

# Frontlist 2014 Quarter 1

Mathsciences



## Biomedicine

M. Balali-Mood, M. Abdollahi (Eds.)

### Basic and Clinical Toxicology of Organophosphorus Compounds

This book explains the chemistry of Organophosphorus compounds (OPs), their mechanism of toxicity and the history of OPs from their initial discovery to the development of new compounds such as Novichoks. It details the harmful effects to human health both as a result of acute and chronic OP exposure and the necessary clinical management of affected patients to reduce their toxic side effects. The book also explains the detrimental effect that OPs have had on the environment and the efforts being made to prevent this in the future. Finally, the book looks at the incidents where OPs have been used as chemical warfare agents. Basic and Clinical Toxicology of Organophosphorus Compounds[...]

#### Features

This book explains the chemistry of organophosphorus compounds (OPs), their mechanism of toxicity and the history of OPs from their initial discovery to the development of new compounds such as Novichoks. It details the harmful effects to human health both as a result of acute and chronic OP exposure and the necessary clinical management of affected patients to reduce their toxic side effects. The book also [...]

#### Contents

Chemistry and classification of OP compounds.- History of use and epidemiology of organophosphorus poisoning.- Acute toxicity of organophosphorus compounds.- Chronic toxicity of organophosphorus compounds.- Toxicity and novel biomarkers of OP exposure.- Clinical management of acute OP pesticide poisoning.- Clinical management of organophosphorus nerve agents' poisonings.- Occupational and environmental aspects of organophosphorus compounds.- Summary, discussion and conclusions.

#### Fields of interest

Pharmacology / Toxicology; Emergency Medicine; Molecular Medicine; Biomedicine (general); Environmental Health

#### Target groups

Professional/practitioner

#### Type of publication

Professional book

More on [www.springer.com/978-1-4471-5624-6](http://www.springer.com/978-1-4471-5624-6)

#### Hardcover

2014. XII, 257 p. 31 illus., 6 illus. in color.  
ISBN 978-1-4471-5624-6

**Due: December 31, 2013**

D. Bar-Shalom, K. Rose, klausrose Consulting, Riehen, Switzerland (Eds.)

### Pediatric Formulations

#### A Roadmap

Until the 1990s, it was generally accepted that medicines were first developed for adults and their use in children was investigated later, if at all. One of the main tasks of hospital pharmacies was the manufacturing of child-appropriate formulations in a more or less makeshift way. The first change came in 1997 with U.S. legislation that rewarded manufacturers to do voluntary pediatric research. Ten years later, the European Union passed legislation that required manufacturers to discuss all pediatric aspects, including formulations, with the regulatory authorities as a condition of starting the registration procedure. In consequence, manufacturers must now cover all age groups.[...]

#### Features

As the first book that specifically addresses pediatric formulations in the context of drug development, Pediatric Formulations: A Roadmap covers anatomy and physiology of children as well as the technical state of the art, gives hints about where to find inspiration, and provides a suitable background on the regulatory framework. Existing books on pediatric formulations mainly discuss compounding at [...]

#### Contents

Pediatric Development: Anatomy.- Age, Weight, Body Surface and Stature, Organ Development.- Pediatric Development: Physiology, Enzymes, Drug Metabolism, Pharmacokinetics and Pharmacodynamics.- Pediatric Development – Gastrointestinal.- How to Estimate the Dose to be Given for the First Time to Pediatric Patients.- The Clinical Relevance of Pediatric Formulations.- General Considerations for Pediatric Oral Drug Formulation.- Orosensory Perception.- Flavor Is Not Just Taste: Taste Concealing.- Liquid Formulations.- Paediatric Solid Formulations.- Semi-Solid Formulations.- The Challenge of[...]

#### Fields of interest

Pharmaceutical Sciences / Technology; Pharmacy; Pediatrics

#### Target groups

Research

#### Type of publication

Contributed volume

More on [www.springer.com/978-1-4899-8010-6](http://www.springer.com/978-1-4899-8010-6)

#### Hardcover

2014. XX, 480 p. 42 illus., 25 illus. in color. (AAPS Advances in the Pharmaceutical Sciences Series, Vol. 11)  
ISBN 978-1-4899-8010-6

**Due: February 28, 2014**

G.R. Bowman, University of California, Berkeley, Berkeley, USA; V.S. Pande, Stanford University, Stanford, USA; F. Noé, Freie Universität Berlin, Berlin, Germany (Eds.)

### An Introduction to Markov State Models and Their Application to Long Timescale Molecular Simulation

The aim of this book volume is to explain the importance of Markov state models to molecular simulation, how they work, and how they can be applied to a range of problems. The Markov state model (MSM) approach aims to address two key challenges of molecular simulation: 1) How to reach long timescales using short simulations of detailed molecular models. 2) How to systematically gain insight from the resulting sea of data. MSMs do this by providing a compact representation of the vast conformational space available to biomolecules by decomposing it into states sets of rapidly interconverting conformations and the rates of transitioning between states. This kinetic definition allows one to [...]

#### Features

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#### Contents

An overview and practical guide to building Markov state models.- Markov model theory.- Estimation and Validation of Markov models.- Uncertainty estimation.- Analysis of Markov models.- Transition Path Theory.- Understanding Protein Folding using Markov state models.- Understanding Molecular Recognition by Kinetic Network Models Constructed from Molecular Dynamics Simulations.- Markov State and Diffusive Stochastic Models in Electron Spin Resonance.- Software for building Markov state models.

#### Fields of interest

Molecular Medicine; Theoretical, Mathematical and Computational Physics; Computer Applications in Life Sciences; Physical Chemistry; Mathematics (general)

#### Target groups

Graduate

#### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-94-007-7605-0](http://www.springer.com/978-94-007-7605-0)

#### Hardcover

2014. XII, 139 p. 65 illus., 48 illus. in color. (Advances in Experimental Medicine and Biology, Vol. 797)  
ISBN 978-94-007-7605-0

**usually dispatched within 3 to 5 business days  
December 31, 2013**

C. Carlberg, University of Eastern Finland, Kuopio, Finland; F. Molnár, University of Eastern Finland, Kuopio, Finland

## Mechanisms of Gene Regulation

This textbook aims to describe the fascinating area of eukaryotic gene regulation for graduate students in all areas of the biomedical sciences. Gene expression is essential in shaping the various phenotypes of cells and tissues and as such, regulation of expression is a fundamental aspect of nearly all processes in physiology, both in healthy and in diseased states. This pivotal role for the regulation of gene expression makes this textbook essential reading from students of all the biomedical sciences in order to be better prepared for their specialized disciplines. A complete understanding of transcription factors and the processes that alter their activity is a major goal of modern[...]

### Features

This textbook aims to describe the fascinating area of eukaryotic gene regulation for graduate students in all areas of the biomedical sciences. Gene expression is essential in shaping the various phenotypes of cells and tissues and as such, regulation of expression is a fundamental aspect of nearly all processes in physiology, both in healthy and in diseased states. This pivotal role for the [...]

### Contents

Overview: What is gene expression? - The impact of chromatin. - The basal transcriptional machinery. - Transcription factors. - Linking signal transduction and gene regulation. - Switching genes on and off at the example of nuclear receptors. - Mapping the genome. - Chromatin modifiers. - Genomic imprinting. - The epigenome. - Chromatin remodeling. - Chromatin architecture. - Regulatory RNA.

### Fields of interest

Gene Expression; Protein Structure

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-94-007-7904-4](http://www.springer.com/978-94-007-7904-4)

### Hardcover

2014. XV, 210 p. 83 illus., 64 illus. in color.

ISBN 978-94-007-7904-4

**Due: December 31, 2013**

T.J. Cleophas, Department Medicine, Sliedrecht, Netherlands; A.H. Zwinderman, Department Biostatistics, Amsterdam, Netherlands

## Machine Learning in Medicine

### Part Three

Machine learning is concerned with the analysis of large data and multiple variables. It is also often more sensitive than traditional statistical methods to analyze small data. The first and second volumes reviewed subjects like optimal scaling, neural networks, factor analysis, partial least squares, discriminant analysis, canonical analysis, fuzzy modeling, various clustering models, support vector machines, Bayesian networks, discrete wavelet analysis, association rule learning, anomaly detection, and correspondence analysis. This third volume addresses more advanced methods and includes subjects like evolutionary programming, stochastic methods, complex sampling, optional[...]

### Features

Machine learning is concerned with the analysis of large data and multiple variables. It is also often more sensitive than traditional statistical methods to analyze small data. The first and second volumes reviewed subjects like optimal scaling, neural networks, factor analysis, partial least squares, discriminant analysis, canonical analysis, fuzzy modeling, various clustering models, support vector [...]

### Contents

Preface. - Introduction to Machine Learning Part Three. - Evolutionary Operations. - Multiple Treatments. - Multiple Endpoints. - Optimal Binning. - Exact P-Values. - Probit Regression. - Overdispersion. 10 Random Effects. - Weighted Least Squares. - Multiple Response Sets. - Complex Samples. - Runs Tests. - Decision Trees. - Spectral Plots. - Newton's Methods. - Stochastic Processes, Stationary Markov Chains. - Stochastic Processes, Absorbing Markov Chains. - Conjoint Models. - Machine Learning and Unsolved Questions. - Index.

### Fields of interest

Biomedicine (general); Medicine (general); Statistics (general); Computer Imaging, Vision, Pattern Recognition and Graphics

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-94-007-7868-9](http://www.springer.com/978-94-007-7868-9)

### Hardcover

2013. XIX, 224 p. 41 illus.

ISBN 978-94-007-7868-9

**usually dispatched within 3 to 5 business days**

A.J. Domb, School of Pharmacy-Faculty of Medic, Jerusalem, Israel; W. Khan, School of Pharmacy-Faculty of Medicine, Jerusalem, Israel (Eds.)

## Focal Controlled Drug Delivery

The concept of focal controlled drug delivery has been applied for treating illnesses that are localized to a certain tissue or organ. These delivery systems are applied directly to the diseased site and deliver a desired dose for an extended time period while minimizing systemic distribution of toxic drug. Controlled drug delivery systems have been focused on oral extended release formulations and on systemic delivery of small drugs and peptides. Despite the upsurge of interest in focal targeted drug delivery, there is currently no single reference text on the subject. By comparison, there are numerous authored and edited books on oral, systemic and transdermal drug delivery or books[...]

### Features

The concept of Focal Drug Delivery has been applied for treating illnesses that are localized to a certain tissue or organ. These delivery systems are applied directly to the diseased site and deliver a desired dose for an extended time period while minimizing systemic distribution of toxic drug. Despite the upsurge of interest in focal targeted drug delivery, there is currently no single reference text on [...]

### Contents

Biodegradable Polymers for Focal Delivery Systems. - Implantable Medical Devices. - Systemic Targeting Systems-EPR Effect, Ligand Targeting Systems. - Liposomal formulations for Focal and Targeted Drug Delivery in Cancer and Other Diseases. - Polymer Drug Conjugate in Focal Drug Delivery. - Pharmacokinetic and Pharmacodynamic Aspects of Focal and Targeted Delivery of Drugs. - Treatment of Brain Tumors. - Intranasal Delivery of Neuropeptide-Loaded Nanoparticles and Their Application to Nervous System Therapeutics. - Focal Drug Delivery in Inner Ear Therapy. - Nanotechnology Based Ophthalmic Drug[...]

### Fields of interest

Pharmaceutical Sciences / Technology

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9433-1](http://www.springer.com/978-1-4614-9433-1)

### Hardcover

2014. XIV, 736 p. 99 illus., 75 illus. in color. (Advances in Delivery Science and Technology)

ISBN 978-1-4614-9433-1

**Due: January 31, 2014**

B. Ferry, D. Gervasoni, C. Vogt, Claude Bernard University, Lyon, France

## Stereotaxic Neurosurgery in Laboratory Rodent

Handbook on Best Practices

Stereotaxic neurosurgery in rodents is used by a variety of people working at research laboratories (research staff, technicians, students at animal facilities...). The present handbook presents all the steps necessary to complete a stereotaxic neurosurgery protocol in accordance with current animal welfare guidelines. This book will guide surgeons step by step, from anesthesia to the post-surgery recovery procedures, including asepsis of the surgical tools and surgical zone, analgesia, correctly identifying the reference points on the skull and brain targets, etc. In keeping with the current international trends, the authors above all focus on the following points: the consideration[...]

### Features

Stereotaxic neurosurgery in rodents is used by a variety of people working at research laboratories (research staff, technicians, students at animal facilities...). The present handbook presents all the steps necessary to complete a stereotaxic neurosurgery protocol in accordance with current animal welfare guidelines. This book will guide surgeons step by step, from anesthesia to the post-surgery recovery [...]

### Contents

Regulatory and Ethical Considerations.- Elements of Descriptive Neuroanatomy.- Elements of Functional Neuroanatomy: The Major Neurotransmitter Systems.- Stereotaxic Approach of a Target Structure.- Preparation of the Stereotaxic Surgical Procedure.- Post-mortem examination of animals.

### Fields of interest

Neurosciences; Neurobiology; Neurosurgery; Animal Models; Surgery

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-2-8178-0471-2](http://www.springer.com/978-2-8178-0471-2)

### Hardcover

Original French edition published by Editions Lavoisier, Cachan, 2012

2014. XII, 228 p. 146 illus., 128 illus. in color.

ISBN 978-2-8178-0471-2

**Due: February 28, 2014**

M. Hammarlund-Udenaes, Uppsala University, Uppsala, Sweden; E. de Lange, Leiden University, Leiden, Netherlands; R.G. Thorne, University of Wisconsin-Madison School of, Madison, USA (Eds.)

## Drug Delivery to the Brain

Physiological Concepts, Methodologies and Approaches

The development of new CNS drugs is notoriously difficult. Drugs must reach CNS target sites for action and these sites are protected by a number of barriers, the most important being the blood-brain barrier (BBB). Many factors are therefore critical to consider for CNS drug delivery, e.g. active/passive transport across the BBB, intra-brain distribution, and central/systemic pharmacokinetics, to name a few. Neurological disease and trauma conditions add further complexity because CNS barriers, drug distribution and pharmacokinetics are dynamic and often changed by disease/trauma. Knowledge of all these factors and their interplay in different conditions is of utmost importance for[...]

### Features

This book describes the different approaches for drug delivery to the brain with an emphasis on the physiology of the blood-brain barrier (BBB) and the governing principles and concepts for drug delivery across the BBB. It contains cutting-edge methods for studying drug delivery and administering drugs into the brain. The book also explores different approaches for predicting human brain concentrations as [...]

### Contents

Anatomy and physiology of the blood-brain barriers.- Recent Progress in Blood-Brain Barrier and Blood-CSF Barrier Transport Research: Pharmaceutical Relevance for Drug Delivery to the Brain.- Blood-Brain Barrier (BBB) Pharmacoproteomics: A New Research Field Opened up by Quantitative Targeted Absolute Proteomics (QTAP).- Drug Metabolism at the Blood-Brain and Blood-CSF Barriers.- Pharmacokinetic Concepts in Brain Drug Delivery.- In vitro models of blood-brain barriers.- In situ and in vivo animal models.- Principles of PET and its Role in Understanding Drug Delivery to the Brain.- PKPD[...]

### Fields of interest

Pharmaceutical Sciences / Technology; Biomedicine (general)

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9104-0](http://www.springer.com/978-1-4614-9104-0)

### Hardcover

2014. XX, 731 p. 150 illus., 126 illus. in color. (AAPS Advances in the Pharmaceutical Sciences Series, Vol. 10)

ISBN 978-1-4614-9104-0

**usually dispatched within 3 to 5 business days  
December 31, 2013**

G.R. Lewin, B.D. Carter, Vanderbilt University School of Medicine, Nashville, USA (Eds.)

## Neurotrophic Factors

This book provides critical reviews of the role of neurotrophins and their receptors in a wide variety of diseases including neurodegenerative diseases like Huntington's syndrome, cognitive function, psychiatric disorders such as clinical depression, Rett syndrome, motoneurone disease, spinal cord injury, pain, metabolic disease and cardiovascular disease. It also contains contributions from leaders in the field dealing with the basic biology, transcriptional and post-translational regulation of the neurotrophins and their receptors. The present book will review all recent areas of progress in the study of neurotrophins and their biological roles.

### Features

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### Contents

The Neurotrophin Family: NGF, BDNF, NT3 and NT4.- Deciphering Proneurotrophin Actions.- Spatio-Temporal Intracellular Dynamics of Neurotrophins and Their Receptors. Implications for Neurotrophin Signaling and Neuronal Function.- Neurotrophins: Transcription and Translation.- Neurotrophin Receptors: Trk Receptors.- The Biological Functions and Signaling Mechanisms of the p75 Neurotrophin Receptor.- Sortilins in Neurotrophic Factor Signaling.- The Biology of Neurotrophins: Neurotrophins in the Regulation of Cellular Survival and Death.- BDNF and Synaptic Plasticity, Cognitive Function and[...]

### Fields of interest

Pharmacology / Toxicology; Molecular Medicine; Neurosciences

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-45105-8](http://www.springer.com/978-3-642-45105-8)

### Hardcover

2014. XII, 613 p. 37 illus., 27 illus. in color. (Handbook of Experimental Pharmacology, Vol. 220)  
ISBN 978-3-642-45105-8

**Due: January 31, 2014**

E. Marani, EWI, MIRA, University Twente, Enschede, Netherlands;  
W.F.R.M. Koch, Medisch Centrum Alkmaar, Alkmaar, Netherlands

## The Pelvis

Structure, Gender and Society

This book offers a critical review of the pelvic sciences—past, present and future—from an anatomical and physiological perspective and is intended for researchers, medical practitioners and paramedical therapists in the fields of urology, gynecology and obstetrics, proctology, physiotherapy, as well as for patients. The book starts with a “construction plan” of the pelvis and shows its structural consequences. The historical background of pelvic studies proceeds from medieval and early Italian models to the definitive understanding of the pelvic anatomy in the Seventeenth century. During these eras of pelvic research, concepts and approaches developed that are illustrated with [...]

### Features

This book offers a critical review of the pelvic sciences—past, present and future—from an anatomical and physiological perspective and is intended for researchers, medical practitioners and paramedical therapists in the fields of urology, gynecology and obstetrics, proctology, physiotherapy, as well as for patients. The book starts with a “construction plan” of the pelvis and shows its [...]

### Contents

The Pelvis or My Pelvis.- “Construction Plan” of the Bony Pelvis.- The Pelvis at War.- The Birth Canal.- History.- Concepts and Approaches in the Study of the Pelvis.- Sexual Organs and Society.- Anatomy of the Pelvic Wall.- The Development of Uropoetic Structures.- Physiotherapy for Pelvic Muscles.- The Sub and Retroperitoneal Space.- Vision and Waist-to-Hip Ratio.- Male and Female Bladder.- The Pelvis and Herbal Medicine.- Innervation of the Mature Human Pelvis.- Electromyography of Smooth Muscle of Bladder and Uterus.- Reflexes or Controller Action?.- The Connective Tissue in the [...]

### Fields of interest

Human Physiology; Gynecology; Anatomy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40005-6](http://www.springer.com/978-3-642-40005-6)

### Hardcover

2014. XVII, 541 p. 203 illus., 80 illus. in color.  
ISBN 978-3-642-40005-6

**Due: December 31, 2013**

J. Peltola, Tampere University Hospital, Tampere, Finland

## Clinical Management of Partial-Onset Seizures in Epilepsy

While tonic-clonic seizures are the most commonly recognized, approximately 60% of patients with epilepsy actually have partial-onset seizures, with one side of the brain being affected. While clinicians regularly see patients with partial-onset seizures, in both the community or office setting, it is often challenging to determine what the type of epilepsy is being experienced and which treatment should be administered. Written by a Dr Jukka Peltola, a renowned key thought leader, this concise high-quality pocket-sized book will be aimed at educating non-specialists how to accurately diagnose and classify partial-onset seizures, with a special focus on currently available and [...]

### Features

While tonic-clonic seizures are the most commonly recognized, approximately 60% of patients with epilepsy actually have partial-onset seizures, with one side of the brain being affected. While clinicians regularly see patients with partial-onset seizures, in both the community or office setting, it is often challenging to determine what the type of epilepsy is being experienced and which treatment should be [...]

### Contents

Introduction to partial-onset epilepsy.- Definition and classification of epileptic seizures.- Diagnosis and prognosis of epileptic syndromes.- Treatment options and long-term management.

### Fields of interest

Neurosciences; Medicine (general); Pharmacotherapy

### Target groups

Professional/practitioner

### Type of publication

Handbook

More on [www.springer.com/978-3-319-02758-6](http://www.springer.com/978-3-319-02758-6)

### Softcover

2014. Approx. 100 p. 35 illus., 25 illus. in color.  
ISBN 978-3-319-02758-6

**Due: March 30, 2014**

D. Ribatti, University of Bari Medical School, Bari, Italy

## Angiogenesis and Anti-Angiogenesis in Hematological Malignancies

It has been generally accepted that angiogenesis is involved in the pathogenesis of hematological malignancies, like acute and chronic leukemia, lymphoma, myelodysplastic syndromes, myeloproliferative neoplasms and multiple myeloma. The extent of angiogenesis in the bone marrow has been correlated with disease burden, prognosis and treatment outcome. Reciprocal positive and negative interactions between tumor cells and bone marrow stromal cells, namely hematopoietic stem cells, fibroblasts, osteoblasts/osteoclasts, endothelial cells, endothelial progenitor cells, T cells, macrophages and mast cells, mediated by an array of cytokines, receptors and adhesion molecules, modulate the [...]

### Features

It has been generally accepted that angiogenesis is involved in the pathogenesis of hematological malignancies, like acute and chronic leukemia, lymphoma, myelodysplastic syndromes, myeloproliferative neoplasms and multiple myeloma. The extent of angiogenesis in the bone marrow has been correlated with disease burden, prognosis and treatment outcome. Reciprocal positive and negative interactions between tumor [...]

### Contents

Preface.- Introduction.- Angiogenesis in multiple myeloma.- Angiogenesis in lymphomas.- Angiogenesis in leukemia.- Antiangiogenesis.- Concluding remarks.- References.

### Fields of interest

Cancer Research; Oncology; Hematology; Life Sciences (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-017-8034-6](http://www.springer.com/978-94-017-8034-6)

### Hardcover

2014. I, 142 p. 44 illus., 30 illus. in color.  
ISBN 978-94-017-8034-6

**Due: January 31, 2014**

P. Ruben, Simon Fraser University, Burnaby, Canada (Ed.)

## Voltage Gated Sodium Channels

A number of techniques to study ion channels have been developed since the electrical basis of excitability was first discovered. Ion channel biophysicists have at their disposal a rich and ever-growing array of instruments and reagents to explore the biophysical and structural basis of sodium channel behavior. Armed with these tools, researchers have made increasingly dramatic discoveries about sodium channels, culminating most recently in crystal structures of voltage-gated sodium channels from bacteria. These structures, along with those from other channels, give unprecedented insight into the structural basis of sodium channel function. This volume of the Handbook of Experimental[...]

### Features

A number of techniques to study ion channels have been developed since the electrical basis of excitability was first discovered. Ion channel biophysicists have at their disposal a rich and ever-growing array of instruments and reagents to explore the biophysical and structural basis of sodium channel behavior. Armed with these tools, researchers have made increasingly dramatic discoveries about sodium [...]

### Contents

Overview: biophysical properties and structure of sodium channels.- The voltage sensor module in sodium channels.- Slow inactivation of Na<sup>+</sup> channels.- Regulation/modulation of sensory neuron sodium channels.- Ubiquitylation of voltage-gated sodium channels.- Probing gating mechanisms of sodium channel using pore blockers.- Animal toxins influence voltage-gated sodium channel function.- Voltage-sensor trapping toxins: Iso form-specific ligands for sodium channels.- Pharmacological insights and quirks of bacterial sodium channels.- The role of non-pore-forming  $\beta$  subunits in physiology and[...]

### Fields of interest

Pharmacology / Toxicology; Neurosciences; Cardiology; Membrane Biology; Protein Structure

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-41587-6](http://www.springer.com/978-3-642-41587-6)

### Hardcover

2014. X, 334 p. 58 illus., 36 illus. in color. (Handbook of Experimental Pharmacology, Vol. 221)  
ISBN 978-3-642-41587-6

**Due: February 28, 2014**

J.G. Taylor, University of London, London, United Kingdom

## Solving the Mind-Body Problem by the CODAM Neural Model of Consciousness?

This book details a model of consciousness supported by scientific experimental data from the human brain. It presents how the Corollary Discharge of Attention Movement (CODAM) neural network model allows for a scientific understanding of consciousness as well as provides a solution to the Mind-Body problem. The book provides readers with a general approach to consciousness that is powerful enough to lead to the inner self and its ramifications for the vast range of human experiences. It also offers an approach to the evolution of human consciousness and features chapters on mental disease (especially schizophrenia) and on meditative states (including drug-induced states of mind).[...]

### Features

This book details a model of consciousness supported by scientific experimental data from the human brain. It presents how the Corollary Discharge of Attention Movement (CODAM) neural network model allows for a scientific understanding of consciousness as well as provides a solution to the Mind-Body problem. The book provides readers with a general approach to consciousness that is powerful enough to [...]

### Contents

Preface.- The Story of Consciousness.- The Search for Consciousness in the Brain.- Attention and Consciousness: Fused or Independent?.- Past & Current Neural Models of Consciousness.- The Control Nature of Attention.- The Full CODAM Model.- The Owner and CODAM.- Does I Really Exist?.- Does the Corollary Discharge of Attention Exist?.- Understanding Mental Diseases.- The Escape from Life through Meditation.- The Evolution of Human Consciousness.- Animal Consciousness.- Understanding Consciousness and Emotions.- Solving the Mind-Body Problem through CODAM.- Is there Free Will in CODAM?-[...]

### Fields of interest

Neurosciences; Evolutionary Biology; Simulation and Modeling; Philosophy of Mind; Popular Science in Mathematics / Natural Science / Technology; Mathematical Models of Cognitive Processes and Neural Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7644-9](http://www.springer.com/978-94-007-7644-9)

### Hardcover

2013. XX, 273 p. 28 illus., 16 illus. in color. (Springer Series in Cognitive and Neural Systems, Vol. 9)  
ISBN 978-94-007-7644-9

**usually dispatched within 3 to 5 business days January 31, 2014**

J. das Neves, B. Sarmiento, Instituto Superior de Ciências Saúde, Gandra, Portugal (Eds.)

## Mucosal Delivery of Biopharmaceuticals

### Biology, Challenges and Strategies

Biopharmaceutical medicines, the newest class of therapeutics, are quite heterogeneous and include a range of molecules such as proteins, peptides, vaccines and nucleic acids, with use in virtually all therapeutic fields (e.g. cancer and infectious diseases, vaccination, metabolic dysfunctions) and diagnostics. This edited book gives a concise and up-to-date overview of the biological features justifying the use of different human mucosa as delivery routes for biopharmaceuticals, the technological strategies that have been followed so far regarding the optimization of mucosal potentialities as well as the challenges that arise with the advent of new biopharmaceutical drugs and[...]

### Features

This book provides a concise and up-to-date overview of the biological features justifying the use of different human mucosa as delivery routes for biopharmaceuticals as well as the technological strategies that have been followed so far regarding the optimization of mucosal potentialities. The book also addresses the challenges that arise with the advent of new biopharmaceutical drugs and alternative means [...]

### Contents

Concepts in Mucosal Immunity and Mucosal Vaccines.- Mucoadhesion and Characterization of Mucoadhesive Properties.- Mucus as a Barrier for Biopharmaceuticals and Drug Delivery Systems.- Epithelial Permeation and Absorption Mechanisms of Biopharmaceuticals.- Oral Delivery of Biopharmaceuticals.- Buccal Delivery of Biopharmaceuticals: Vaccines and Allergens.- Pulmonary Delivery of Biopharmaceuticals.- Nasal Delivery of Biopharmaceuticals.- Ocular Delivery of Biopharmaceuticals.- Vaginal Delivery of Biopharmaceuticals.- Nanoparticles-in-Microsphere Oral Delivery Systems (NiMOS) for Nucleic[...]

### Fields of interest

Pharmaceutical Sciences / Technology; Pharmacology / Toxicology

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9523-9](http://www.springer.com/978-1-4614-9523-9)

### Hardcover

2014. I, 789 p. 134 illus., 23 illus. in color.  
ISBN 978-1-4614-9523-9

**Due: January 31, 2014**

## Chemistry

M. Baranska, Jagiellonian University, Krakow, Poland (Ed.)

### Optical Spectroscopy and Computational Methods in Biology and Medicine

This multi-author contributed volume gives a comprehensive overview of recent progress in various vibrational spectroscopic techniques and chemometric methods and their applications in chemistry, biology and medicine. In order to meet the needs of readers, the book focuses on recent advances in technical development and potential exploitations of the theory, as well as the new applications of vibrational methods to problems of recent general interest that were difficult or even impossible to achieve in the not so distant past. Integrating vibrational spectroscopy and computational approaches serves as a handbook for people performing vibrational spectroscopy followed by chemometric[...]

#### Features

This multi-author contributed volume gives a comprehensive overview of recent progress in various vibrational spectroscopic techniques and chemometric methods and their applications in chemistry, biology and medicine. In order to meet the needs of readers, the book focuses on recent advances in technical development and potential exploitations of the theory, as well as the new applications of vibrational [...]

#### Contents

From the Contents: Raman and FT-IR spectroscopy: theory and general overview on application in biology and medicine.- Overview on computational techniques used for analysis of biological systems lub.- Application of computational techniques – quantum and molecular modeling – to study dynamics and spectroscopic properties of fluorescence probes in biological systems.- Raman imaging: experimental techniques and chemometric analysis.- Qualitative and quantitative FT-Raman analysis of plants.- Structural analysis of carotenoids in a single cells monitored by Raman spectroscopy supported by[...]

#### Fields of interest

Theoretical and Computational Chemistry; Medical Biochemistry; Spectroscopy / Spectrometry; Analytical Chemistry

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-94-007-7831-3](http://www.springer.com/978-94-007-7831-3)

Worldwide rights

#### Hardcover

2014. XII, 540 p. 204 illus., 134 illus. in color. (Challenges and Advances in Computational Chemistry and Physics, Vol. 14)

ISBN 978-94-007-7831-3

usually dispatched within 3 to 5 business days

December 31, 2013

B.M. Bhanage, Institute of Chemical Technology, Mumbai, India; M. Arai, Hokkaido University, Sapporo, Japan (Eds.)

### Transformation and Utilization of Carbon Dioxide

Transformation and Utilization of Carbon Dioxide shows the various organic, polymeric and inorganic compounds which result from the transformation of carbon dioxide through chemical, photocatalytic, electrochemical, inorganic and biological processes. The book consists of twelve chapters demonstrating interesting examples of these reactions, depending on the types of reaction and catalyst. It also includes two chapters dealing with the utilization of carbon dioxide as a reaction promoter and presents a wide range of examples of chemistry and chemical engineering with carbon dioxide. Transformation and Utilization of Carbon Dioxide is a collective work of reviews illustrative of recent[...]

#### Features

Transformation and Utilization of Carbon Dioxide shows the various organic, polymeric and inorganic compounds which result from the transformation of carbon dioxide through chemical, photocatalytic, electrochemical, inorganic and biological processes. The book consists of twelve chapters demonstrating interesting examples of these reactions, depending on the types of reaction and catalyst. It also [...]

#### Contents

Part I Chemical Reactions.- Valorization of Carbon Dioxide to Organic Products with Organocatalysts.- Direct Transformation of Carbon Dioxide to Value-Added Products over Heterogeneous Catalysts.- Indirect Utilization of Carbon Dioxide in Organic Synthesis for Valuable Chemicals.- Hydrogenation and Related Reductions of Carbon Dioxide with Molecular Catalysts.- Latest Advances in the Catalytic Hydrogenation of Carbon Dioxide to Methanol/Dimethylether.- Syngas Production Using Carbon Dioxide Reforming: Fundamentals and Perspectives.- Carbon Dioxide as C-1 Block for the Synthesis of[...]

#### Fields of interest

Catalysis; Renewable and Green Energy; Environmental Chemistry; Industrial Chemistry / Chemical Engineering

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-3-642-44987-1](http://www.springer.com/978-3-642-44987-1)

#### Hardcover

2014. XII, 390 p. 101 illus., 41 illus. in color. (Green Chemistry and Sustainable Technology)

ISBN 978-3-642-44987-1

Due: January 31, 2014

V. Dhir, Sikh National College Qadian, Lahore, India

### Physicochemical Interactions of Amino Acids and Peptides in Aqueous Media

The present work covers in detail the results of measurements of apparent molar volumes, viscosities and apparent molar adiabatic isothermal compressibility of various -amino acids and peptide in water and in aqueous sodium nitrate (NaNO<sub>3</sub>), potassium nitrate (KNO<sub>3</sub>) and magnesium nitrate hexahydrate [Mg(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O] solutions at different temperatures as follows. These data have been used to arrive at the various parameters like partial molar volumes, partial molar adiabatic compressibility capacities and viscosity B-coefficients and their corresponding transfer functions, side chain contributions, interaction coefficients, activation parameters and hydration numbers. These parameters[...]

#### Features

The present work covers in detail the results of measurements of apparent molar volumes, viscosities and apparent molar adiabatic isothermal compressibility of various -amino acids and peptide in water and in aqueous sodium nitrate (NaNO<sub>3</sub>), potassium nitrate (KNO<sub>3</sub>) and magnesium nitrate hexahydrate [Mg(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O] solutions at different temperatures as follows. These data have been used to arrive at the [...]

#### Contents

From the Contents: General Introduction.- Structure of Water.- Forces that Stabilize the Protein Structure.- Outline of the Present Research Work.- Review of Literature.- Experimental.- Sources & Grades of Chemicals.- Experimental Techniques.- Theoretical Background of Physico-Chemical Properties.- Results and Discussion.- Apparent Molar Volumes of α-Amino Acids and Diglycine in Aqueous Sodium Nitrate at Different Temperatures (T=288.15-318.15)K.- Apparent Molar Volumes of α-Amino Acids and Diglycine in Aqueous Potassium Nitrate at Different Temperatures (T=288.15-318.15)K.- Apparent[...]

#### Fields of interest

Physical Chemistry; Protein Structure; Analytical Chemistry

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-1-907343-86-5](http://www.springer.com/978-1-907343-86-5)

#### Hardcover

2014. Approx. 300 p. 100 illus.

ISBN 978-1-907343-86-5

Due: March 28, 2014

D. Eibl, Zürcher Hochschule für Angew. Wissensch, Wädenswil, Switzerland; R. Eibl, Hochschule Wädenswil, Wädenswil, Switzerland (Eds.)

## Disposable Bioreactors II

Dynamic Single-Use Bioreactors Used in Modern Liter- and m<sup>3</sup>- Scale Biotechnological Processes: Engineering Characteristics and Scaling Up, by Christian Löffelholz, Stephan C. Kaiser, Matthias Kraume, Regine Eibl, Dieter Eibl Orbitally Shaken Single-Use Bioreactors, by Wolf Klöckner, Sylvia Diederichs, Jochen Büchs Therapeutic Human Cells: Manufacture for Cell Therapy/Regenerative Medicine by Christian van den Bos, Robert Keefe, Carmen Schirmaier, Michael McCaman Fast Single-Use VLP Vaccine Productions Based on Insect Cells and the Baculovirus Expression Vector System: Influenza as Case Study by Regine Eibl, Nina Steiger, Sabine Wellnitz, Tiago Vicente, Corinne John, Dieter Eibl Microbial [...]

### Features

Christian Löffelholz, Stephan C. Kaiser, Matthias Kraume, Regine, Eibl, Dieter Eibl Dynamic Single-Use Bioreactors Used in Modern Liter- and m<sup>3</sup>-Scale Biotechnological Processes: Engineering Characteristics and Scaling Up Wolf Klöckner, Sylvia Diederichs, Jochen Büchs, Orbitally Shaken Single-Use Bioreactors Christian van den Bos, Robert Keefe, Carmen Schirmaier, Michael [...]

### Fields of interest

Biotechnology; Cell Biology; Biomedical Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45157-7](http://www.springer.com/978-3-642-45157-7)

### Hardcover

2014. VIII, 292 p. (Advances in Biochemical Engineering/Biotechnology, Vol. 138)  
ISBN 978-3-642-45157-7

**Due: January 31, 2014**

M. Fedotov, Borekov Catalysis Institute, Novosibirsk, Russian Federation

## NMR in Inorganic and Coordination Chemistry

The present text provides detailed information for the application of NMR in inorganic and coordination chemistry. Detailed, yet clear derivations of all relevant equations are provided throughout. These offer not only a very good introductory basis for those new to NMR, but also many practical work-ups for those already familiar with this technique but who wish to apply it to specific inorganic compounds. The reader is given in-depth background on NMR methods, its restrictions and advantages over other characterization methods. A convenient listing for isotopes of each element is provided as a handy reference. NMR data for compounds of all elements with numerous examples of [...]

### Features

The present text provides detailed information for the application of NMR in inorganic and coordination chemistry. Detailed, yet clear derivations of all relevant equations are provided throughout. These offer not only a very good introductory basis for those new to NMR, but also many practical work-ups for those already familiar with this technique but who wish to apply it to specific inorganic compounds. [...]

### Contents

Nuclear magnetic resonance – methodology and experiments.- Nuclear magnetic resonance of non-transitional elements.- Nuclear Magnetic Resonance of Transition Elements.- Some applications of NMR.

### Fields of interest

Inorganic Chemistry; Characterization and Evaluation of Materials; Spectroscopy and Microscopy; Spectroscopy / Spectrometry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-907343-83-4](http://www.springer.com/978-1-907343-83-4)

### Hardcover

2014. Approx. 380 p. 100 illus..  
ISBN 978-1-907343-83-4

**Due: March 28, 2014**

F. Gatti, Université Montpellier 2, Montpellier Cedex, France (Ed.)

## Molecular Quantum Dynamics

From Theory to Applications

This book focuses on current applications of molecular quantum dynamics. Examples from all main subjects in the field, presented by the internationally renowned experts, illustrate the importance of the domain. Recent success in helping to understand experimental observations in fields like heterogeneous catalysis, photochemistry, reactive scattering, optical spectroscopy, or femto- and attosecond chemistry and spectroscopy underline that nuclear quantum mechanical effects affect many areas of chemical and physical research. In contrast to standard quantum chemistry calculations, where the nuclei are treated classically, molecular quantum dynamics can cover quantum mechanical effects [...]

### Features

This book focuses on current applications of molecular quantum dynamics. Examples from all main subjects in the field, presented by the internationally renowned experts, illustrate the importance of the domain. Recent success in helping to understand experimental observations in fields like heterogeneous catalysis, photochemistry, reactive scattering, optical spectroscopy, or femto- and attosecond [...]

### Contents

From the Contents: Introduction and Conceptual Background.- Elementary Molecule-Surface Scattering Processes relevant to Heterogeneous Catalysis: Insights from Quantum Dynamics Calculations.- Tunneling in Unimolecular and Bimolecular Reactions.- Reactive Scattering and Resonance.

### Fields of interest

Theoretical and Computational Chemistry; Physical Chemistry; Math. Applications in Chemistry; Quantum Computing; Spectroscopy / Spectrometry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45289-5](http://www.springer.com/978-3-642-45289-5)

### Hardcover

2014. X, 286 p. 100 illus., 62 illus. in color. (Physical Chemistry in Action)  
ISBN 978-3-642-45289-5

**Due: February 28, 2014**

R.S. Glass, University of Arizona, Tucson, USA

## Sulfur's Role in the Modern World

This book connects the chemistry and biochemistry of sulfur in order to understand these impacts and to inspire the rational discovery of further beneficial applications. Compounds and materials containing sulfur have an important impact on medicine and health, foods, new materials as well as our atmosphere. After a review of the chemical principles which provide the foundation for sulfur's unique contributions to the properties of its compounds, these principles will be used to interpret the application of these compounds. This book will not only provide a fundamental understanding of the properties of sulfur compounds but more importantly, inform about the rational development of[...]

### Features

Sulfur and its compounds play key roles in biochemistry, foods, medicine and health, polymers, nanomaterials and the atmosphere. Central to these roles is the chemistry of sulfur. This book endeavors to provide insight into the chemistry that underlies the gainful exploitation of sulfur by Nature and by man. Sulfur's Role in the Modern World reviews the chemical principles germane to sulfur's [...]

### Contents

Review of Chemical Principles Relevant to Sulfur's Properties.- Use of Sulfur in Organic Synthesis.- Metal-Sulfur Compounds.- Occurrence and Role of Sulfur in Biochemistry: Sulfur, the Life of the Party.- Sulfur and the Origin of Life.- Sulfur Compounds in Medicine and Health.- Toxicology and Sulfur.- Sulfur Compounds in Food: The Taste and Smell of Sulfur.- Sulfur in Nanotechnology and Materials Science: From Pigments to Quantum Dots.- Sulfur Cycles – Atmospheric Impact.

### Fields of interest

Organic Chemistry; Environmental Chemistry; Biochemistry; Earth Sciences (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-90-481-3837-1](http://www.springer.com/978-90-481-3837-1)

### Hardcover

2014. Approx. 350 p.  
ISBN 978-90-481-3837-1

**Due: July 28, 2014**

R. Guevara-Gonzalez, Queretaro Autonomous University, Queretaro, Mexico; I. Torres-Pacheco, Queretaro Autonomous University, Queretaro, Mexico (Eds.)

## Biosystems Engineering

### Biofactories for Food Production in the XXI Century

This book presents new food production systems (for plants and animals) involving agrochemicals that increase in a controlled manner the bioactives content, under greenhouse conditions. Moreover, conception and design of new instrumentation for precision agriculture and aquaculture contributing in food production is also highlighted in this book.

### Features

This book presents new food production systems (for plants and animals) involving agrochemicals that increase in a controlled manner the bioactives content, under greenhouse conditions. Moreover, conception and design of new instrumentation for precision agriculture and aquaculture contributing in food production is also highlighted in this book.

### Contents

Plant Biosystems: From conventional to new Food production systems.- Agriculture for nutraceuticals.- The Plant immune system and Food Production.- Mathematical modelling for Biosystems.- Plant Bionics as tool for Food Production Biosystems.- Exploring aquaculture as Food Biosystem.- Prototypes for aquaculture-plant Biosystems.- b.3. Aquaculture Bionics.- Perspectives of Biosystems as sustainable strategy for Food Production in century XXI.- Concluding Remarks.

### Fields of interest

Food Science; Industrial and Production Engineering; Biotechnology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03879-7](http://www.springer.com/978-3-319-03879-7)

### Hardcover

2014. Approx. 300 p.  
ISBN 978-3-319-03879-7

**Due: February 28, 2014**

E. Jabbari, University of South Carolina, Columbia, USA

## Modeling and Simulation of Polymerization Reactions

While there are many excellent textbooks and reference books covering the chemistry, physics, rheology, processing, and characterization of polymers, this textbook is the first treatment in one place of the modeling and simulation of polymerization reactions. This is the very model of a textbook; not only is it single-authored, but also it comes with chapter introductions, chapter summaries, worked examples, exercises, and many references to the literature.

In addition, this book will serve as a reference for students, researchers, post-doctoral workers, and polymer scientists both inside and outside of academia. Courses using the book may be found in departments of polymer[...]

### Features

While there are many excellent textbooks and reference books covering the chemistry, physics, rheology, processing, and characterization of polymers, this textbook is the first treatment in one place of the modeling and simulation of polymerization reactions. This is the very model of a textbook; not only is it single-authored, but also it comes with chapter introductions, chapter [...]

### Contents

Introduction to polymerization reactions.- Functions with distributed variables.- Properties of z-transforms.- Conservation of moments.- Models for elementary reactions.- Modeling addition polymerization systems with the method of Moments.- Modeling diffusion-controlled polymerization reactions.- Simulation of reactions by the Monte Carlo method.- Monte Carlo simulation of branching in emulsion polymerization of butadiene.- Monte Carlo simulation of degradation of porous poly(lactide) scaffolds.- The statistical method of Markov chain.- Modeling copolymerization by the method of a[...]

### Fields of interest

Polymer Sciences; Math. Applications in Chemistry; Industrial Chemistry / Chemical Engineering; Probability Theory and Stochastic Processes; Mathematical Modeling and Industrial Mathematics; Theoretical and Computational Chemistry

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-0-387-76791-8](http://www.springer.com/978-0-387-76791-8)

### Hardcover

2014. Approx. 500 p. 100 illus..  
ISBN 978-0-387-76791-8

**Due: February 28, 2014**

K. Kondo, Osaka Prefecture University, Osaka, Japan; R.N. Akolkar, Intel Corporation, Hillsboro, USA; D.P. Barkey, M. Yokoi, Industrial Technology Support Institute, Osaka Prefecture, Japan (Eds.)

## Copper Electrodeposition for Nanofabrication of Electronics Devices

This book discusses the scientific mechanism of copper electrodeposition and its wide range of applications. The book will cover everything from the basic fundamentals to practical applications. In addition, the book will also cover important topics such as: • ULSI wiring material based upon copper nanowiring • Printed circuit boards • Stacked semiconductors • Through Silicon Via • Smooth copper foil for Lithium-Ion battery electrodes. This book is ideal for nanotechnologists, industry professionals, and practitioners.

### Features

This book discusses the scientific mechanism of copper electrodeposition and its wide range of applications. The book will cover everything from the basic fundamentals to practical applications. In addition, the book will also cover important topics such as: • ULSI wiring material based upon copper nanowiring • Printed circuit boards • Stacked semiconductors • Through Silicon Via • [...]

### Contents

Copper Electrodeposition.- Suppression Effect and Additive Chemistry.- Acceleration Effect.- Modeling and Simulation.- Frontiers of Cu Electrodeposition and Electroless Plating for On-Chip Interconnects.- Microstructure of Evolution of Copper in Nanoscale Interconnect Features.- Direct Copper Plating.- Through Silicon Via.- Build-up Printed Wiring Boards.- Copper Foil Smooth on Both Sides for Lithium Ion Battery.- Through Hole Plating.

### Fields of interest

Electrochemistry; Nanotechnology; Electronics and Microelectronics, Instrumentation; Solid State Physics

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-1-4614-9175-0](http://www.springer.com/978-1-4614-9175-0)

### Hardcover

2014. VIII, 282 p. 190 illus., 75 illus. in color. (Nanotechnology Science and Technology, Vol. 171)  
ISBN 978-1-4614-9175-0

**usually dispatched within 3 to 5 business days**

W. Kurdowski, Instytut Szkieł i Materiałów Budowlanych, Kraków, Poland

## Cement and Concrete Chemistry

This monograph describes cement clinker formation. It covers multicomponent systems, clinker phase structures and their reactions with water, hydrate composition and structure, as well as their physical properties. The mineral additions to cement are described as are their influence on cement-paste properties. Special cements are also discussed. The microstructure of concrete is then presented, and special emphasis is given to the role of the interfacial transition zone, and the corrosion processes in the light of cement-phase composition, mineral additions and w/c ratio. The admixtures' role in modern concrete technology is described with an emphasis on superplasticizer chemistry and [...]

### Features

This monograph describes cement clinker formation. It covers multicomponent systems, clinker phase structures and their reactions with water, hydrate composition and structure, as well as their physical properties. The mineral additions to cement are described as are their influence on cement-paste properties. Special cements are also discussed. The microstructure of concrete is then presented, and special [...]

### Contents

Cement Kinds and Principles of their Classification.- Portland Cement Clinker.- Hydration of Clinker Phases.- Cement Hydration.- The Properties of Cement Paste.- Concrete Properties.- Mineral Additions for Cement Production.- Hydration of Cements with Mineral Additions.- Special Cements.- New Concretes.

### Fields of interest

Industrial Chemistry / Chemical Engineering; Ceramics, Glass, Composites, Natural Materials; Building Materials

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-94-007-7944-0](http://www.springer.com/978-94-007-7944-0)

### Hardcover

2014. X, 496 p. 465 illus.  
ISBN 978-94-007-7944-0

**Due: February 28, 2014**

A. Lavacchi, ICCOM-CNR, Sesto Fiorentino, Italy; H. Miller, ICCOM-CNR, Sesto Fiorentino (FI), Italy; F. Vizza, ICCOM-CNR, Sesto Fiorentino, Italy

## Nanotechnology in Electrocatalysis for Energy

This book focuses on nanotechnology in electrocatalysis for energy applications. In particular the book covers nanostructured electrocatalysts for low temperature fuel cells, low temperature electrolyzers and electrochemical valorization. The function of this book is to provide an introduction to basic principles of electrocatalysis, together with a review of the main classes of materials and electrode architectures. This book will illustrate the basic ideas behind material design and provide an introductory sketch of current research focuses. The easy-to-follow three part book focuses on major formulas, concepts and philosophies. This book is ideal for professionals and researchers [...]

### Features

This book focuses on nanotechnology in electrocatalysis for energy applications. In particular, the book covers nanostructured electrocatalysts for low temperature fuel cells, low temperature electrolyzers and electrochemical valorization. The function of this book is to provide an introduction to basic principles of electrocatalysis, together with a review of the main classes of materials and electrode [...]

### Contents

Introduction.- A bird's eye view of energy related electrochemistry.- Electrochemical device for energy conversion and storage.- Factors affecting design.- Carbon based nanomaterials.- Other Support Nanomaterials.- Supported metal nanoparticles.- Shape and structure controlled metal nanoparticles.- Monolayer decorated core shell and hollow nanoparticles.- Molecular complexes in electrocatalysis for energy production and storage.- Concluding Remarks.

### Fields of interest

Electrochemistry; Energy Systems; Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution; Nanotechnology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4899-8058-8](http://www.springer.com/978-1-4899-8058-8)

### Hardcover

2014. XI, 333 p. 131 illus., 48 illus. in color. (Nanotechnology Science and Technology, Vol. 170)  
ISBN 978-1-4899-8058-8

**Due: December 31, 2013**

J.J. Li, University of San Francisco, San Francisco, USA

## Name Reactions

A Collection of Detailed Mechanisms and Synthetic Applications Fifth Edition

In this fifth edition of Jack Jie Li's seminal "Name Reactions", the author has added twenty-seven new name reactions to reflect the recent advances in organic chemistry. As in previous editions, each reaction is delineated by its detailed step-by-step, electron-pushing mechanism and supplemented with the original and the latest references, especially from review articles. Now with addition of many synthetic applications, this book is not only an indispensable resource for advanced undergraduate and graduate students, but is also a good reference book for all organic chemists in both industry and academia. Unlike other books on name reactions in organic chemistry, Name Reactions, A[...]

### Features

In this fifth edition of Jack Jie Li's seminal "Name Reactions", the author has added twenty-seven new name reactions to reflect the recent advances in organic chemistry. As in previous editions, each reaction is delineated by its detailed step-by-step, electron-pushing mechanism and supplemented with the original and the latest references, especially from review articles. Now with addition of many [...]

### Contents

From the Contents: Alder ene reaction.- Baran Reagents.- Bargellini Reaction.- Barton-Zard reaction.- Beirut reaction.- Boyland-Sims oxidation.- Cattallani Reaction.- Danheiser annulation.- Kolbe-Schmitt Reaction.- Larock Indole Synthesis.- Li A3 Reaction.- McMillan Catalyst.- Meth-Cohn Quinoline Synthesis.- Sanford Reaction.- Shi-White Reagent.- Stevens Rearrangement.- Stork-Danheiser alkylation.- Weinreb Amide.- Yu C-H Activation.- Zaitsev Elimination.- Zinin Benzidine Rearrangement (Semidine Rearrangement).

### Fields of interest

Organic Chemistry; Inorganic Chemistry; Biochemistry

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03978-7](http://www.springer.com/978-3-319-03978-7)

### Hardcover

2014. 700 p. 5000 illus.  
ISBN 978-3-319-03978-7

Due: February 28, 2014

S. Margadonna, University of Edinburgh, Edinburgh, United Kingdom (Ed.)

## Fullerene-Related Materials

"Fullerene-Related Materials" provides an in-depth coverage of the essential break-throughs in the Chemistry and Physics of fullerene related materials over the last five years. It includes materials such as: Metal intercalated fullerides Endohedral fullerenes Higher fullerenes Non-conventional carbon cages. The first part of the text explores the structural, electronic and magnetic phase diagrams of fullerene derivatives and pays special attention to metal intercalated fullerenes. The second part covers the recent advances in synthesis, reactivity and applications of fullerene related materials. "Fullerene-Related Materials" forms an invaluable resource for academics and researchers[...]

### Features

"Fullerene-Related Materials" provides an in-depth coverage of the essential break-throughs in the Chemistry and Physics of fullerene related materials over the last five years. It includes materials such as: Metal intercalated fullerides Endohedral fullerenes Higher fullerenes Non-conventional carbon cages. The first part of the text explores the [...]

### Contents

Synthesis and Application of open-cage fullerenes.- Open Cage fullerene derivatives.- Formation processes of fullerenes and single wall nanotubes.- Covalent and non covalent modification of [60] fullerene for material science applications.- Pressure-induced polymers of C60.- Expanded fullerides and Mott-Hubbard transition.- Negative Thermal expansion and valence transition in rare-earth fullerides.- Photoemission spectroscopy of fullerene derivatives.- Theoretical aspects of highly correlated fullerides: metal insulator transition.- Order and disorder in magnetic fullerides.- FETs based[...]

### Fields of interest

Organic Chemistry; Atomic, Molecular, Optical and Plasma Physics; Physical Chemistry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4020-4458-8](http://www.springer.com/978-1-4020-4458-8)

### Hardcover

2014.  
ISBN 978-1-4020-4458-8

Due: April 28, 2014

P.F. McMillan, University College London, London, United Kingdom; F. Meersman, Rousselot - Expertise Center, Gent, Belgium

## High Pressure Chemistry and Biology

A monograph spanning solid state and materials chemistry. Aimed to prime those who have just entered the research field (must have a thorough grounding in theory); also beneficial to researchers with a focus on new directions in HPC.

### Features

A monograph spanning solid state and materials chemistry. Aimed to prime those who have just entered the research field (must have a thorough grounding in theory); also beneficial to researchers with a focus on new directions in HPC.

### Contents

Basic principles of high pressure.- Solid state chemistry, geochemistry and mineralogy.- Molecular chemistry: electronic structure and reaction pathways.- Biological molecules under pressure.- New directions.- Epilogue.

### Fields of interest

Physical Chemistry; Materials Science (general); Bioorganic Chemistry

### Target groups

Research

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-90-481-3868-5](http://www.springer.com/978-90-481-3868-5)

### Hardcover

2014. Approx. 300 p.  
ISBN 978-90-481-3868-5

Due: July 28, 2014

R. Moore, University of Stirling, Stirling, United Kingdom; Y. Ge, Cranfield University, Bedfordshire, Montserrat; L. Li, Guangdong University of Technology, Guangzhou, China (P.R.); X. Wang, Beijing University of Technology, Beijing, China (P.R.) (Eds.)

## Nanomedicine

### Principles and Perspectives

Nano-scale science and technology have revolutionized medicine by enabling researchers to gain a deeper understanding of many diseases and offers new insights in fields as diverse as diagnostics, therapy, imaging, drug delivery, and regenerative medicine. Increasing demand and awareness of applications of nanotechnology in medicine has resulted in the emergence of a new fast-growing discipline – nanomedicine. This book offers a comprehensive and diverse perspective on the new discipline. It aims to bridge the gap between nanotechnology and medicine through contributions by world-renowned experts from academia, industry, government agency and the healthcare system. Each contribution[...]

### Features

Nano-scale science and technology have revolutionized medicine by enabling researchers to gain a deeper understanding of many diseases and offers new insights in fields as diverse as diagnostics, therapy, imaging, drug delivery, and regenerative medicine. Increasing demand and awareness of applications of nanotechnology in medicine has resulted in the emergence of a new fast-growing discipline – nanomedicine. [...]

### Contents

Nanomedicine: a revolutionary interdisciplinary.- From biotechnology to nanotechnology.- Nanos-structure design and computational modelling.- Nanobiology in medicine.- Medical nanomaterials.- Nanotechnology in regenerative medicine.- Medical nanobiosensors.- Nano-theranostics and imaging.- Nanotechnology and medical devices.- Nanopharmaceuticals.- Nanotoxicology and safety concerns.- Nanoethics and regulations.

### Fields of interest

Biotechnology; Nanotechnology; Molecular Medicine; Industrial Chemistry / Chemical Engineering; Medicinal Chemistry; Imaging / Radiology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-2139-9](http://www.springer.com/978-1-4614-2139-9)

### Hardcover

2014. 600p. 65 illus., 25 illus. in color. (Nanotechnology Science and Technology)  
ISBN 978-1-4614-2139-9

**Due: February 28, 2014**

I. Omae, Omae Research Laboratories, Sayama, Japan

## Cyclometalation Reactions

### Five-Membered Ring Products as Universal Reagents

This book provides a review of cyclometalation reactions and organometallic intramolecular-coordination five-membered ring products, the most active type of reactions in synthetic organic reactions and their products. Included is the discovery of intramolecular-coordination bonds in cyclometalation reactions and the characteristics of those reactions, as well as the reasons that their five-membered ring compounds are very easily synthesized through such reactions. In addition, the applications of cyclometalation reactions and five-membered ring products, synthetic applications, catalysts, and other products are described. These topics are of special interest for industrial researchers.

### Features

This book provides a review of cyclometalation reactions and organometallic intramolecular-coordination five-membered ring products, the most active type of reactions in synthetic organic reactions and their products. Included is the discovery of intramolecular-coordination bonds in cyclometalation reactions and the characteristics of those reactions, as well as the reasons that their five-membered ring [...]

### Contents

From the Contents: Discovery of Intramolecular-Coordination Bonds in Cyclometalation Reactions with Main Group Metal Compounds.- Verification of the Formation of Intramolecular-Coordination Bonds in Cyclometalation Reactions with Transition Metal Compounds.- Organometallic Intramolecular-Coordination Compounds.- Characteristics of Cyclometalation Reactions for Organometallic Intramolecular-Coordination Five-Membered Ring Compounds.- Reasons That Organometallic Intramolecular-Coordination Five-Membered Ring Compounds Are Very Easily Synthesized Through Cyclometalation Reactions.- Applications.

### Fields of interest

Organometallic Chemistry; Catalysis

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-4-431-54603-0](http://www.springer.com/978-4-431-54603-0)

### Hardcover

2014. XV, 252 p. 270 illus., 1 illus. in color.  
ISBN 978-4-431-54603-0

**Due: February 28, 2014**

M. Pekař, I. Samohýl, Institute of Chemical Technology, Prague 6, Czech Republic

## The Thermodynamics of Linear Fluids and Fluid Mixtures

In this book, Samohýl and Pekař offer a consistent and general non-equilibrium thermodynamic description for a model of chemically reacting mixtures. This type of model is frequently encountered in practice and up until now, chemically reacting systems (out of equilibrium) have rarely been described in books on non-equilibrium thermodynamics. Readers of this book benefit from the systematic development of the theory; this starts with general principles, going through the applications to single component fluid systems, and finishing with the theory of mixtures, including chemical reactions. The authors describe the simplest mixture model – the linear fluid – and highlight many[...]

### Features

In this book, Samohýl and Pekař offer a consistent and general non-equilibrium thermodynamic description for a model of chemically reacting mixtures. This type of model is frequently encountered in practice and up until now, chemically reacting systems (out of equilibrium) have rarely been described in books on non-equilibrium thermodynamics. Readers of this book benefit from the systematic development of the [...]

### Contents

Thermodynamics and its Concepts in Non-equilibrium.- Thermodynamics of Uniform Systems.- Continuum Thermodynamics of a Single Fluid.- Continuum Thermodynamics of Mixtures of Linear Fluids.

### Fields of interest

Physical Chemistry; Thermodynamics; Surfaces and Interfaces, Thin Films; Industrial Chemistry / Chemical Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02513-1](http://www.springer.com/978-3-319-02513-1)

### Hardcover

2014. X, 308 p. 3 illus.  
ISBN 978-3-319-02513-1

**usually dispatched within 3 to 5 business days**

F. Wambugu, Africa Harvest Biotech Foundation, Nairobi, Kenya; D. Kamanga, Africa Harvest Biotech Foundation, Nairobi, Kenya (Eds.)

## Biotechnology in Africa

### Emergence, Initiatives and Future

In this book, Florence Wambugu and Daniel Kamanga of Africa Harvest Biotech Foundation International bring together expert African authorities to critique various biotechnology initiatives and project future developments in the field in Africa. For the first time, African voices from multidisciplinary fields as diverse as economics, agriculture, biotechnology, law, politics and academia, demand to be allowed to set the continent's biotech development agenda. This book argues that there is a great future for biotechnology in Africa which sidesteps western interests that do not match those of the local populace. In these diverse chapters, Africa's political and scientific leaders demand[...]

### Features

In this book, Florence Wambugu and Daniel Kamanga of Africa Harvest Biotech Foundation International bring together expert African authorities to critique various biotechnology initiatives and project future developments in the field in Africa. For the first time, African voices from multidisciplinary fields as diverse as economics, agriculture, biotechnology, law, politics, and academia, demand to [...]

### Contents

Introduction: The Importance of Political Will in furthering Agricultural Biotechnology for Economic Growth, Food and Nutritional Security in Africa.- Commercialized Genetically Modified Crops: Biotech (Bt) Cotton in Burkina Faso Demonstrates that Political Will is Key for Biotechnology to Benefit Commercial Agriculture in Africa.- Opportunities and Challenges of Commercializing Biotech Products in Egypt: Biotech (Bt) Maize: A Case Study.- Genetically Modified Crops Commercialized in South Africa.- Building the Bio-economy and Commercialization Challenges: Moving Africa Towards a [...]

### Fields of interest

Biotechnology; R & D / Technology Policy; Plant Sciences; Agriculture; Environmental Management; Pharmacy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04000-4](http://www.springer.com/978-3-319-04000-4)

### Hardcover

2014. 380 p. 150 illus., 50 illus. in color. (Science Policy Reports, Vol. 7)  
ISBN 978-3-319-04000-4

**Due: March 31, 2014**

## Computer Science

A. Adamatzky, University of the West of England, Bristol, United Kingdom; L. Chua, University of California, Berkeley, USA (Eds.)

## Memristor Networks

Using memristors one can achieve circuit functionalities that are not possible to establish with resistors, capacitors and inductors, therefore the memristor is of great pragmatic usefulness. Potential unique applications of memristors are in spintronic devices, ultra-dense information storage, neuromorphic circuits and programmable electronics. Memristor Networks focuses on the design, fabrication, modelling of and implementation of computation in spatially extended discrete media with many memristors. Top experts in computer science, mathematics, electronics, physics and computer engineering present foundations of the memristor theory and applications, demonstrate how to design[...]

### Features

Using memristors one can achieve circuit functionalities that are not possible to establish with resistors, capacitors and inductors, therefore the memristor is of great pragmatic usefulness. Potential unique applications of memristors are in spintronic devices, ultra-dense information storage, neuromorphic circuits, and programmable electronics. Memristor Networks focuses on the design, fabrication, [...]

### Contents

Preface.- The Fourth Element.- Aftermath of Finding the Memristor.- Resistance Switching Memories are Memristors.- The Detectors Used in the First Radios were Memristors.- Memristor, Hodgkin-Huxley and Edge of Chaos.- Why are Memristor and Memristor Different Devices?.- Synapse as a Memristor.- Memristors and Memristive Devices for Neuromorphic Computing.- Bio-inspired Neural Networks.- Self-organization and Emergence of Dynamical Structures in Neuromorphic Atomic Switch Networks.- Spike-Timing-Dependent-Plasticity with Memristors.- Memristor Bridge-based Artificial Neural Weighting[...]

### Fields of interest

Computer Hardware; Theory of Computation; Circuits and Systems

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-02629-9](http://www.springer.com/978-3-319-02629-9)

### Hardcover

2014. XVI, 750 p. 445 illus., 292 illus. in color.  
ISBN 978-3-319-02629-9

**Due: January 31, 2014**

P.K. Atrey, University of Winnipeg, Winnipeg, Canada; M. Kankanhalli, A. Cavallaro (Eds.)

## Intelligent Multimedia Surveillance

### Current Trends and Research

Intelligent multimedia surveillance concerns the analysis of multiple sensing inputs including video and audio streams, radio-frequency identification (RFID), and depth data. These data are processed for the automated detection and tracking of people, vehicles, and other objects. The goal is to locate moving targets, to understand their behavior, and to detect suspicious or abnormal activities for crime prevention. Despite its benefits, there is societal apprehension regarding the use of such technology, so an important challenge in this research area is to balance public safety and privacy. This edited book presents recent findings in the field of intelligent multimedia surveillance[...]

### Features

Intelligent multimedia surveillance concerns the analysis of multiple sensing inputs including video and audio streams, radio-frequency identification (RFID), and depth data. These data are processed for the automated detection and tracking of people, vehicles, and other objects. The goal is to locate moving targets, to understand their behavior, and to detect suspicious or abnormal activities for crime [...]

### Contents

Chap. 1 - Intelligent Video Surveillance as a Service.- Chap. 2 - A Literature Review on Video Analysis of Crowded Scenes.- Chap. 3 - Privacy and Security in Video Surveillance.- Chap. 4 - Object Video Streams: A Framework for Preserving Privacy in Video Surveillance.- Chap. 5 - Surveillance Privacy Protection.- Chap. 6 - RFID Localization Improved by Motion Segmentation in Multimedia Surveillance Systems.- Chap. 7 - A Framework For Object Tracking Using Visual Saliency Information.- Chap. 8 - Scene Understanding Via Multiresolution Disparity Map in PTZ Camera Network.- Chap. 9 - [...]

### Fields of interest

Artificial Intelligence (incl. Robotics); Multimedia Information Systems; Image Processing and Computer Vision; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41511-1](http://www.springer.com/978-3-642-41511-1)

### Hardcover

2013. IX, 192 p. 76 illus., 57 illus. in color.  
ISBN 978-3-642-41511-1

**usually dispatched within 3 to 5 business days**

W.S. Bainbridge

## Personality Capture and Emulation

Personality Capture and Emulation is the gateway to an amazing future that actually may be achieved, enabling the preservation and simulation of human personalities at progressively higher levels of fidelity. This challenge is no longer the province merely of uninhibited visionaries, but has become a solid field of research, drawing upon a wide range of information technologies in human-centered computing and cyber-human systems. Even at modest levels of accomplishment, research in this emerging area requires convergence of cognitive, social, and cultural sciences, in cooperation with information engineering and artificial intelligence, thus stimulating new multidisciplinary[...]

### Features

Personality Capture and Emulation is the gateway to an amazing future that actually may be achieved, enabling the preservation and simulation of human personalities at progressively higher levels of fidelity. This challenge is no longer the province merely of uninhibited visionaries, but has become a solid field of research, drawing upon a wide range of information technologies in human-centered [..]

### Contents

Background.- Massive Questionnaires.- Mobile and Ubiquitous Capture.- Recommender Systems.- Cognitive Abilities.- Autobiographical Memories.- Text Analysis.- Virtual Worlds.- Appendix: Ten Personality Capture and Analysis Programs.- Glossary.

### Fields of interest

User Interfaces and Human Computer Interaction; Computer Appl. in Social and Behavioral Sciences; Sociology, general; Philosophy of Mind

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5603-1](http://www.springer.com/978-1-4471-5603-1)

### Hardcover

2014. VI, 213 p. 8 illus. With online files/update. (Human-Computer Interaction Series)  
ISBN 978-1-4471-5603-1

**usually dispatched within 3 to 5 business days**

J. Barnes, John Barnes Informatics, Reading, United Kingdom

## Ada 2012 Rationale

### The Language -- The Standard Libraries

Ada 2012 is the latest version of the international standard for the programming language Ada. It is designated ISO/IEC 8652:2012 (E) and is a new edition replacing the 2005 version. The primary goals for the new version were to further enhance its capabilities particularly in those areas where its reliability and predictability are of great value. Many important new features have been included such as those defining dynamic contracts and for handling multiprocessors and are integrated within the existing language framework in an elegant and coherent manner. The Ada 2012 Rationale describes not only the changes from Ada 2005 but also the reason for the changes. It starts with an[...]

### Features

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### Contents

Introduction.- Contracts and Aspects.- Expressions.- Structure and Visibility.- Tasking and Real-Time.- Iterators, Pools, etc.- Overview of changes.- Predefined Library.- Containers.- Epilogue.

### Fields of interest

Programming Languages, Compilers, Interpreters; Operating Systems; Programming Techniques; Software Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45209-3](http://www.springer.com/978-3-642-45209-3)

### Softcover

2013. XI, 213 p. 3 illus. (Programming and Software Engineering, Vol. 8338)  
ISBN 978-3-642-45209-3

**Due: December 12, 2013**

Y. Borenstein, VisualDNA, London, United Kingdom; A. Moraglio, University of Birmingham, Birmingham, United Kingdom (Eds.)

## Theory and Principled Methods for the Design of Metaheuristics

Metaheuristics, and evolutionary algorithms in particular, are known to provide efficient, adaptable solutions for many real-world problems, but the often informal way in which they are defined and applied has led to misconceptions, and even successful applications are sometimes the outcome of trial and error. Ideally, theoretical studies should explain when and why metaheuristics work, but the challenge is huge: mathematical analysis requires significant effort even for simple scenarios and real-life problems are usually quite complex. In this book the editors establish a bridge between theory and practice, presenting principled methods that incorporate problem knowledge in[...]

### Features

Metaheuristics, and evolutionary algorithms in particular, are known to provide efficient, adaptable solutions for many real-world problems, but the often informal way in which they are defined and applied has led to misconceptions, and even successful applications are sometimes the outcome of trial and error. Ideally, theoretical studies should explain when and why metaheuristics work, but the challenge is [..]

### Contents

No Free Lunch Theorems: Limitations and Perspectives of Metaheuristics.- Convergence Rates of Evolutionary Algorithms and Parallel Evolutionary Algorithms.- Rugged and Elementary Landscapes.- Single-Funnel and Multi-funnel Landscapes and Subthreshold Seeking Behavior.- Black-Box Complexity for Bounding the Performance of Randomized Search Heuristics.- Designing an Optimal Search Algorithm with Respect to Prior Information.- The Bayesian Search Game.- Principled Design of Continuous Stochastic Search: From Theory to Practice.- Parsimony Pressure Made Easy: Solving the Problem of Bloat in[...]

### Fields of interest

Theory of Computation; Computational Intelligence; Artificial Intelligence (incl. Robotics); Optimization; Operation Research / Decision Theory

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-33205-0](http://www.springer.com/978-3-642-33205-0)

### Hardcover

2013. XX, 270 p. 62 illus., 16 illus. in color. (Natural Computing Series)  
ISBN 978-3-642-33205-0

**Due: December 31, 2013**

K.C. Budka, J.G. Deshpande, M. Thottan

## Communication Networks for Smart Grids

Making Smart Grid Real

This book presents an application-centric approach to the development of smart grid communication architecture. The coverage includes in-depth reviews of such cutting-edge applications as advanced metering infrastructure, distribution automation, demand response and synchrophasors. Features: examines a range of exciting utility applications made possible through smart grid evolution; describes the core-edge network architecture for smart grids, introducing the concept of WANs and FANs; explains how the network design paradigm for smart grids differs from that for more established data networks, and discusses network security in smart grids; provides an overview of communication[...]

### Features

A 21st century clean energy economy demands a 21st century electricity grid, yet the communication networks of many utilities today are ill-equipped for smart grid evolution. This must-read text/reference presents an application-centric approach to the development of smart grid communication architecture and network transformation. The coverage includes in-depth reviews of such cutting-edge [...]

### Contents

Introduction to Smart Grids.- Elements of Power Systems for Networking Practitioners.- Elements of Communication Networking for Power Systems Practitioners.- Conventional Applications in Utility Operations.- Smart Grid Applications.- A Communication Network Architecture for the Smart Grid.- An Overview of Smart Grid Network Design Process.- Network Security.- WAN and FAN Technologies for the Smart Grid.- Smart Grid Data Management.- Communication Network Transformation.- Future of Smart Grid Communication Networks.- Icons Used in Figures.- Smart Grid Characterization.- Fourier[...]

### Fields of interest

Computer Communication Networks; Data Encryption; Power Electronics, Electrical Machines and Networks

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4471-6301-5](http://www.springer.com/978-1-4471-6301-5)

### Hardcover

2014. X, 359 p. 91 illus., 1 illus. in color. (Computer Communications and Networks)  
ISBN 978-1-4471-6301-5

**Due: January 31, 2014**

S. Cagnoni, M. Mirolli, Istituto di Scienze e Tecnologie, Rome, Italy; M. Villani, University of Modena and Reggio Emilia, Reggio Emilia, Italy (Eds.)

## Evolution, Complexity and Artificial Life

Evolution and complexity characterize both biological and artificial life – by direct modeling of biological processes and the creation of populations of interacting entities from which complex behaviors can emerge and evolve. This edited book includes invited chapters from leading scientists in the fields of artificial life, complex systems, and evolutionary computing. The contributions identify both fundamental theoretical issues and state-of-the-art real-world applications. The book is intended for researchers and graduate students in the related domains.

### Features

Traditionally, artificial evolution, complex systems, and artificial life were separate fields, with their own research communities, but we are now seeing increased engagement and hybridization. Evolution and complexity characterize biological life but they also permeate artificial life, through direct modeling of biological processes and the creation of populations of interacting entities from which [...]

### Contents

One Artefact – Many Phenomena.- Taming the Complexity of Natural and Artificial Evolutionary Dynamics.- Models of Gene Regulation: Integrating Modern Knowledge into the Random Boolean Network Framework.- Attractors Perturbations in Biological Modelling: Avalanches and Cellular Differentiation.- Automatic Design of Boolean Networks for Modeling Cell Differentiation.- Towards the Engineering of Chemical Communication Between Semi-synthetic and Natural Cells.- Cumulative Learning Through Intrinsic Reinforcements.- Development of Categorization Abilities in Evolving Embodied Agents: A Study[...]

### Fields of interest

Artificial Intelligence (incl. Robotics); Complexity; Computational Intelligence

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-37576-7](http://www.springer.com/978-3-642-37576-7)

### Hardcover

2013. XII, 272 p. 98 illus., 38 illus. in color.  
ISBN 978-3-642-37576-7

**Due: December 31, 2013**

J.M. Carroll, The Pennsylvania State University, University Park, USA (Ed.)

## Innovative Practices in Teaching Information Sciences and Technology

Experience Reports and Reflections

University teaching and learning has never been more innovative than it is now. This has been enabled by a better contemporary understanding of teaching and learning. Instructors now present situated projects and practices to their students, not just foundational principles. Lectures and structured practice are now often replaced by engaging and constructivist learning activities that leverage what students know about, think about and care about. Teaching innovation has also been enabled by online learning in the classroom, beyond the classroom and beyond the campus. Learning online is perhaps not the panacea sometimes asserted but it is a disruptively rich and expanding set of tools[...]

### Features

University teaching and learning has never been more innovative than it is now. This has been enabled by a better contemporary understanding of teaching and learning. Instructors now present situated projects and practices to their students, not just foundational principles. Lectures and structured practice are now often replaced by engaging and constructivist learning activities that leverage what [...]

### Contents

Introduction.- The Karate Kid Method of Problem Based Learning.- Hungry Wolves, Creepy Sheepies: The Gamification of the Programmer's Classroom.- Teaching and Learning in Technical IT Courses.- Towards an Egalitarian Pedagogy for the Millennial Generation: A Reflection.- Higher Education Classroom Community Game: Together We Are Smarter.- The Tinker Toy Challenge – Peeking Under the Cloak of Invisibility in Information System Design.- Learning by Design.- Teaching Structured Analytical Thinking with Data using Visual-analytic Tools.- The Analytic Decision Game.- Cyber Forensic War Room:[...]

### Fields of interest

Computers and Education; Teaching and Teacher Education; Science Education

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03655-7](http://www.springer.com/978-3-319-03655-7)

### Hardcover

2014. I, 260 p. 30 illus.  
ISBN 978-3-319-03655-7

**Due: February 28, 2014**

J. Cecilio, P. Furtado, University of Coimbra, Coimbra, Portugal

## Wireless Sensors in Industrial Time-Critical Environments

This book introduces the fundamentals of DCS, and shows how to include wireless technology in their design while guaranteeing the desired operation characteristics. The text also presents insights and results gained from extensive practical experience in implementing and testing systems within a specific industrial setting. Features: examines the operations that the DCS implements, covering human-machine interfaces, diagnostics and maintenance interfaces, and controllers; discusses industrial control system and wireless network protocols; reviews scheduling in wireless sensor networks; describes a latency model for heterogeneous DCS with wired and wireless parts, that predicts[...]

### Features

Modern industrial systems are often highly automated, with hundreds or even thousands of sensors and actuators monitoring the various processes, overseen by a distributed control system (DCS). Such control systems increasingly make use of wireless communications, yet these must still satisfy all safety-critical requirements. This unique text introduces the components, operations, industry protocols [...]

### Contents

Introduction.- Industrial Control Systems: Concepts, Components and Architectures.- Distributed Control System Operations.- Industrial Protocols and Planning Considerations.- Scheduling of Wireless Sensor Networks.- Latency Modeling for Distributed Control Systems with Wired and Wireless Sensors.- Planning for Distributed Control Systems with Wired and Wireless Sensors.- Performance and Debugging.- Application Scenario: An Industrial Case Study.- Network Configuration: Example.- Network Layout: Example.- Evaluation of Planning and Monitoring Approaches: Details.

### Fields of interest

Computer Communication Networks; Control

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02888-0](http://www.springer.com/978-3-319-02888-0)

### Hardcover

2014. XVII, 127 p. 75 illus., 68 illus. in color. (Computer Communications and Networks)  
ISBN 978-3-319-02888-0

**Due: January 31, 2014**

C. Cioffi-Revilla, George Mason University, Fairfax, USA

## Introduction to Computational Social Science

### Principles and Applications

This reader-friendly textbook is the first work of its kind to provide a unified Introduction to Computational Social Science (CSS). Four distinct methodological approaches are examined in detail, namely automated social information extraction, social network analysis, social complexity theory and social simulation modeling. The coverage of these approaches is supported by a discussion of the historical context, as well as by a list of texts for further reading. Features: highlights the main theories of the CSS paradigm as causal explanatory frameworks that shed new light on the nature of human and social dynamics; explains how to distinguish and analyze the different levels of[...]

### Features

The emerging field of computational social science (CSS) is devoted to the pursuit of interdisciplinary social science research from an information processing perspective, through the medium of advanced computing and information technologies. This reader-friendly textbook/reference is the first work of its kind to provide a comprehensive and unified Introduction to Computational Social Science. [...]

### Contents

Introduction.- Computation and Social Science.- Automated Information Extraction.- Social Networks.- Social Complexity I: Origins and Measurement.- Social Complexity II: Laws.- Social Complexity III: Theories.- Simulations I: Methodology.- Simulations II: Variable-Oriented Models.- Simulations III: Object-Oriented Models.

### Fields of interest

Computer Appl. in Social and Behavioral Sciences; Methodology of the Social Sciences; Data Mining and Knowledge Discovery; Graph Theory; Simulation and Modeling

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4471-5660-4](http://www.springer.com/978-1-4471-5660-4)

### Hardcover

2014. XXXIII, 312 p. 59 illus., 21 illus. in color. (Texts in Computer Science)  
ISBN 978-1-4471-5660-4

**Due: January 31, 2014**

N. Dershowitz, Tel Aviv University, Tel Aviv, Israel; E. Nissam, University of London, London, United Kingdom (Eds.)

## Language, Culture, Computation: Computing - Theory and Technology

### Essays Dedicated to Yaacov Choueka on the Occasion of His 75 Birthday, Part I

This Festschrift volume is published in Honor of Yaacov Choueka on the occasion of his 75th birthday. The present three-volumes liber amicorum, several years in gestation, honours this outstanding Israeli computer scientist and is dedicated to him and to his scientific endeavours. Yaacov's research has had a major impact not only within the walls of academia, but also in the daily life of lay users of such technology that originated from his research. An especially amazing aspect of the temporal span of his scholarly work is that half a century after his influential research from the early 1960s, a project in which he is currently involved is proving to be a sensation, as will become[...]

### Features

This Jubilee set of three volumes constitutes a condign tribute to Yaacov Choueka, a computer scientist, mathematician, computational linguist, and lexicographer: he is one of the founders of the fields of full-text information retrieval, computational linguistics, humanities computing, and legal databases. The three volumes (LNCS 8001-8003) comprise 61 chapters, and are each devoted to a broad theme. The [...]

### Fields of interest

Artificial Intelligence (incl. Robotics); Language Translation and Linguistics; Information Storage and Retrieval; Theory of Computation

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45320-5](http://www.springer.com/978-3-642-45320-5)

### Softcover

2014. XII, 622 p. (Information Systems and Applications, incl. Internet/Web, and HCI, Vol. 8001)  
ISBN 978-3-642-45320-5

**Due: February 18, 2014**

N. Dershowitz, Tel Aviv University, Tel Aviv, Israel; E. Nissam, University of London, London, United Kingdom (Eds.)

## Language, Culture, Computation: Computing for the Humanities, Law, and Narratives

Essays Dedicated to Yaacov Choueka on the Occasion of His 75 Birthday, Part II

This Festschrift volume is published in Honor of Yaacov Choueka on the occasion of this 75th birthday. The present three-volumes liber amicorum, several years in gestation, honours this outstanding Israeli computer scientist and is dedicated to him and to his scientific endeavours. Yaacov's research has had a major impact not only within the walls of academia, but also in the daily life of lay users of such technology that originated from his research. An especially amazing aspect of the temporal span of his scholarly work is that half a century after his influential research from the early 1960s, a project in which he is currently involved is proving to be a sensation, as will become[...]

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### Fields of interest

Artificial Intelligence (incl. Robotics); Language Translation and Linguistics; Information Storage and Retrieval; Theory of Computation

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45323-6](http://www.springer.com/978-3-642-45323-6)

### Softcover

2014. XII, 556 p. (Information Systems and Applications, incl. Internet/Web, and HCI, Vol. 8002)  
ISBN 978-3-642-45323-6

**Due: February 18, 2014**

N. Dershowitz, Tel Aviv University, Tel Aviv, Israel; E. Nissam, University of London, London, United Kingdom (Eds.)

## Language, Culture, Computation: Computational Linguistics and Linguistics

Essays Dedicated to Yaacov Choueka on the Occasion of His 75 Birthday, Part III

This Festschrift volume is published in Honor of Yaacov Choueka on the occasion of this 75th birthday. The present three-volumes liber amicorum, several years in gestation, honours this outstanding Israeli computer scientist and is dedicated to him and to his scientific endeavours. Yaacov's research has had a major impact not only within the walls of academia, but also in the daily life of lay users of such technology that originated from his research. An especially amazing aspect of the temporal span of his scholarly work is that half a century after his influential research from the early 1960s, a project in which he is currently involved is proving to be a sensation, as will become[...]

### Features

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### Fields of interest

Artificial Intelligence (incl. Robotics); Language Translation and Linguistics; Information Storage and Retrieval; Theory of Computation

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45326-7](http://www.springer.com/978-3-642-45326-7)

### Softcover

2014. XII, 728 p. (Information Systems and Applications, incl. Internet/Web, and HCI, Vol. 8003)  
ISBN 978-3-642-45326-7

**Due: February 18, 2014**

G.A. Fink

## Markov Models for Pattern Recognition

From Theory to Applications

This thoroughly revised and expanded new edition now includes a more detailed treatment of the EM algorithm, a description of an efficient approximate Viterbi-training procedure, a theoretical derivation of the perplexity measure and coverage of multi-pass decoding based on n-best search. Supporting the discussion of the theoretical foundations of Markov modeling, special emphasis is also placed on practical algorithmic solutions. Features: introduces the formal framework for Markov models; covers the robust handling of probability quantities; presents methods for the configuration of hidden Markov models for specific application areas; describes important methods for efficient[...]

### Features

Markov models are extremely useful as a general, widely applicable tool for many areas in statistical pattern recognition. This unique text/reference places the formalism of Markov chain and hidden Markov models at the very center of its examination of current pattern recognition systems, demonstrating how the models can be used in a range of different applications. Thoroughly revised and expanded, [...]

### Contents

Introduction.- Application Areas.- Part I: Theory.- Foundations of Mathematical Statistics.- Vector Quantization and Mixture Estimation.- Hidden Markov Models.- N-Gram Models.- Part II: Practice.- Computations with Probabilities.- Configuration of Hidden Markov Models.- Robust Parameter Estimation.- Efficient Model Evaluation.- Model Adaptation.- Integrated Search Methods.- Part III: Systems.- Speech Recognition.- Handwriting Recognition.- Analysis of Biological Sequences.

### Fields of interest

Pattern Recognition; Image Processing and Computer Vision; Language Translation and Linguistics; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4471-6307-7](http://www.springer.com/978-1-4471-6307-7)

### Hardcover

2014. XII, 287 p. 58 illus. (Advances in Computer Vision and Pattern Recognition)  
ISBN 978-1-4471-6307-7

**Due: January 29, 2014**

F. Frommlet, University of Vienna, Vienna, Austria; M. Bogdan, Wrocław University of Technology, Wrocław, Poland

## Phenotypes and Genotypes

### Search for Influential Genes

This book presents the methodology of association mapping in experimental populations and genome-wide association studies (GWAS). The main emphasis is placed on methods based on modifications of the Bayesian information criterion, designed specifically to handle multiple testing problems in large-scale genome scans for trait loci (TL). The book is written at the level of a graduate course for bioinformatics students. The first chapter introduces the major concepts of quantitative trait loci (QTL) mapping. The second chapter discusses the methodology of QTL mapping in experimental populations, with the main emphasis on the related issues of model selection in linear models. The[...]

### Features

This book presents the methodology of association mapping in experimental populations and genome-wide association studies (GWAS). The main emphasis is placed on methods based on modifications of the Bayesian information criterion, designed specifically to handle multiple testing problems in large-scale genome scans for trait loci (TL). The book is written at the level of a graduate course for bioinformatics [...]

### Fields of interest

Computational Biology / Bioinformatics; Bioinformatics; Statistics for Life Sciences, Medicine, Health Sciences

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5309-2](http://www.springer.com/978-1-4471-5309-2)

### Hardcover

2014. X, 290 p. (Computational Biology, Vol. 18)  
ISBN 978-1-4471-5309-2

**Due: July 28, 2014**

D.M. Gabbay, Bar-Ilan University, Ramat-Gan, Israel

## Reactive Kripke Semantics

This text offers an extension to the traditional Kripke semantics for non-classical logics by adding the notion of reactivity. Reactive Kripke models change their accessibility relation as we progress in the evaluation process of formulas in the model. This feature makes the reactive Kripke semantics strictly stronger and more applicable than the traditional one. Here we investigate the properties and axiomatisations of this new and most effective semantics, and we offer a wide landscape of applications of the idea of reactivity. Applied topics include reactive automata, reactive grammars, reactive products, reactive deontic logic and reactive preferential structures. Reactive Kripke[...]

### Features

This text offers an extension to the traditional Kripke semantics for non-classical logics by adding the notion of reactivity. Reactive Kripke models change their accessibility relation as we progress in the evaluation process of formulas in the model. This feature makes the reactive Kripke semantics strictly stronger and more applicable than the traditional one. Here we investigate the properties and [...]

### Contents

Chap.1 - A Theory of Hypermodal Logics.- Chap.2 - Introducing Reactive Kripke Semantics and Arc Accessibility.- Chap.3 - Introducing Reactive Modal Tableaux.- Chap.4 - Reactive Intuitionistic Tableaux.- Chap.5 - Completeness Theorems for Reactive Modal Logics.- Chap.6 - Modal Logics of Reactive Frames.- Chap.7 - Global View on Reactivity: Switch Graphs and their Logics.- Chap.8 - Reactive Automata.- Chap.9 - Reactivity and Grammars: An Exploration.- Chap.10 - Reactive Flow Products.- Chap.11 - Reactive Standard Deontic Logic.- Chap.12 - Reactive Preferential Structures and Non-monotonic[...]

### Fields of interest

Mathematical Logic and Formal Languages; Artificial Intelligence (incl. Robotics); Mathematical Logic and Foundations; Logic

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41388-9](http://www.springer.com/978-3-642-41388-9)

### Hardcover

2013. XII, 442 p. 201 illus., 10 illus. in color. (Cognitive Technologies)  
ISBN 978-3-642-41388-9

**usually dispatched within 3 to 5 business days**

**December 31, 2013**

M.L. Gavrilova, C.J.K. Tan, CloudfabriQ Ltd., London, United Kingdom; A. Abraham, Technical University of Ostrava, Ostrava, Czech Republic (Eds.)

## Transactions on Computational Science XXI

### Special Issue on Innovations in Nature-Inspired Computing and Applications

This, the 21st issue of the Transactions on Computational Science journal, edited by Ajith Abraham, is devoted to the topic of nature-inspired computing and applications. The 15 full papers included in the volume focus on the topics of neurocomputing, evolutionary algorithms, swarm intelligence, artificial immune systems, membrane computing, computing with words, artificial life and hybrid approaches.

### Features

This, the 21st issue of the Transactions on Computational Science journal, edited by Ajith Abraham, is devoted to the topic of nature-inspired computing and applications. The 15 full papers included in the volume focus on the topics of neurocomputing, evolutionary algorithms, swarm intelligence, artificial immune systems, membrane computing, computing with words, artificial life and hybrid approaches.

### Fields of interest

Theory of Computation; Computational Intelligence; Artificial Intelligence (incl. Robotics); Data Mining and Knowledge Discovery; Numeric Computing

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45317-5](http://www.springer.com/978-3-642-45317-5)

### Softcover

2013. XVI, 367 p. 164 illus. (Transactions on Computational Science, Vol. 8160)  
ISBN 978-3-642-45317-5

**usually dispatched within 3 to 5 business days**

A. Gkoulalas-Divanis, IBM Research - Ireland, Mulhuddart, Ireland;  
A. Labbi, IBM Research-Zurich, Rüschlikon, Switzerland (Eds.)

## Large-Scale Data Analytics

This edited book collects state-of-the-art research related to large-scale data analytics that has been accomplished over the last few years. This is among the first books devoted to this important area based on contributions from diverse scientific areas such as databases, data mining, supercomputing, hardware architecture, data visualization, statistics, and privacy. There is increasing need for new approaches and technologies that can analyze and synthesize very large amounts of data, in the order of petabytes, that are generated by massively distributed data sources. This requires new distributed architectures for data analysis. Additionally, the heterogeneity of such sources[...]

### Features

This edited book collects state-of-the-art research related to large-scale data analytics that has been accomplished over the last few years. This is among the first books devoted to this important area based on contributions from diverse scientific areas such as databases, data mining, supercomputing, hardware architecture, data visualization, statistics, and privacy. There is increasing need for new [...]

### Contents

The Family of Map-Reduce.- Optimization of Massively Parallel Data Flows.- Mining Tera-Scale Graphs with "Pegasus".- Customer Analyst for the Telecom Industry.- Machine Learning Algorithm Acceleration using Hybrid (CPU-MPP) MapReduce Clusters.- Large-Scale Social Network Analysis.- Visual Analysis and Knowledge Discovery for Text.- Practical Distributed Privacy-Preserving Data Analysis at Large Scale.

### Fields of interest

Database Management; Information Systems and Communication Service; Business Information Systems; Data Mining and Knowledge Discovery; Systems and Data Security

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9241-2](http://www.springer.com/978-1-4614-9241-2)

### Hardcover

2014. XXIII, 257 p. 83 illus., 53 illus. in color.  
ISBN 978-1-4614-9241-2

**Due: January 31, 2014**

B. Goertzel, G/F 51C Lung Mei Village, Tai Po, Hong Kong, China (P.R.); C. Pennachin, Igenesis Av. Prof. M'ario, Minas Gerais, Brazil; N. Geisweiller

## Engineering General Intelligence, Part 1

### A Path to Advanced AGI via Embodied Learning and Cognitive Synergy

The work outlines a novel conceptual and theoretical framework for understanding Artificial General Intelligence and based on this framework outlines a practical roadmap for the development of AGI with capability at the human level and ultimately beyond.

### Features

The work outlines a novel conceptual and theoretical framework for understanding Artificial General Intelligence and based on this framework outlines a practical roadmap for the development of AGI with capability at the human level and ultimately beyond.

### Contents

A Brief Overview of Cog Prime.- Build Me Something I Haven't Seen: A Cog Prime Thought Experiment.- What is Human-Like General Intelligence? A Patternist Philosophy of Mind.- Brief Survey of Cognitive Architectures.- A Generic Architecture of Human-Like Cognition.- A Formal Model of Intelligent Agents.- Cognitive Synergy.- General Intelligence in the Everyday Human World.- A Mind-World Correspondence Principle.- Stages of Cognitive Development.- The Engineering and Development of Ethics.- Local, Global and Glocal Knowledge Representation.- Representing Implicit Knowledge via[...]

### Fields of interest

Artificial Intelligence (incl. Robotics); Computational Intelligence; Complexity; Neurosciences; Mathematical Models of Cognitive Processes and Neural Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-6239-026-3](http://www.springer.com/978-94-6239-026-3)

### Hardcover

2014. XXII, 391 p. 105 illus., 32 illus. in color. (Atlantis Thinking Machines, Vol. 5)  
ISBN 978-94-6239-026-3

**Due: December 31, 2013**

B. Goertzel, G/F 51C Lung Mei Village, Tai Po, Hong Kong, China (P.R.); C. Pennachin, Igenesis Av. Prof. M'ario, Minas Gerais, Brazil; N. Geisweiller

## Engineering General Intelligence, Part 2

### The CogPrime Architecture for Integrative, Embodied AGI

The work outlines a detailed blueprint for the creation of an Artificial General Intelligence system with capability at the human level and ultimately beyond, according to the Cog Prime AGI design and the Open Cog software architecture.

### Features

The work outlines a detailed blueprint for the creation of an Artificial General Intelligence system with capability at the human level and ultimately beyond, according to the Cog Prime AGI design and the Open Cog software architecture.

### Contents

The Open Cog Framework.- Knowledge Representation Using the Atomspace.- Representing Procedural Knowledge.- Emotion, Motivation, Attention and Control.- Attention Allocation.- Economic Goal and Action Selection.- Integrative Procedure Evaluation.- Perceptual and Motor Hierarchies.- Integrating Cog Prime with a Compositional Spatiotemporal Deep Learning Network.- Making DeSTIN Representationally Transparent.- Bridging the Symbolic/Subsymbolic Gap.- Procedure Learning as Program Learning.- Learning Procedures via Imitation, Reinforcement and Correction.- Procedure Learning via Adaptively[...]

### Fields of interest

Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-6239-029-4](http://www.springer.com/978-94-6239-029-4)

### Hardcover

2014. XXII, 555 p. 42 illus., 9 illus. in color. (Atlantis Thinking Machines, Vol. 6)  
ISBN 978-94-6239-029-4

**Due: December 31, 2013**

S. Gong, Queen Mary University of London, London, United Kingdom; M. Cristani, S. Yan, C.C. Loy, The Chinese University of Hong Kong, Shatin, Hong Kong (Eds.)

## Person Re-Identification

The first book of its kind dedicated to the challenge of person re-identification, this text provides an in-depth, multidisciplinary discussion of recent developments and state-of-the-art methods. Features: introduces examples of robust feature representations, reviews salient feature weighting and selection mechanisms and examines the benefits of semantic attributes; describes how to segregate meaningful body parts from background clutter; examines the use of 3D depth images and contextual constraints derived from the visual appearance of a group; reviews approaches to feature transfer function and distance metric learning and discusses potential solutions to issues of data[...]

### Features

Re-identification offers a useful tool for non-invasive biometric validation, surveillance, and human-robot interaction in a broad range of applications from crowd traffic management to personalised healthcare. This comprehensive volume is the first work of its kind dedicated to addressing the challenge of Person Re-Identification, presenting insights from an international selection of [...]

### Contents

The Re-Identification Challenge.- Part I: Features and Representations.- Discriminative Image Descriptors for Person Re-Identification.- SDALF.- Re-Identification by Covariance Descriptors.- Attributes-Based Re-Identification.- Person Re-Identification by Attribute-Assisted Clothes Appearance.- Person Re-Identification by Articulated Appearance Matching.- One-Shot Person Re-Identification with a Consumer Depth Camera.- Group Association.- Evaluating Feature Importance for Re-Identification.- Part II: Matching and Distance Metric.- Learning Appearance Transfer for Person[...]

### Fields of interest

Image Processing and Computer Vision; Pattern Recognition; Mathematical Applications in Computer Science; Information Systems Applications (incl.Internet); User Interfaces and Human Computer Interaction; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4471-6295-7](http://www.springer.com/978-1-4471-6295-7)

### Hardcover

2014. XVI, 456 p. 163 illus., 154 illus. in color. (Advances in Computer Vision and Pattern Recognition) ISBN 978-1-4471-6295-7

**Due: January 13, 2014**

A. Hameurlain, Paul Sabatier University, Toulouse, France; J. Küng, University of Linz, FAW, Linz, Austria; R. Wagner, University of Linz, FAW, Linz, Austria; B. Amann, P. Lamarre, Université de Lyon, Lyon, France (Eds.)

## Transactions on Large-Scale Data- and Knowledge-Centered Systems XI

### Special Issue on Advanced Data Stream Management and Continuous Query Processing

This, the 11th issue of Transactions on Large-Scale Data- and Knowledge-Centered Systems, contains five selected papers focusing on Advanced Data Stream Management and Processing of Continuous Queries. The contributions cover different methods for avoiding unauthorized access to streaming data, modeling complex real-time behavior of stream processing applications, comparing different event-centric and data-centric platforms for the development of applications in pervasive environments, capturing localized repeated associative relationships from multiple time series, and obtaining uniform and fresh sampling strategies over input data streams generated by large open systems containing[...]

### Features

This, the 11th issue of Transactions on Large-Scale Data- and Knowledge-Centered Systems, contains five selected papers focusing on Advanced Data Stream Management and Processing of Continuous Queries. The contributions cover different methods for avoiding unauthorized access to streaming data, modeling complex real-time behavior of stream processing applications, comparing different event-centric and [...]

### Contents

ASSIST: Access Controlled Ship Identification Streams.- The HIT Model: Workflow-Aware Event Stream Monitoring.- P-Bench: Benchmarking in Data-Centric Pervasive Application Development.- Efficient Mining of Lag Patterns in Evolving Time Series.- On the Power of the Adversary to Solve the Node Sampling Problem.

### Fields of interest

Database Management; Data Mining and Knowledge Discovery

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45268-0](http://www.springer.com/978-3-642-45268-0)

### Softcover

2013. X, 127 p. 37 illus. (Transactions on Large-Scale Data- and Knowledge-Centered Systems, Vol. 8290) ISBN 978-3-642-45268-0

**usually dispatched within 3 to 5 business days**

A. Hameurlain, Paul Sabatier University, Toulouse, France; J. Küng, University of Linz, FAW, Linz, Austria; R. Wagner, University of Linz, FAW, Linz, Austria (Eds.)

## Transactions on Large-Scale Data- and Knowledge-Centered Systems XII

This, the 12th issue of Transactions on Large-Scale Data and Knowledge-Centered Systems, contains five revised selected regular papers. Topics covered include schema matching and schema mapping, update propagation in decision support systems, routing methods in peer-to-peer systems, distributed stream analytics and dynamic data partitioning.

### Features

This, the 12th issue of Transactions on Large-Scale Data and Knowledge-Centered Systems, contains five revised selected regular papers. Topics covered include schema matching and schema mapping, update propagation in decision support systems, routing methods in peer-to-peer systems, distributed stream analytics and dynamic data partitioning.

### Fields of interest

Database Management; Data Mining and Knowledge Discovery

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45314-4](http://www.springer.com/978-3-642-45314-4)

### Softcover

2013. X, 129 p. 39 illus. (Transactions on Large-Scale Data- and Knowledge-Centered Systems, Vol. 8320) ISBN 978-3-642-45314-4

**usually dispatched within 3 to 5 business days**

R. Hausser, Friedrich-Alexander-Universität, Erlangen, Germany

## Foundations of Computational Linguistics

Human-Computer Communication in Natural Language

The central task of a future-oriented computational linguistics is the development of cognitive machines which humans can freely talk with in their respective natural language. In the long run, this task will ensure the development of a functional theory of language, an objective method of verification, and a wide range of practical applications. Natural communication requires not only verbal processing, but also non-verbal perception and action. Therefore the content of this textbook is organized as a theory of language for the construction of talking robots. The main topic is the mechanism of natural language communication in both the speaker and the hearer. In the third edition the [...]

### Features

The central task of a future-oriented computational linguistics is the development of cognitive machines which humans can freely talk with in their respective natural language. In the long run, this task will ensure the development of a functional theory of language, an objective method of verification, and a wide range of practical applications. Natural communication requires not only verbal processing, [...]

### Contents

Chap. 1 - Computational Analysis of Natural Language.- Chap. 2 - Smart vs. Solid Solutions.- Chap. 3 - Cognitive Foundations of Semantics.- Chap. 4 - Language Communication.- Chap. 5 - Using Language Signs on Suitable Contexts.- Chap. 6 - Structure and Functioning of Signs.- Chap. 7 - Formal Grammar.- Chap. 8 - Language Hierarchies and Complexity.- Chap. 9 - Basic Notions of Parsing.- Chap. 10 - Left-Associative Grammar (LAG).- Chap. 11 - Hierarchy of LA Grammar.- Chap. 12 - LA and PS Hierarchies in Comparison.- Chap. 13 - Words and Morphemes.- Chap. 14 - Word Form Recognition in LA[...]

### Fields of interest

Language Translation and Linguistics; Computational Linguistics; Artificial Intelligence (incl. Robotics); User Interfaces and Human Computer Interaction

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-41430-5](http://www.springer.com/978-3-642-41430-5)

### Hardcover

2014. XXVIII, 522 p. 233 illus.  
ISBN 978-3-642-41430-5

**Due: January 31, 2014**

B. Henderson-Sellers, University of Technology, Sydney, Broadway, Australia; J. Ralyté, University of Geneva, Carouge, Switzerland; P.J. Ågerfalk, Uppsala University, Uppsala, Sweden; M. Rossi

## Situational Method Engineering

While previously available methodologies for software – like those published in the early days of object technology – claimed to be appropriate for every conceivable project, situational method engineering (SME) acknowledges that most projects typically have individual characteristics and situations. Thus, finding the most effective methodology for a particular project needs specific tailoring to that situation. Such a tailored software development methodology needs to take into account all the bits and pieces needed for an organization to develop software, including the software process, the input and output work products, the people involved, the languages used to describe[...]

### Features

While previously available methodologies for software – like those published in the early days of object technology – claimed to be appropriate for every conceivable project, situational method engineering (SME) acknowledges that most projects typically have individual characteristics and situations. Thus, finding the most effective methodology for a particular project needs specific tailoring to that [...]

### Contents

Part I SME Basics.- Chapter 1 Introduction.- Chapter 2 Method chunks, method fragments and method components.- Chapter 3 Method Engineering as a Social Practice.- Chapter 4 Formal descriptions.- Part II Applying SME in Practice.- Chapter 5 Identification and construction of individual method chunks/fragments.- Chapter 6 Processes for creating a methodology from method parts.- Chapter 7 Tailoring a constructed method.- Chapter 8 Assessing quality.- Chapter 9 Examples of constructed processes.- Part III The Future of SME.- Chapter 10 Recent advances in SME.- Chapter 11 Final summary and[...]

### Fields of interest

Software Engineering; Management of Computing and Information Systems

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41466-4](http://www.springer.com/978-3-642-41466-4)

### Hardcover

2014. XX, 308 p. 100 illus.  
ISBN 978-3-642-41466-4

**Due: January 31, 2014**

S. Jajodia, George Mason University, Fairfax, USA; K. Kant, George Mason University, Fairfax, USA; P. Samarati, University of Milan, Crema, Italy; A. Singhal, National Institute of Standards, Gaithersburg, USA; V. Swarup, The MITRE Corporation, McLean, USA; C. Wang, Information Sciences Directorate, Triangle Park, USA (Eds.)

## Secure Cloud Computing

This book presents a range of cloud computing security challenges and promising solution paths. The first two chapters focus on practical considerations of cloud computing. In Chapter 1, Chandramouli, Iorga, and Chokani describe the evolution of cloud computing and the current state of practice, followed by the challenges of cryptographic key management in the cloud. In Chapter 2, Chen and Sion present a dollar cost model of cloud computing and explore the economic viability of cloud computing with and without security mechanisms involving cryptographic mechanisms. The next two chapters address security issues of the cloud infrastructure. In Chapter 3, Szefer and Lee describe a[...]

### Features

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### Contents

Cryptographic Key Management Issues and Challenges in Cloud Services.- Costs and Security in Clouds.- Hardware-enhanced Security for Cloud Computing.- Cloud Computing Security: What Changes with Software-Defined Networking?.- Proof of Isolation for Cloud Storage.- Selective and Fine-Grained Access to Data in the Cloud.- Enabling Collaborative Data Authorization Between Enterprise Clouds.- Making Query Execution Over Encrypted Data Practical.- Privacy-preserving Keyword Search over Encrypted Data in Cloud Computing.- Towards Data Confidentiality and a Vulnerability Analysis Framework for[...]

### Fields of interest

Systems and Data Security; Information Systems Applications (incl. Internet); Computer Communication Networks; Information Systems and Communication Service

### Target groups

Professional/practitioner

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9277-1](http://www.springer.com/978-1-4614-9277-1)

### Hardcover

2014. VIII, 338 p. 92 illus., 56 illus. in color.  
ISBN 978-1-4614-9277-1

**Due: January 31, 2014**

R. Klette

## Concise Computer Vision

An Introduction into Theory and Algorithms

This textbook provides an accessible general introduction to the essential topics in computer vision. Classroom-tested programming exercises and review questions are also supplied at the end of each chapter. Features: provides an introduction to the basic notation and mathematical concepts for describing an image and the key concepts for mapping an image into an image; explains the topologic and geometric basics for analysing image regions and distributions of image values and discusses identifying patterns in an image; introduces optic flow for representing dense motion and various topics in sparse motion analysis; describes special approaches for image binarization and segmentation[...]

### Features

Many textbooks on computer vision can be unwieldy and intimidating in their coverage of this extensive discipline. This textbook addresses the need for a concise overview of the fundamentals of this field. Concise Computer Vision provides an accessible general introduction to the essential topics in computer vision, highlighting the role of important algorithms and mathematical concepts. [...]

### Contents

Image Data.- Image Processing.- Image Analysis.- Dense Motion Analysis.- Image Segmentation.- Cameras, Coordinates and Calibration.- 3D Shape Reconstruction.- Stereo Matching.- Feature Detection and Tracking.- Object Detection.

### Fields of interest

Image Processing and Computer Vision; Computing Methodologies

### Target groups

Upper undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-1-4471-6319-0](http://www.springer.com/978-1-4471-6319-0)

### Softcover

2014. XVI, 432 p. 299 illus., 221 illus. in color. (Undergraduate Topics in Computer Science)  
ISBN 978-1-4471-6319-0

**Due: January 29, 2014**

C. Kościelny, M. Kurkowski, Czestochowa University of Technology, Czestochowa, Poland; M. Srebrny, Polish Academy of Sciences, Warsaw, Poland

## Modern Cryptography Primer

Theoretical Foundations and Practical Applications

Cryptography has experienced rapid development, with major advances recently in both secret and public key ciphers, cryptographic hash functions, cryptographic algorithms and multiparty protocols, including their software engineering correctness verification, and various methods of cryptanalysis. This textbook introduces the reader to these areas, offering an understanding of the essential, most important, and most interesting ideas, based on the authors' teaching and research experience. After introducing the basic mathematical and computational complexity concepts, and some historical context, including the story of Enigma, the authors explain symmetric and asymmetric cryptography.[...]

### Features

Cryptography has experienced rapid development, with major advances recently in both secret and public key ciphers, cryptographic hash functions, cryptographic algorithms and multiparty protocols, including their software engineering correctness verification, and various methods of cryptanalysis. This textbook introduces the reader to these areas, offering an understanding of the essential, most important, [...]

### Contents

Chap. 1 Basic Concepts and Historical Overview.- Chap. 2 Mathematical Foundations of Cryptography.- Chap. 3 Foundations of Symmetric Cryptography.- Chap. 4 Foundations of Asymmetric Cryptography.- Chap. 5 An Electronic Signature and Hash Functions.- Chap. 6 PGP Systems and True Crypt.- Chap. 7 Public Key Infrastructure.- Chap. 8 Cryptographic Protocols.- Chap. 9 Cryptography Application for Data Security.- References.- Index.

### Fields of interest

Data Structures, Cryptology and Information Theory; Systems and Data Security; e-commerce / e-business; Computer Systems Organization and Communication Networks

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-41385-8](http://www.springer.com/978-3-642-41385-8)

### Hardcover

2013. XIV, 238 p. 97 illus.  
ISBN 978-3-642-41385-8

**usually dispatched within 3 to 5 business days**

P. Lake, P. Crowther

## Concise Guide to Databases

A Practical Introduction

This easy-to-read textbook/reference presents a comprehensive introduction to databases, opening with a concise history of databases and of data as an organisational asset. As relational database management systems are no longer the only database solution, the book takes a wider view of database technology, encompassing big data, NoSQL, object and object-relational and in-memory databases. The text also examines the issues of scalability, availability, performance and security encountered when building and running a database in the real world. Topics and features: presents review and discussion questions at the end of each chapter, in addition to skill-building, hands-on exercises.[...]

### Features

Modern businesses depend on data for their very survival, creating a need for sophisticated databases and database technologies to help store, organise and transport their valuable data. This easy-to-read textbook/reference presents a comprehensive introduction to databases, opening with a concise history of databases and of data as an organisational asset. As relational database management systems [...]

### Contents

Part I: Databases in Context.- Data: An Organisational Asset.- The History of Databases.- Physical Storage and Distribution.- Part II: Database Types.- Relational: The Start of the Modern Era in Databases.- NoSQL: Column-Based and Document-Based Databases.- Big Data.- Object and Object-Relational.- In-Memory Databases.- Part III: What Database Professionals Worry About.- Scalability.- Availability.- Performance.- Security.

### Fields of interest

Database Management; Information Storage and Retrieval; Data Structures, Cryptology and Information Theory; Software Engineering / Programming and Operating Systems

### Target groups

Upper undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-1-4471-5600-0](http://www.springer.com/978-1-4471-5600-0)

### Softcover

2013. XIX, 307 p. 113 illus. (Undergraduate Topics in Computer Science)  
ISBN 978-1-4471-5600-0

**usually dispatched within 3 to 5 business days**

W. Lawrenz, C&S group GmbH, Wolfenbüttel, Germany (Ed.)

## CAN System Engineering

From Theory to Practical Applications

This book addresses the various challenges and open questions relating to CAN communication networks. Opening with a short introduction into the fundamentals of CAN, the book then examines the problems and solutions for the physical layout of networks, including EMC issues and topology layout. Additionally, a discussion of quality issues with a particular focus on test techniques is presented. Each chapter features a collection of illuminating insights and detailed technical information supplied by a selection of internationally-regarded experts from industry and academia. Features: presents thorough coverage of architectures, implementations and application of CAN transceiver, data[...]

### Features

The controller area network (CAN) microcontroller communication protocol is now ubiquitous in a staggeringly wide range of transportation and industrial control applications. This fully revised and updated new edition addresses the various challenges and open questions relating to CAN communication networks. Opening with a short introduction into the fundamentals of CAN, the book then examines the [...]

### Contents

CAN Basic Architectures.- Physical Layer.- Data Link Layer Implementation.- Higher Level Protocols.- Applications.- Testing.

### Fields of interest

Computer Systems Organization and Communication Networks; Control, Robotics, Mechatronics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4471-5612-3](http://www.springer.com/978-1-4471-5612-3)

### Hardcover

2013. XXV, 353 p. 186 illus.  
ISBN 978-1-4471-5612-3

**usually dispatched within 3 to 5 business days  
December 14, 2013**

R.J. Lipton, Georgia Institute of Technology, Atlanta, USA; K.W. Regan, The State University of New York, Buffalo, USA

## People, Problems, and Proofs

Essays from Gödel's Lost Letter: 2010

People, problems, and proofs are the lifeblood of theoretical computer science. Behind the computing devices and applications that have transformed our lives are clever algorithms, and for every worthwhile algorithm there is a problem that it solves and a proof that it works. Before this proof there was an open problem: can one create an efficient algorithm to solve the computational problem? And, finally, behind these questions are the people who are excited about these fundamental issues in our computational world. In this book the authors draw on their outstanding research and teaching experience to showcase some key people and ideas in the domain of theoretical computer science.[...]

### Features

People, problems, and proofs are the lifeblood of theoretical computer science. Behind the computing devices and applications that have transformed our lives are clever algorithms, and for every worthwhile algorithm there is a problem that it solves and a proof that it works. Before this proof there was an open problem: can one create an efficient algorithm to solve the computational problem? And, finally, [...]

### Contents

The Claimant, the Readers, and the Crowd.- Kenneth Iverson: Notation and Thinking.- Edmund Hillary: Proofs and Mountain Climbing.- Leonardo da Vinci: Proofs as Art.- Michael Atiyah: The Role of Proof.- Subhash Khot: Unique Games Conjecture.- Arno van den Essen: An Amazing Conjecture.- Richard Hamilton: Group Efforts.- Grigori Perelman: A New Clay Problem.- Eric Allender: Solvable Groups.- Enrico Bombieri: On Intuition.- Fred Hennie: Lower Bounds.- Volker Strassen: Amazing Results.- Adam Smith: Dumb Channels.- Georg Cantor: Diagonal Method.- Raymond Smullyan: The Reals Are Uncountable.- [...]

### Fields of interest

Theory of Computation; History of Computing; Mathematics of Computing; History of Mathematics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41421-3](http://www.springer.com/978-3-642-41421-3)

### Hardcover

2013. XVIII, 333 p. 33 illus., 5 illus. in color.  
ISBN 978-3-642-41421-3

**Due: December 31, 2013**

R. Maes, Katholieke Universiteit Leuven, Heverlee, Belgium

## Physically Unclonable Functions

Constructions, Properties and Applications

Physically unclonable functions (PUFs) are innovative physical security primitives that produce unclonable and inherent instance-specific measurements of physical objects; in many ways they are the inanimate equivalent of biometrics for human beings. Since they are able to securely generate and store secrets, they allow us to bootstrap the physical implementation of an information security system. In this book the author discusses PUFs in all their facets: the multitude of their physical constructions, the algorithmic and physical properties which describe them, and the techniques required to deploy them in security applications. The author first presents an extensive overview and [...]

### Features

Physically unclonable functions (PUFs) are innovative physical security primitives that produce unclonable and inherent instance-specific measurements of physical objects; in many ways they are the inanimate equivalent of biometrics for human beings. Since they are able to securely generate and store secrets, they allow us to bootstrap the physical implementation of an information security system. In this [...]

### Contents

Chap. 1 - Introduction and Preview.- Chap. 2 - Physically Unclonable Functions: Concept and Constructions.- Chap. 3 - Physically Unclonable Functions: Properties.- Chap. 4 - Implementation and Experimental Analysis of Intrinsic PUFs.- Chap. 5 - PUF-Based Entity Identification and Authentication.- Chap. 6 - PUF-Based Key Generation.- Chap. 7 - Conclusion and Future Work.- App. A - Notation and Definitions from Probability Theory and Information Theory.- App. B - Non-intrinsic PUF(-like) Constructions.- References.

### Fields of interest

Data Structures, Cryptology and Information Theory; Electrical Engineering; Security Science and Technology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41394-0](http://www.springer.com/978-3-642-41394-0)

### Hardcover

2013. XVII, 193 p. 28 illus.  
ISBN 978-3-642-41394-0

**usually dispatched within 3 to 5 business days**

N. Magnenat-Thalmann, MIRALab - University of Geneva, Carouge, Switzerland; O. Ratib, University Hospital of Geneva, Geneva, Switzerland; H.F. Choi, MIRALab - University of Geneva, Carouge, Switzerland (Eds.)

### 3D Multiscale Physiological Human

3D Multiscale Physiological Human aims to promote scientific exchange by bringing together overviews and examples of recent scientific and technological advancements across a wide range of research disciplines. As a result, the variety in methodologies and knowledge paradigms are contrasted, revealing potential gaps and opportunities for integration. Chapters have been contributed by selected authors in the relevant domains of tissue engineering, medical image acquisition and processing, visualization, modeling, computer aided diagnosis and knowledge management. The multi-scale and multi-disciplinary research aspects of articulations in humans are highlighted, with a particular[...]

#### Features

3D Multiscale Physiological Human aims to promote scientific exchange by bringing together overviews and examples of recent scientific and technological advancements across a wide range of research disciplines. As a result, the variety in methodologies and knowledge paradigms are contrasted, revealing potential gaps and opportunities for integration. Chapters have been contributed by selected authors [...]

#### Contents

Preface.- Part I – Introduction.- Towards Effective Diagnosis and Prediction via 3D Patient Model – A Complete Research Plan.- Part II – Cell and Tissue Engineering.- Tissue Engineering and Regenerative Medicine Strategies for the Treatment of Osteochondral Lesions.- Part III – Imaging and Visualization.- Hybrid Imaging: From Anatomy to Function.- Deformable Models in Medical Image Segmentation.- Visualization and User Interaction Methods for Multiscale Biomedical Data.- Part IV – Simulation and Articulations.- Modeling and Simulating Virtual Anatomical Humans.- Clinical Gait Analysis[...]

#### Fields of interest

Computer Graphics; Bioinformatics; Human Physiology

#### Target groups

Research

#### Type of publication

Contributed volume

More on [www.springer.com/978-1-4471-6274-2](http://www.springer.com/978-1-4471-6274-2)

#### Hardcover

2014. VIII, 323 p. 110 illus., 99 illus. in color.  
ISBN 978-1-4471-6274-2

**Due: January 31, 2014**

T. Mens, University of Mons, Mons, Belgium; A. Serebrenik, Eindhoven University of Technology, Eindhoven, Netherlands; A. Cleve, University of Namur, Namur, Belgium (Eds.)

### Evolving Software Systems

During the last few years, software evolution research has explored new domains such as the study of socio-technical aspects and collaboration between different individuals contributing to a software system, the use of search-based techniques and meta-heuristics, the mining of unstructured software repositories, the evolution of software requirements, and the dynamic adaptation of software systems at runtime. Also more and more attention is being paid to the evolution of collections of inter-related and inter-dependent software projects, be it in the form of web systems, software product families, software ecosystems or systems of systems. With this book, the editors present insightful[...]

#### Features

During the last few years, software evolution research has explored new domains such as the study of socio-technical aspects and collaboration between different individuals contributing to a software system, the use of search-based techniques and meta-heuristics, the mining of unstructured software repositories, the evolution of software requirements, and the dynamic adaptation of software systems at [...]

#### Contents

Part I Evolving Software Artefacts.- 1 An Overview of Requirements Evolution.- 2 Coupled Evolution of Software Meta models and Models.- 3 Software Product Quality Models.- Part II Techniques.- 4 Search Based Software Maintenance: Methods and Tools.- 5 Mining Unstructured Software Repositories.- 6 Leveraging Web 2.0 for Software Evolution.- Part III Evolution of Specific Types of Software Systems.- 7 Evolution of Web Systems.- 8 Runtime Evolution of Highly Dynamic Software.- 9 Evolution of Software Product Lines.- 10 Studying Evolving Software Ecosystems based on Ecological Models.- Part[...]

#### Fields of interest

Software Engineering; Management of Computing and Information Systems; Information Systems Applications (incl.Internet)

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-3-642-45397-7](http://www.springer.com/978-3-642-45397-7)

#### Hardcover

2013. X, 414 p. 83 illus., 35 illus. in color.  
ISBN 978-3-642-45397-7

**Due: December 31, 2013**

P.M. Nugues

### Language Processing with Perl and Prolog

Theories, Implementation, and Application

The areas of natural language processing and computational linguistics have continued to grow in recent years, driven by the demand to automatically process text and spoken data. With the processing power and techniques now available, research is scaling up from lab prototypes to real-world, proven applications. This book teaches the principles of natural language processing, first covering linguistics issues such as encoding, entropy, and annotation schemes; defining words, tokens and parts of speech; and morphology. It then details the language-processing functions involved, including part-of-speech tagging using rules and stochastic techniques; using Prolog to write phase-structure[...]

#### Features

The areas of natural language processing and computational linguistics have continued to grow in recent years, driven by the demand to automatically process text and spoken data. With the processing power and techniques now available, research is scaling up from lab prototypes to real-world, proven applications. This book teaches the principles of natural language processing, first covering [...]

#### Contents

Chap. 1 - An Overview of Language Processing.- Chap. 2 - Corpus Processing Tools.- Chap. 3 - Encoding and Annotation Schemes.- Chap. 4 - Topics in Information Theory and Machine Learning.- Chap. 5 - Counting Words.- Chap. 6 - Words, Parts of Speech, and Morphology.- Chap. 7 - Part-of-Speech Tagging Using Rules.- Chap. 8 - Part-of-Speech Tagging Using Statistical Techniques.- Chap. 9 - Phrase-Structure Grammars in Prolog.- Chap. 10 - Partial Parsing.- Chap. 11 - Syntactic Formalisms.- Chap. 12 - Parsing Techniques.- Chap. 13 - Dependency Parsing.- Chap. 14 - Semantics and Predicate[...]

#### Fields of interest

Language Translation and Linguistics; Computational Linguistics; Artificial Intelligence (incl. Robotics); User Interfaces and Human Computer Interaction

#### Target groups

Lower undergraduate

#### Type of publication

Undergraduate textbook

More on [www.springer.com/978-3-642-41463-3](http://www.springer.com/978-3-642-41463-3)

#### Hardcover

2014. XX, 645 p. (Cognitive Technologies)  
ISBN 978-3-642-41463-3

**Due: January 29, 2014**

A. Osherenko

## Social Interaction, Globalization and Computer-Aided Analysis

A Practical Guide to Developing Social Simulation

Tackling globalization is a great challenge – it is both extremely beneficial and essentially problematic. This comprehensive, multidisciplinary study confronts this ambivalence through the use of computer simulation. It discusses the findings of social interaction and social simulation through the use of understandable global examples. Readers can use this book as a tool to outline significant aspects of intercultural simulation and highlight the issues that need to be considered in the reader's analysis. The author leads the reader via sequential narration from a colloquial description of intercultural situations to final simulation prototypes; each step is accompanied by descriptive[...]

### Features

Tackling globalization is a great challenge – it is both extremely beneficial and essentially problematic. This comprehensive, multidisciplinary study confronts this ambivalence through the use of computer simulation. It discusses the findings of social interaction and social simulation through the use of understandable global examples. Readers can use this book as a tool to outline significant [...]

### Contents

Preface.- List of Tables.- List of Figures.- Acronyms.- Part I – Multidisciplinary Part.- Introduction.- Related Work on Social Interaction and Social Simulation.- Scenarios of Social Interaction.- Part II – Developmental Part.- Acquisition of Intercultural Data.- Framework for Data Processing.- Prototypes of Social Simulation.- Evaluation of the Prototyping Approach.- Conclusion.- Index.

### Fields of interest

User Interfaces and Human Computer Interaction; Computer Appl. in Social and Behavioral Sciences; Psycholinguistics; Community & Environmental Psychology; Cultural Studies; Interdisciplinary Studies

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6259-9](http://www.springer.com/978-1-4471-6259-9)

### Hardcover

2014. XVIII, 244 p. 83 illus. (Human-Computer Interaction Series)

ISBN 978-1-4471-6259-9

Due: January 31, 2014

D. Page, University of Bristol, Bristol, United Kingdom; N. Smart, University of Bristol, Bristol, United Kingdom

## What Is Computer Science?

An Information Security Perspective

This engaging and accessible text addresses the fundamental question: What Is Computer Science? The book showcases a set of representative concepts broadly connected by the theme of information security, for which the presentation of each topic can be treated as a "mini" lecture course, demonstrating how it allows us to solve real problems, as well as how it relates to other subjects. The discussions are further supported by numerous examples and practical hands-on exercises. Features: presents a concise introduction to the study of algorithms and describes how computers work; introduces the concepts of data compression, and error detection and correction; highlights the role of data[...]

### Features

The remarkable diversity of ideas within the subject of computer science makes it highly rewarding and exciting to study, yet also difficult to describe in essence. This engaging and accessible text addresses the fundamental question: What Is Computer Science? Rather than supplying a brief overview of every relevant topic, the book showcases a set of representative concepts broadly connected by [...]

### Contents

Part I: Foundations of Computer Science.- Compressing and Correcting Digital Media.- Writing and Comparing Algorithms.- Playing Hide-and-Seek with Virus Scanners.- How Long is a Piece of String?.- Demystifying Web-Search: The Mathematics of PageRank.- Part II: Examples from Information Security.- Using Short Programs to Make and Break Historical Ciphers.- Generation and Testing of Random Numbers.- Safety in Numbers: Modern Cryptography from Ancient Arithmetic.- Hiding a Needle in a Haystack: Concealed Messages.- Picking Digital Pockets.

### Fields of interest

Computer Science (general); Data Encryption; Algorithm Analysis and Problem Complexity; Computers and Education

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-3-319-04041-7](http://www.springer.com/978-3-319-04041-7)

### Softcover

2014. VIII, 254 p. 38 illus. (Undergraduate Topics in Computer Science)

ISBN 978-3-319-04041-7

Due: January 30, 2014

M. Pelillo, Università "Ca' Foscari" di Venezia, Venezia Mestre, Italy (Ed.)

## Similarity-Based Pattern Analysis and Recognition

This accessible text/reference presents a coherent overview of the emerging field of non-Euclidean similarity learning. The book presents a broad range of perspectives on similarity-based pattern analysis and recognition methods, from purely theoretical challenges to practical, real-world applications. The coverage includes both supervised and unsupervised learning paradigms, as well as generative and discriminative models. Topics and features: explores the origination and causes of non-Euclidean (dis)similarity measures, and how they influence the performance of traditional classification algorithms; reviews similarity measures for non-vectorial data, considering both a "kernel[...]

### Features

The pattern recognition and machine learning communities have, until recently, focused mainly on feature-vector representations, typically considering objects in isolation. However, this paradigm is being increasingly challenged by similarity-based approaches, which recognize the importance of relational and similarity information. This accessible text/reference presents a coherent overview of [...]

### Contents

Introduction.- Part I: Foundational Issues.- Non-Euclidean Dissimilarities.- SIMBAD.- Part II: Deriving Similarities for Non-vectorial Data.- On the Combination of Information Theoretic Kernels with Generative Embeddings.- Learning Similarities from Examples under the Evidence Accumulation Clustering Paradigm.- Part III: Embedding and Beyond.- Geometricity and Embedding.- Structure Preserving Embedding of Dissimilarity Data.- A Game-Theoretic Approach to Pairwise Clustering and Matching.- Part IV: Applications.- Automated Analysis of Tissue Micro-Array Images on the Example of Renal[...]

### Fields of interest

Pattern Recognition

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5627-7](http://www.springer.com/978-1-4471-5627-7)

### Hardcover

2013. XIV, 291 p. 65 illus., 46 illus. in color. (Advances in Computer Vision and Pattern Recognition)

ISBN 978-1-4471-5627-7

usually dispatched within 3 to 5 business days

J. Poon, Information Technologies, Sydney, Australia; S. Poon, University of Sydney, Sydney, Australia (Eds.)

## Data Analytics for Traditional Chinese Medicine Research

This contributed volume explores how data mining, machine learning, and similar statistical techniques can analyze the types of problems arising from Traditional Chinese Medicine (TCM) research. The book focuses on the study of clinical data and the analysis of herbal data. Challenges addressed include diagnosis, prescription analysis, ingredient discoveries, network based mechanism deciphering, pattern-activity relationships, and medical informatics. Each author demonstrates how they made use of machine learning, data mining, statistics and other analytic techniques to resolve their research challenges, how successful if these techniques were applied, any insight noted and how these[...]

### Features

This contributed volume explores how data mining, machine learning, and similar statistical techniques can analyze the types of problems arising from Traditional Chinese Medicine (TCM) research. The book focuses on the study of clinical data and the analysis of herbal data. Challenges addressed include diagnosis, prescription analysis, ingredient discoveries, network based mechanism deciphering, [...]

### Contents

Foreword.- Searching for Evidence in Traditional Chinese Medicine Research: A Review and New Opportunities.- Causal Complexities of TCM Prescriptions: Understanding the underlying mechanisms of herbal formulation.- Medical Diagnosis by Using Machine Learning Techniques.- Network based deciphering of the mechanism of TCM.- Prescription Analysis and Mining.- Statistical Validation of TCM Syndrome Postulates in the Context of Depressive Patients.- Artificial Neural Network-based Chinese Medicine Diagnosis in Decision Support Manner and Herbal Ingredient Discoveries.- Chromatographic[...]

### Fields of interest

Data Mining and Knowledge Discovery; Health Informatics; Health Informatics; Pattern Recognition

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03800-1](http://www.springer.com/978-3-319-03800-1)

### Hardcover

2014. XXII, 260 p. 59 illus., 44 illus. in color. ISBN 978-3-319-03800-1

**Due: February 28, 2014**

T. Ravindra Babu, Infosys Ltd., Bangalore, India; M.N. Murty, Indian Institute of Science, Bangalore, India; S.V. Subrahmanya, Infosys Technologies Ltd., Bangalore, India

## Compression Schemes for Mining Large Datasets

### A Machine Learning Perspective

This book addresses the challenges of data abstraction generation using a least number of database scans, compressing data through novel lossy and non-lossy schemes, and carrying out clustering and classification directly in the compressed domain. Schemes are presented which are shown to be efficient both in terms of space and time, while simultaneously providing the same or better classification accuracy. Features: describes a non-lossy compression scheme based on run-length encoding of patterns with binary valued features; proposes a lossy compression scheme that recognizes a pattern as a sequence of features and identifying subsequences; examines whether the identification of[...]

### Features

As data mining algorithms are typically applied to sizable volumes of high-dimensional data, these can result in large storage requirements and inefficient computation times. This unique text/reference addresses the challenges of data abstraction generation using a least number of database scans, compressing data through novel lossy and non-lossy schemes, and carrying out clustering and [...]

### Contents

Introduction.- Data Mining Paradigms.- Run-Length Encoded Compression Scheme.- Dimensionality Reduction by Subsequence Pruning.- Data Compaction through Simultaneous Selection of Prototypes and Features.- Domain Knowledge-Based Compaction.- Optimal Dimensionality Reduction.- Big Data Abstraction through Multiagent Systems.- Intrusion Detection Dataset: Binary Representation.

### Fields of interest

Pattern Recognition; Data Mining and Knowledge Discovery; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5606-2](http://www.springer.com/978-1-4471-5606-2)

### Hardcover

2013. XVI, 197 p. 62 illus., 3 illus. in color. (Advances in Computer Vision and Pattern Recognition) ISBN 978-1-4471-5606-2

**usually dispatched within 3 to 5 business days**

M.P. Robillard, McGill University, Montréal, Canada; W. Maalej, University of Hamburg, Hamburg, Germany; R.J. Walker, University of Calgary, Calgary, Canada; Th. Zimmermann, Microsoft Research, Redmond, USA (Eds.)

## Recommendation Systems in Software Engineering

With the growth of public and private data stores and the emergence of off-the-shelf data-mining technology, recommendation systems have emerged that specifically address the unique challenges of navigating and interpreting software engineering data. This book collects, structures, and formalizes knowledge on recommendation systems in software engineering. It adopts a pragmatic approach with an explicit focus on system design, implementation, and evaluation. The book is divided into three parts: "Part I – Techniques" introduces basics for building recommenders in software engineering, including techniques for collecting and processing software engineering data, but also for presenting[...]

### Features

With the growth of public and private data stores and the emergence of off-the-shelf data-mining technology, recommendation systems have emerged that specifically address the unique challenges of navigating and interpreting software engineering data. This book collects, structures, and formalizes knowledge on recommendation systems in software engineering. It adopts a pragmatic approach with an [...]

### Fields of interest

Software Engineering; Management of Computing and Information Systems; Information Storage and Retrieval

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45134-8](http://www.springer.com/978-3-642-45134-8)

### Hardcover

2014. XII, 628 p. 108 illus., 46 illus. in color. ISBN 978-3-642-45134-8

**Due: January 31, 2014**

P.K. Saha, University of Iowa, Iowa City, USA; U. Maulik, S. Basu, Jadavpur University, Kolkata, India (Eds.)

## Advanced Computational Approaches to Biomedical Engineering

There has been rapid growth in biomedical engineering in recent decades, given advancements in medical imaging and physiological modelling and sensing systems, coupled with immense growth in computational and network technology, analytic approaches, visualization and virtual-reality, man-machine interaction and automation. Biomedical engineering involves applying engineering principles to the medical and biological sciences and it comprises several topics including biomedicine, medical imaging, physiological modelling and sensing, instrumentation, real-time systems, automation and control, signal processing, image reconstruction, processing and analysis, pattern recognition, and [...]

### Features

There has been rapid growth in biomedical engineering in recent decades, given advancements in medical imaging and physiological modelling and sensing systems, coupled with immense growth in computational and network technology, analytic approaches, visualization and virtual-reality, man-machine interaction, and automation. Biomedical engineering involves applying engineering principles to the medical and [...]

### Contents

Part I – Advanced Computational Methods.- Chap. 1 – Graph Algorithmic Techniques for Biomedical Image Segmentation.- Chap. 2 – Information Theoretic Clustering for Medical Image Segmentation.- Chap. 3 – Multiobjective Differential Evolution Based Fuzzy Clustering for MR Brain Image Segmentation.- Chap. 4 – Spectral and Non-linear Analysis of Thalamocortical Neural Mass Model Oscillatory Dynamics.- Chap. 5 – A Meta-learning Approach for Protein Function Prediction.- Part II – Biomedical Applications.- Chap. 6 – Segmentation of the Carotid Arteries from 3D Ultrasound Images.- Chap. 7 – [...]

### Fields of interest

Artificial Intelligence (incl. Robotics); Computational Intelligence; Computational Biology / Bioinformatics; Image Processing and Computer Vision; Mathematical and Computational Biology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41538-8](http://www.springer.com/978-3-642-41538-8)

### Hardcover

2014. XII, 217 p. 100 illus., 69 illus. in color. ISBN 978-3-642-41538-8

Due: January 31, 2014

J.T. Streib, Illinois College, Jacksonville, USA; T. Soma, Illinois College, Jacksonville, USA

## Guide to Java

### A Concise Introduction to Programming

This book presents a focused and accessible primer on the fundamentals of Java programming, with extensive use of examples and hands-on exercises. Topics and features: provides an introduction to variables, input/output and arithmetic operations; describes objects and contour diagrams, explains selection structures, and demonstrates how iteration structures work; discusses object-oriented concepts such as overloading and classes methods, and introduces string variables and processing; illustrates arrays and array processing and examines recursion; explores inheritance and polymorphism and investigates elementary files; presents a primer on graphical input/output, discusses elementary [...]

### Features

Seeking to learn quickly how to program in Java without prior experience? This Guide to Java presents a focused and accessible primer on the fundamentals of Java programming, with extensive use of illustrative examples and hands-on exercises. Addressing the need to acquire a good working model of objects in order to avoid possible misconceptions, the text introduces the core concepts of [...]

### Contents

Variables, Input / Output and Arithmetic.- Objects: An Introduction.- Selection Structures.- Iteration Structures.- Objects: Revisited.- Strings.- Arrays.- Recursion.- Objects: Inheritance and Polymorphism.- Elementary File Input and Output.- Simple Graphical Input and Output.- Exceptions.- Java doc Comments.- Glossary.- Answers to Selected Exercises.

### Fields of interest

Programming Techniques; Programming Languages, Compilers, Interpreters

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-1-4471-6316-9](http://www.springer.com/978-1-4471-6316-9)

### Softcover

2014. X, 372 p. 150 illus., 2 illus. in color. (Undergraduate Topics in Computer Science) ISBN 978-1-4471-6316-9

Due: February 28, 2014

V.S. Subrahmanian, University of Maryland, College Park, USA; A. Mannes, University of Maryland, College Park, USA; A. Roul, R.K. Raghavan

## Indian Mujahideen

### Computational Analysis and Public Policy

Advance Praise for Indian Mujahideen: Computational Analysis and Public Policy “This book presents a highly innovative computational approach to analyzing the strategic behavior of terrorist groups and formulating counter-terrorism policies. It would be very useful for international security analysts and policymakers.” Uzi Arad, National Security Advisor to the Prime Minister of Israel and Head, Israel National Security Council (2009-2011) “An important book on a complex security problem. Issues have been analysed in depth based on quality research. Insightful and well-balanced in describing the way forward.” Naresh Chandra, Indian Ambassador to the USA (1996-2001) and Cabinet [...]

### Features

Advance Praise for Indian Mujahideen: Computational Analysis and Public Policy “This book presents a highly innovative computational approach to analyzing the strategic behavior of terrorist groups and formulating counter-terrorism policies. It would be very useful for international security analysts and policymakers.” Uzi Arad, National Security Advisor to the Prime Minister of [...]

### Contents

Introduction.- Indian Mujahideen (IM).- Temporal Probabilistic Behavior Rules.- Targeting Public Sites.- Bombings.- Simultaneous and Timed Attacks.- Total Deaths in IM Attacks.- Computing Policy Options.- Suggested Counter-Terrorism Policies.- Building a National Counter-Terrorism Center.- Appendix A: Data Methodology.- Appendix B: List of All Terrorist Attacks Carried out by IM.- Appendix C: Temporal Probabilistic Rules Presented in This Book.- Appendix D: Instances of Improved Diplomatic Relations between India and Pakistan.- Appendix E: Instances of Indian Mujahideen Conferences.- [...]

### Fields of interest

Data Mining and Knowledge Discovery; Political Science, general; Criminology & Criminal Justice; Public International Law

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02817-0](http://www.springer.com/978-3-319-02817-0)

### Hardcover

2013. XVIII, 173 p. 22 illus. (Terrorism, Security, and Computation) ISBN 978-3-319-02817-0

usually dispatched within 3 to 5 business days

S.T. Taft, SofCheck, Inc., Burlington, USA; R.A. Duff, R.L. Brukardt, AXE Consultants, Madison, USA; E. Ploedereder, University of Stuttgart, Stuttgart, Germany; P. Leroy, Google Zurich, Zurich, Switzerland; E. Schonberg, New York University, New York, USA (Eds.)

## Ada 2012 Reference Manual. Language and Standard Libraries

International Standard ISO/IEC 8652/2012 (E)

The Ada 2012 Reference Manual is an enhanced version of the text of International Standard ISO/IEC 8652/2012(E) for the programming language Ada. The Ada 2012 Reference Manual combines all of the previous corrections of Technical Corrigendum 1 and Amendment 1 with changes and additions that improve the capabilities of the language and the reliability of programs written in the language. The Ada 2012 Reference Manual will replace the former versions as an indispensable working companion for anybody using Ada professionally or learning and studying the language systematically.

### Features

The Ada 2012 Reference Manual is an enhanced version of the text of International Standard ISO/IEC 8652/2012(E) for the programming language Ada. The Ada 2012 Reference Manual combines all of the previous corrections of Technical Corrigendum 1 and Amendment 1 with changes and additions that improve the capabilities of the language and the reliability of programs written in the language. The Ada 2012 Reference [...]

### Contents

General.- Lexical Elements.- Declarations and Types.- Names and Expressions.- Statements.- Subprograms.- Packages.- Visibility Rules.- Tasks and Synchronization.- Program Structure and Compilation Issues.- Exceptions.- Generic Units.- Representation Issues.- The Standard Libraries.- Annex A (normative) Predefined Language Environment.- Annex B (normative) Interface to Other Languages.- Annex C (normative) Systems Programming.- Annex D (normative) Real-Time Systems.- Annex E (normative) Distributed Systems.- Annex F (normative) Information Systems.- Annex G (normative) Numerics.- Annex H[...]

### Fields of interest

Programming Techniques; Programming Languages, Compilers, Interpreters; Operating Systems; Software Engineering

### Target groups

Professional/practitioner

### Type of publication

Manual

More on [www.springer.com/978-3-642-45418-9](http://www.springer.com/978-3-642-45418-9)

### Softcover

2013. XXVIII, 921 p. (Programming and Software Engineering, Vol. 8339)  
ISBN 978-3-642-45418-9

**Due: December 30, 2013**

A. Trendowicz, Fraunhofer Institute for Experimental, Kaiserslautern, Germany; R. Jeffery, The University of New South Wales, Sydney, Australia

## Software Project Effort Estimation

Foundations and Best Practice Guidelines for Success

Software effort estimation is one of the oldest and most important problems in software project management, and thus today there are a large number of models, each with its own unique strengths and weaknesses in general, and even more importantly, in relation to the environment and context in which it is to be applied. Trendowicz and Jeffery present a comprehensive look at the principles of software effort estimation and support software practitioners in systematically selecting and applying the most suitable effort estimation approach. Their book not only presents what approach to take and how to apply and improve it, but also explains why certain approaches should be used in specific[...]

### Features

Software effort estimation is one of the oldest and most important problems in software project management, and thus today there are a large number of models, each with its own unique strengths and weaknesses in general, and even more importantly, in relation to the environment and context in which it is to be applied. Trendowicz and Jeffery present a comprehensive look at the principles of software [...]

### Contents

PART I Foundations.- Challenges of Predictable Software Development.- Principles of Effort and Cost Estimation.- Common Factors Influencing Software Project Effort.- Estimation under Uncertainty.- Basic Estimation Strategies.- PART II Selecting An Appropriate Estimation Method.- Classification of Effort Estimation Methods.- Finding the Most Suitable Estimation Method.- PART III Popular Effort Estimation Methods.- Statistical Regression Analysis.- Constructive Cost Model – COCOMO.- Classification and Regression Trees.- Case-Based Reasoning.- Wideband Delphi.- Planning Poker.- Bayesian[...]

### Fields of interest

Software Engineering; Management of Computing and Information Systems; Project Management

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-03628-1](http://www.springer.com/978-3-319-03628-1)

### Hardcover

2014. XV, 485 p. 86 illus. in color.  
ISBN 978-3-319-03628-1

**Due: January 31, 2014**

J. Vince, Bournemouth University, Ashted, United Kingdom

## Mathematics for Computer Graphics

John Vince explains a wide range of mathematical techniques and problem-solving strategies associated with computer games, computer animation, virtual reality, CAD and other areas of computer graphics in this updated and expanded fourth edition. The first four chapters revise number sets, algebra, trigonometry and coordinate systems, which are employed in the following chapters on vectors, transforms, interpolation, 3D curves and patches, analytic geometry and barycentric coordinates. Following this, the reader is introduced to the relatively new topic of geometric algebra, and the last two chapters provide an introduction to differential and integral calculus, with an emphasis on[...]

### Features

John Vince explains a wide range of mathematical techniques and problem-solving strategies associated with computer games, computer animation, virtual reality, CAD, and other areas of computer graphics in this updated and expanded fourth edition. The first four chapters revise number sets, algebra, trigonometry and coordinate systems, which are employed in the following chapters on [...]

### Contents

Preface.- Mathematics.- Numbers.- Algebra.- Trigonometry.- Coordinate Systems.- Vector.- Transforms.- Interpolation.- Curves and Patches.- Analytic Geometry.- Barycentric Coordinates.- Geometric Algebra.- Calculus: Derivatives.- Calculus: Integration.- Worked Examples.- Conclusion.- Index.

### Fields of interest

Computer Graphics; Mathematical Applications in Computer Science

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-1-4471-6289-6](http://www.springer.com/978-1-4471-6289-6)

### Softcover

2014. XVIII, 416 p. 280 illus. (Undergraduate Topics in Computer Science)  
ISBN 978-1-4471-6289-6

**Due: January 31, 2014**

W. Widłak, Skłodowska-Curie Memorial Cancer Center, Gliwice, Poland

## Molecular Biology - Not Only for Bioinformaticians

Bioinformatics, which can be defined as the application of computer science and information technology to the field of biology and medicine, has been rapidly developing over the past few decades. It generates new knowledge as well as the computational tools to create that knowledge. Understanding the basic processes in living organisms is therefore indispensable for bioinformaticians. This book addresses beginners in molecular biology, especially computer scientists who would like to work as bioinformaticians. It presents basic processes in living organisms in a condensed manner. Additionally, principles of several high-throughput technologies in molecular biology, which need the[...]

### Features

Bioinformatics, which can be defined as the application of computer science and information technology to the field of biology and medicine, has been rapidly developing over the past few decades. It generates new knowledge as well as the computational tools to create that knowledge. Understanding the basic processes in living organisms is therefore indispensable for bioinformaticians. This book addresses [...]

### Fields of interest

Computational Biology / Bioinformatics; Bioinformatics; Computer Science (general)

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-45360-1](http://www.springer.com/978-3-642-45360-1)

### Softcover

2013. XII, 153 p. 122 illus. (Lecture Notes in Bioinformatics, Vol. 8248)

ISBN 978-3-642-45360-1

**usually dispatched within 3 to 5 business days**

I. Zitouni, Microsoft Research, Redmond, USA (Ed.)

## Natural Language Processing of Semitic Languages

Research in Natural Language Processing (NLP) has rapidly advanced in recent years, resulting in exciting algorithms for sophisticated processing of text and speech in various languages. Much of this work focuses on English; in this book we address another group of interesting and challenging languages for NLP research: the Semitic languages. The Semitic group of languages includes Arabic (206 million native speakers), Amharic (27 million), Hebrew (7 million), Tigrinya (6.7 million), Syriac (1 million) and Maltese (419 thousand). Semitic languages exhibit unique morphological processes, challenging syntactic constructions, and various other phenomena that are less prevalent in other[...]

### Features

Research in Natural Language Processing (NLP) has rapidly advanced in recent years, resulting in exciting algorithms for sophisticated processing of text and speech in various languages. Much of this work focuses on English; in this book we address another group of interesting and challenging languages for NLP research: the Semitic languages. The Semitic group of languages includes Arabic (206 million [...])

### Contents

Part I Natural Language Processing Core-Technologies.- 1.Linguistic Introduction: The Orthography, Morphology and Syntax of Semitic Languages. R.Fabri, M.Gasser, N.Habash, G.Kiraz, and S.Wintner.- 2.Morphological Processing of Semitic Languages. S.Wintner.- 3.Syntax and Parsing of Semitic Languages. R.Tsarfaty.- 4.Semantic Processing of Semitic Languages. M.Diab and Y.Marton.- 5.Language Modeling. I.Heintz.- Part II Natural Language Processing Applications.- 6.Statistical Machine Translation. H.Hassan and K.Darwish.- 7.Named Entity Recognition. B.Mohit.- 8.Anaphora Resolution.[...]

### Fields of interest

Language Translation and Linguistics; Computational Linguistics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45357-1](http://www.springer.com/978-3-642-45357-1)

### Hardcover

2014. X, 420 p. (Theory and Applications of Natural Language Processing)

ISBN 978-3-642-45357-1

**Due: June 11, 2014**

## Economics

A. Agnetis, Università di Siena, Siena, Italy; J.-C. Billaut, Université Tours, Tours, France; S. Gawiejnowicz, Adam Mickiewicz University, Poznan, Poland; D. Pacciarelli, A. Soukhal

## Multiagent Scheduling

### Models and Algorithms

Scheduling theory has received a growing interest since its origins in the second half of the 20th century. Developed initially for the study of scheduling problems with a single objective, the theory has been recently extended to problems involving multiple criteria. However, this extension has still left a gap between the classical multi-criteria approaches and some real-life problems in which not all jobs contribute to the evaluation of each criterion. In this book, we close this gap by presenting and developing multi-agent scheduling models in which subsets of jobs sharing the same resources are evaluated by different criteria. Several scenarios are introduced, depending on the[...]

### Features

Scheduling theory has received a growing interest since its origins in the second half of the 20th century. Developed initially for the study of scheduling problems with a single objective, the theory has been recently extended to problems involving multiple criteria. However, this extension has still left a gap between the classical multi-criteria approaches and some real-life problems in which not all [...]

### Contents

1. Multiagent Scheduling Fundamentals.- 2. Problems, Algorithms and Complexity.- 3. Single Machine Problems.- 4. Batching Scheduling Problems.- 5. Parallel Machine Scheduling Problems.- 6. Scheduling Problems with Variable Job Processing Times.- References.

### Fields of interest

Operation Research / Decision Theory; Models and Principles

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41879-2](http://www.springer.com/978-3-642-41879-2)

### Hardcover

2014. XII, 277 p. 55 illus.  
ISBN 978-3-642-41879-2

**Due: February 28, 2014**

R. Boutellier, ETH Zürich, Zürich, Switzerland; M. Heinzen, ETH Zürich, Zürich, Switzerland

## Growth Through Innovation

Managing the Technology-Driven Enterprise

Capitalism produced entrepreneurs and property rights, the two basic pillars of innovation and growth. As the speed of technology is steadily increasing only radical innovation can be the name of the game. This book discusses technology and innovation trends by looking into historical examples and telling the latest business stories. It opens the discourse about pirates, pioneers, innovators and imitators; proposes the framework of dominant, science-driven and high-tech industry for innovation management and gives insights into intellectual property rights, industrial designs and technical risk management. Finally, it offers 8 important innovation principles for technology driven[...]

### Features

Capitalism produced entrepreneurs and property rights, the two basic pillars of innovation and growth. As the speed of technology is steadily increasing only radical innovation can be the name of the game. This book discusses technology and innovation trends by looking into historical examples and telling the latest business stories. It opens the discourse about pirates, pioneers, innovators and imitators; [...]

### Contents

Technology Changes our Life.- Paradigms and Hidden Research Strategies.- Technology, Driver of Growth.- Technology Speed and Substitution.- Diffusion of New Technologies.- The Myth of the Pioneer.- Pirates, Pioneers, Innovators and Imitators.- Dominant Design Industry.- Science-Driven Industry.- High-Tech Industries.- Basic Innovation Principles.- Radical Versus Routine Innovation.- Trend Towards Routine Innovation.- Design of Industrial Goods.- Protection of Innovation.- Core Capabilities.- Technical Risk Management.- Human Aspects of Technical Risk Management.- Non-Proliferation of[...]

### Fields of interest

Technology Management; R & D / Technology Policy; Organization / Planning; Emerging Markets / Globalization

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-04015-8](http://www.springer.com/978-3-319-04015-8)

### Hardcover

2014. X, 264 p. 79 illus. (Management for Professionals)  
ISBN 978-3-319-04015-8

**Due: February 10, 2014**

X. Cai, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong; X. Wu, East China Normal University, Shanghai, China (P.R.); X. Zhou, Macquarie University, North Ryde, Australia

## Optimal Stochastic Scheduling

Many interesting and important results on stochastic scheduling problems have been developed in recent years, with the aid of probability theory. This book provides a comprehensive and unified coverage of studies in stochastic scheduling. The objective is two-fold: (i) to summarize the elementary models and results in stochastic scheduling, so as to offer an entry-level reading material for students to learn and understand the fundamentals of this area and (ii) to include in details the latest developments and research topics on stochastic scheduling, so as to provide a useful reference for researchers and practitioners in this area. Optimal Stochastic Scheduling is organized into two[...]

### Features

Many interesting and important results on stochastic scheduling problems have been developed in recent years, with the aid of probability theory. This book provides a comprehensive and unified coverage of studies in stochastic scheduling. The objective is two-fold: (i) to summarize the elementary models and results in stochastic scheduling, so as to offer an entry-level reading material for students to [...]

### Contents

Basic Concepts.- Regular Performance Measures.- Irregular Performance Measures.- Stochastic Machine Breakdowns.- Optimal Stopping Problems.- Multi-armed Bandit Processes.- Dynamic Policies.- Stochastic Scheduling with Incomplete Information.- Optimal Policies in Time-varying Scheduling.- More Stochastic Scheduling Models.

### Fields of interest

Operation Research / Decision Theory; Production / Logistics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4899-7404-4](http://www.springer.com/978-1-4899-7404-4)

### Hardcover

2014. X, 420 p. 3 illus. (International Series in Operations Research & Management Science, Vol. 207)  
ISBN 978-1-4899-7404-4

**Due: February 28, 2014**

A.K. Chakravarty, Northeastern University, Boston, MA, USA

## Supply Chain Transformation

Evolving with Emerging Business Paradigms

Today, supply chain transformation for creating customer value continues to be a priority for many companies, as it enables them to gain a competitive advantage. While value creation is shaped by external drivers such as market volatility, technology, product and service offering and disruption, it can be stymied by the internal stresses arising from the need to minimize costs, limitations in process redesign, waste minimization and the unavailability of knowledge capital. Therefore, for companies to survive and prosper, the relevant questions to ask would be how to identify the external/internal forces driving changes and how to map the business drivers to the attributes of[...]

### Features

Today, supply chain transformation for creating customer value continues to be a priority for many companies, as it enables them to gain a competitive advantage. While value creation is shaped by external drivers such as market volatility, technology, product and service offering, and disruption, it can be stymied by the internal stresses arising from the need to minimize costs, limitations in process [...]

### Contents

Chapter 1: A Framework for Transformation.- Chapter 2: Managing the Customer.- Chapter 3: Products and Processes.- Chapter 4: Managing Suppliers.- Chapter 5: Logistics and Fulfillment Services.- Chapter 6: Transforming the Contemporary Supply Chain.- Chapter 7: Incorporating Emerging Economics in the Supply Chain.- Chapter 8: Humanitarian Relief Chain.- Chapter 9: Sustainable Supply Chains.- Chapter 10: Healthcare Delivery Network.

### Fields of interest

Production / Logistics; Industrial and Production Engineering; Sustainable Development; e-commerce / e-business

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-41910-2](http://www.springer.com/978-3-642-41910-2)

### Hardcover

2014. XII, 376 p. 152 illus., 52 illus. in color. (Springer Texts in Business and Economics)  
ISBN 978-3-642-41910-2

**Due: February 28, 2014**

G. Chen, Xiamen University, Xiamen, China (P.R.); S. Hamori, Kobe University, Kobe, Japan

## Rural Labor Migration, Discrimination, and the New Dual Labor Market in China

This book studies some important issues in China's labor market, such as rural labor migration, employment and wage discrimination, the new dual labor market, and economic returns on schooling, using the newer and representative data and advanced estimation models. This approach has yielded many interesting results, including a solution to the dilemma of two ongoing crises since 2004: the rural labor surplus and severe shortage of migrant labor. While male workers generally received less favorable treatment and consequently enjoyed a lower average employment probability than female workers in 1996, they also received preferential treatment over female workers, who otherwise had[...]

### Features

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### Contents

Introduction.- Rural Migration and Sectoral Earning Differences in Urban China.- A Solution to the Migrant Labor Shortage and Rural Labor Surplus in China.- Do Chinese Employers Discriminate against Females when Hiring Employees?.- An Empirical Analysis of Gender Wage Differentials in Urban China.- Bivariate Probit Analysis of the Differences between Male and Female Formal Employment in Urban China.- Formal and Informal Employment in Urban China - Income Differentials.- Economic Returns to Schooling in Urban China: OLS and the Instrumental Variables Approach.- First Publication.

### Fields of interest

Labor Economics; Social Sciences (general); Statistics for Social Science, Behavioral Science, Education, Public Policy, and Law

### Target groups

Research

### Type of publication

Brief

More on [www.springer.com/978-3-642-41108-3](http://www.springer.com/978-3-642-41108-3)

### Softcover

2014. X, 118 p. 9 illus. (SpringerBriefs in Economics)  
ISBN 978-3-642-41108-3

usually dispatched within 3 to 5 business days  
December 31, 2013

J. Chen, Shanghai University of Finance and Econo, Shanghai, China (P.R.); M. Stephens, Heriot-Wat University, Edinburgh, United Kingdom; Y. Man, Peking University, Beijing, China (P.R.) (Eds.)

## The Future of Public Housing

### Ongoing Trends in the East and the West

Public housing was once an important strand in western housing policies, but is seldom seen as a mainstream policy instrument for the future. In contrast, in many East Asian countries large public housing programs are underway. Behind these generalizations, there are exceptions, too. By including perspectives of scholars from across the world, this book provides new insights into public housing in its various forms. It contains in-depth chapters on public housing in five East Asian countries and six Western countries, together with three comparative overview chapters.

### Features

Public housing was once an important strand in western housing policies, but is seldom seen as a mainstream policy instrument for the future. In contrast, in many East Asian countries large public housing programs are underway. Behind these generalizations, there are exceptions, too. By including perspectives of scholars from across the world, this book provides new insights into public housing in its various [...]

### Contents

Preface.- Public Housing in the East.- Public Housing in the West.- Concluding Part.

### Fields of interest

Public Finance & Economics; Political Economy

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-41621-7](http://www.springer.com/978-3-642-41621-7)

### Hardcover

2013. XXV, 312 p. 36 illus., 27 illus. in color.  
ISBN 978-3-642-41621-7

Due: January 31, 2014

E. Chew, Queen Mary University of London, London, United Kingdom

## Mathematical and Computational Modeling of Tonality

### Theory and Applications

From the Preface:Blending ideas from operations research, music psychology, music theory, and cognitive science, this book aims to tell a coherent story of how tonality pervades our experience, and hence our models, of music.The story is told through the developmental stages of the Spiral Array model for tonality, a geometric model designed to incorporate and represent principles of tonal cognition, thereby lending itself to practical applications of tonal recognition, segmentation, and visualization. Mathematically speaking, the coils that make up the Spiral Array model are in effect helices, a spiral referring to a curve emanating from a central point. The use of "spiral" here is[...]

### Features

From the Preface:Blending ideas from operations research, music psychology, music theory, and cognitive science, this book aims to tell a coherent story of how tonality pervades our experience, and hence our models, of music.The story is told through the developmental stages of the Spiral Array model for tonality, a geometric model designed to incorporate and represent principles of tonal [...]

### Contents

Tonality.- An Abbreviated Survey.- The Spiral Array.- The CEG Algorithm (Part I).- The CEG Algorithm (Part II): Validation.- Determining Key Boundaries.- Argus Segmentation Method.- Real-Time Pitch Spelling.- MuS.A.R.T.- Visible Humor.- Sensitivity Analysis.- Model Calibration.- CEG Key Finding: Bach's WTC book I.

### Fields of interest

Operation Research / Decision Theory; Computational Mathematics and Numerical Analysis; Music; Cognitive Psychology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9474-4](http://www.springer.com/978-1-4614-9474-4)

### Hardcover

2014. XIV, 307 p. 154 illus., 46 illus. in color. (International Series in Operations Research & Management Science, Vol. 204)  
ISBN 978-1-4614-9474-4

Due: January 31, 2014

P. Chuan, Macau Uni. of Sci. and Tech., Macau, Macao; V. Khachidze, CeBA Canada, Vanier, Canada; I.K.W. Lai, Macau Uni. of Sci. and Tech., Macau, Macao; Y. Liu, Macau University of Science and Technology, Macau, Macao; S. Siddiqui, CeBA Canada, Ottawa, Canada; T. Wang (Eds.)

## Innovation in the High-Tech Economy

This book constitutes the proceedings of the First International Conference on Management Science and Engineering: Innovation and High-tech Services, ICMSE 2013, held in Macau, in June 2013. The papers are contributed by innovative researchers, engineers and practitioners in the field of management science, information system, finance, economics and accounting and offer a platform for exchanging the latest research findings in the field of management science and management innovation, for looking forward to the future trends in the management science and management innovation field in the 21st century, and to promote management modernization and high-tech innovation services.

### Features

This book constitutes the proceedings of the First International Conference on Management Science and Engineering: Innovation and High-tech Services, ICMSE 2013, held in Macau, in June 2013. The papers are contributed by innovative researchers, engineers and practitioners in the field of management science, information system, finance, economics and accounting and offer a platform for exchanging the latest [...]

### Contents

Development Strategy of E-health in China.- E-commerce of Eco Bags on Basis of Pareto Improvement.- The Impact of Technical Barriers to Trade: The Cases of Trade between China, Japan, Korea, and the US.- An Appraisal of Internet Business Models as a Research Paradigm.- The Study of Usability Performance in the E-Commerce Websites.- E-Business and Cloud Computing: A New Practice or a Trend.- Multi-Level Access Control in the Data Pipeline of the International Supply Chain System.- A Smart Parking and Reservation System for QR-Code-Based Car Park.- A Study on Smart Work Center.- An[...]

### Fields of interest

Management/Business for Professionals; Finance / Banking

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-41584-5](http://www.springer.com/978-3-642-41584-5)

### Hardcover

2013. VI, 151 p. 37 illus., 17 illus. in color. (Contributions to Economics)

ISBN 978-3-642-41584-5

**Due: January 31, 2014**

J.M. Cockburn, Université Laval, Québec, Canada; Y. Dissou, University of Ottawa, Ottawa, Canada; J.-Y. Duclos, Laval University, Québec, Canada; L. Tiberi, Laval University, Québec, Canada (Eds.)

## Infrastructure and Economic Growth in Asia

Public spending on infrastructure plays an important role in promoting economic growth and poverty alleviation. Empirical studies unequivocally show that under-investment in infrastructure limit economic growth. At the same time, numerous other studies have shown that investment in infrastructure can be a highly effective tool in fighting poverty reduction. In that context, the financing of infrastructure has been a critical element of most economic growth and poverty reduction strategies in developing countries, since the start of this millennium. This book provides a comparative analysis of the aggregate and sectoral implications of higher spending on infrastructure in three very[...]

### Features

Public spending on infrastructure plays an important role in promoting economic growth and poverty alleviation. Empirical studies unequivocally show that under-investment in infrastructure limits economic growth. At the same time, numerous other studies have shown that investment in infrastructure can be an effective tool in fighting poverty reduction. In that context, the financing of infrastructure has been [...]

### Contents

Introduction.- Infrastructure and Growth.- Approach.- China.- Pakistan.- Philippines.- Summary and conclusion.

### Fields of interest

Development Economics; Economic Growth; Public Finance & Economics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03136-1](http://www.springer.com/978-3-319-03136-1)

### Hardcover

2013. IX, 148 p. 19 illus., 15 illus. in color. (Economic Studies in Inequality, Social Exclusion and Well-Being) ISBN 978-3-319-03136-1

**usually dispatched within 3 to 5 business days  
December 31, 2013**

W.D. Cook, York University, Toronto, Canada; J. Zhu, Worcester Polytechnic Institute, Worcester, USA (Eds.)

## Data Envelopment Analysis

A Handbook of Modeling Internal Structure and Network

This handbook serves as a complement to the Handbook on Data Envelopment Analysis (eds, W.W. Cooper, L.M. Seiford and J. Zhu, 2011, Springer) in an effort to extend the frontier of DEA research. It provides a comprehensive source for the state-of-the-art DEA modeling on internal structures and network DEA. Chapter 1 provides a survey on two-stage network performance decomposition and modeling techniques. Chapter 2 discusses the pitfalls in network DEA modeling. Chapter 3 discusses efficiency decompositions in network DEA under three types of structures, namely series, parallel and dynamic. Chapter 4 studies the determination of the network DEA frontier. In chapter 5 additive[...]

### Features

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### Contents

DEA for Two-State Networks: Efficiency Decompositions and Modeling Techniques.- Network DEA Pitfalls: Divisional Efficiency and Frontier Projection.- Efficiency Decomposition in Network Data Envelopment Analysis.- Two-Stage Network Processes: DEA Frontier Identification.- Additive Efficiency Decomposition in Network DEA.- Scale Efficiency Measurement in Two-Stage Production Systems.- Decomposing Efficiency and Returns to Scale in Two-Stage Network Systems.- Evaluating Two-Stage Network Structures: Bargaining Game Approach.- Shared Resources and Efficiency Decomposition in Two-Stage[...]

### Fields of interest

Operation Research / Decision Theory; Operations Research, Mathematical Programming; Industrial and Production Engineering

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-1-4899-8067-0](http://www.springer.com/978-1-4899-8067-0)

### Hardcover

2014. XVI, 700 p. 109 illus., 41 illus. in color. (International Series in Operations Research & Management Science, Vol. 208)

ISBN 978-1-4899-8067-0

**Due: February 28, 2014**

T.U. Daim, Portland State University, Portland, USA; M. Pizarro, Daimler Trucks North America, Happy Valley, USA; R. Talla, GE Healthcare, Hillsboro, USA (Eds.)

## Planning and Roadmapping Technological Innovations

### Cases and Tools

Across industries, firms vary broadly on how they operate with respect to their Research & Development (R&D) activities. This volume presents a holistic approach to evaluating the critical elements of R&D management, including planning, organization, portfolio management, project management, and knowledge transfer—by assessing R&D management from different sectors. Featuring empirical research and in-depth case studies from industries as diverse as medical imaging, electric vehicles, and cyber security, the authors identify common features of successful R&D management, despite fundamental differences, such as company size, number of employees, industry sector, and the R&D budget. In[...]

### Features

Across industries, firms vary broadly on how they operate with respect to their Research & Development (R&D) activities. This volume presents a holistic approach to evaluating the critical elements of R&D management, including planning, organization, portfolio management, project management, and knowledge transfer—by assessing R&D management from different sectors. Featuring empirical [...]

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Preface.- 1 Communication.- 2 Project Selection.- 3 Design Structure Matrix.- 4 Project Management Criteria.- 5 Technology Road Mapping for Medical Imaging.- 6 Technology Roadmap: The 'Complete EHR' Toward Higher Quality Patient care.- 7 Technology Roadmap for Automotive Flexible Display.- 8 Technology Roadmap for Next Generation PC.- 9 Technology Roadmap for Tesla Motors Sedan EV.- 10 A Proposed Roadmap for Cyber Security in Cloud Computing at Portland State University.

### Fields of interest

Technology Management; R & D / Technology Policy; Business Strategy / Leadership

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-02972-6](http://www.springer.com/978-3-319-02972-6)

### Hardcover

2014. XII, 270 p. 102 illus., 95 illus. in color. (Innovation, Technology, and Knowledge Management)  
ISBN 978-3-319-02972-6

**Due: December 31, 2013**

P. Dorman, The Evergreen State College, Olympia, USA

## Macroeconomics

### A Fresh Start

The world has changed dramatically in recent years and so has the field of economics, but many introductory economics textbooks have remained stuck in the past. This book provides a new beginning for the study of macroeconomics, fundamentally international in its approach and emphasizing current debates and research trends. The first, mostly descriptive half of the book presents the main macroeconomic and financial patterns observed across the world, the institutions that govern national economies and the policy options available to decision-makers. In the second half, different schools of thought in macroeconomics are introduced with an emphasis on their underlying assumptions, so[...]

### Features

The world has changed dramatically in recent years and so has the field of economics, but many introductory economics textbooks have remained stuck in the past. This book provides a new beginning for the study of macroeconomics, fundamentally international in its approach and emphasizing current debates and research trends. The first, mostly descriptive half of the book presents the main macroeconomic and [...]

### Contents

1 Introduction: Economic Growth and Development in Historical Perspective.- 2 Some Relevant Microeconomics.- Part I: The Terrain of Macroeconomics.- 3 Accounts and Measurements.- 4 The Fundamental Macroeconomic Identities.- 5 Macroeconomic Issues: Output, Employment, Inflation, Financial Stability.- 6 Macroeconomic Adjustment.- 7 An Introduction to Money, Banks and Financial Systems.- 8 International Finance: A World of Many Moneys.- 9 International Trade in an Interdependent World.- Part II: Macroeconomic Theories in Conflict.- 10 Classical Economic Doctrine and the Keynesian[...]

### Fields of interest

Macroeconomics / Monetary Economics; Economics

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-3-642-37440-1](http://www.springer.com/978-3-642-37440-1)

### Hardcover

2014. Approx. 350 p. 117 illus. (Springer Texts in Business and Economics)  
ISBN 978-3-642-37440-1

**Due: January 31, 2014**

P. Dorman, The Evergreen State College, Olympia, USA

## Microeconomics

### A Fresh Start

The world has changed dramatically in recent years and so has the field of economics, but many introductory economics textbooks have remained stuck in the past. This book provides a new beginning for the study of microeconomics, emphasizing current debates and research trends. It is international in outlook and reflects the shift toward empirical methods, as well as the study of institutions and economic behavior. It is also written to fit in with an approach to teaching based on active learning and critical thinking. Mainstream material is still covered, but within a new context, making it more relevant, realistic and responsive to the deeper questions economists are now asking about[...]

### Features

The world has changed dramatically in recent years and so has the field of economics, but many introductory economics textbooks have remained stuck in the past. This book provides a new beginning for the study of microeconomics, emphasizing current debates and research trends. It is international in outlook and reflects the shift toward empirical methods, as well as the study of institutions and economic [...]

### Contents

Part I: Foundations.- 1 Economics and the Economy.- 2 Economics Yesterday and Today.- 3 Four Building Blocks of Economic Theory.- 4 Values and Objectives.- 5 Analyzing Markets.- 6 Markets and Human Well-Being. Appendix: Markets and Freedom.- 7 Markets.- 8 Firms.- 9 Government.- 10 Civil Society.- Part III: A Closer Look at Markets.- 11 The Theory of Demand. Appendix: Indifference Curves.- 12 Production Costs and the Theory of Supply.- 13 Monopoly Power.- 14 The Economics of Bargaining Power.- 15 Market Failure.- Part IV: Microeconomic Challenges.- 16 Labor and Employment.- 17 Financial[...]

### Fields of interest

Microeconomics; Political Economy

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-3-642-37433-3](http://www.springer.com/978-3-642-37433-3)

### Hardcover

2014. Approx. 350 p. 116 illus. (Springer Texts in Business and Economics)  
ISBN 978-3-642-37433-3

**Due: January 31, 2014**

G. Dutrenit, G. Crespi (Eds.)

## Science, Technology and Innovation Policies for Development

The Latin American Experience

This book examines the implementation of science, technology and innovation (STI) policy in eight Latin American countries and the different paths these policies have taken. It provides empirical evidence to examine the extent to which STI policies are contributing to the development of the region, as well as to the solution of market failures and the stimulus of the region's innovation systems. Since the pioneering work of Solow (1957), it has been recognized that innovation is critical for economic growth both in developed and in less-developed countries. Unfortunately Latin America lags behind world trends and although over the last 20 years the region has established a more stable[...]

### Features

This book examines the implementation of science, technology and innovation (STI) policy in eight Latin American countries and the different paths these policies have taken. It provides empirical evidence to examine the extent to which STI policies are contributing to the development of the region, as well as to the solution of market failures and the stimulus of the region's innovation systems. [...]

### Contents

1. The changing role of science, technology and innovation policy in building systems of innovation: the case of Mexico.- 2. Evolution of the Public Institutions of Science, Technology and Innovation in Chile: 1990-2012.- 3. Insights into the impact of BID's Technology Modernization Program on Argentina's STI policy.- 4. Innovation, Production and Innovation Systems and the BNDES' Contribution.- 5. Inclusive Innovation Against all Odds: the case of Peru.- 6. Value attributed to STI Activities and Policies in Uruguay.- 7. From Design to the Institutional Construction of a Policy for[...]

### Fields of interest

R & D / Technology Policy; Technology Management; Engineering Economics, Organization, Logistics, Marketing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04107-0](http://www.springer.com/978-3-319-04107-0)

### Hardcover

2014. I, 334 p. 8 illus., 4 illus. in color. ISBN 978-3-319-04107-0

Due: April 28, 2014

M.A. Ferraz Dias de Moraes, University of São Paulo, San Dimas, Brazil; D. Zilberman, University of California, Berkeley, USA

## Production of Ethanol from Sugarcane in Brazil

From State Intervention to a Free Market

The success of Brazil in the large-scale production and use of fuel ethanol has been widely discussed and analyzed by other countries interested in adopting policies designed to encourage the use of bio-fuels. Within this context, certain questions arise: Could the Brazilian experience be replicated in other countries? What were the conditions that enabled the creation of the Brazilian Proálcool (National Ethanol Program) and what lessons can be learned? To examine these issues, it is important to understand the functioning of the key, interconnected markets (those for sugarcane, sugar and ethanol), which, from their inception, were the objects of extensive government intervention until[...]

### Features

The success of Brazil in the large-scale production and use of fuel ethanol has been widely discussed and analyzed by other countries interested in adopting policies designed to encourage the use of bio-fuels. Within this context, certain questions arise: Could the Brazilian experience be replicated in other countries? What were the conditions that enabled the creation of the Brazilian Proálcool (National [...])

### Contents

Production of Ethanol from Sugarcane in Brazil.- From State Intervention to a Free Market.- Introduction.- PART I.- STATE INTERVENTION IN THE SUGARCANE ETHANOL INDUSTRY IN BRAZIL.- State intervention in the chain of production of ethanol from sugarcane in Brazil: its forms and effects on the development of the sector between the 1930s and 1980s.- PART II.- THE GOVERNMENT DISTANCES ITSELF IN THE 1990S: THE BREAK AND THE LEARNING CURVE.- The 1990s: deregulation of the sector.- Organizational changes within the public sphere.- Organizational changes within the private sphere.- Changes[...]

### Fields of interest

Environmental Economics; Energy Policy, Economics and Management; Environmental Law / Policy / Ecojustice; Development Economics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03139-2](http://www.springer.com/978-3-319-03139-2)

### Hardcover

2014. 275 p. 36 illus. in color. (Natural Resource Management and Policy, Vol. 43) ISBN 978-3-319-03139-2

Due: December 15, 2013

K. Ganesh, McKinsey Knowledge Center India, Gurgaon, India; S. Mohapatra, S. Nagarajan

## Design and Development of Knowledge Management for Manufacturing

Framework, Solution and Strategy

This book examines the modules/elements required before implementing knowledge management solutions in typical manufacturing and service industry. The objective is to develop a framework, design and model suitable for all requirements and a strategy to properly implement. Related case studies from organizations are included, with the results provided to use as a solution to problems experienced when implementing knowledge management in the industry. Implementing a knowledge management system can be complex and dynamic, no matter how well planned and developed. Inevitably a degree of organizational inertia is focused on the current state rather than the new. Within an enterprise,[...]

### Features

This book examines the modules/elements required before implementing knowledge management solutions in typical manufacturing and service industry. The objective is to develop a framework, design and model suitable for all requirements and a strategy to properly implement. Related case studies from organizations are included, with the results provided to use as a solution to problems experienced when [...]

### Contents

Introduction.- Literature Review.- Readiness Assessment for Knowledge Management Solution Implementation.- Behavior Assessment for Knowledge Management Solutions Implementation.- Taxonomy and Technology Architecture for Knowledge Management Solution Implementation.- Process Design for Knowledge Management Solution Implementation.- Learning Design for Knowledge Management Solution Implementation.- Balance Scorecard Framework for Knowledge Management Solution Implementation.- Vendor Management Framework for Knowledge Management Solution Implementation. Conclusions.

### Fields of interest

Production / Logistics; Industrial Organization; Industrial and Production Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02891-0](http://www.springer.com/978-3-319-02891-0)

### Hardcover

2014. XIX, 194 p. 93 illus., 8 illus. in color. ISBN 978-3-319-02891-0

usually dispatched within 3 to 5 business days

M. Gascó-Hernández (Ed.)

## Open Government

### Opportunities and Challenges for Public Governance

On January 2009, President Obama signed the Memorandum on Transparency and Open Government. The memorandum declares the new Administration's commitment to creating an unprecedented level of openness in Government and establishing a system linking three principles: transparency, public participation and collaboration. Since then, federal agencies in the United States and public administrations around the world have embarked on open government initiatives and have worked to redefine their relationship with citizens and with each other. On September 20th, 2011, eight governments gathered in New York City to launch the Open Government Partnership, a new multilateral initiative to promote[...]

### Features

On January 2009, President Obama signed the Memorandum on Transparency and Open Government. The memorandum declares the new Administration's commitment to creating an unprecedented level of openness in Government and establishing a system linking three principles: transparency, public participation and collaboration. Since then, federal agencies in the United States and public administrations around the world [...]

### Contents

1.Preface.- 2.List of contributors.- 3.Introduction.- 4.Section I. Open government theories.- 5.Section II. Open government case studies.- 6.Section III. Conclusions.

### Fields of interest

Public Administration; Political Science, general; Comparative Politics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9562-8](http://www.springer.com/978-1-4614-9562-8)

### Hardcover

2014. Approx. 350 p. 40 illus. in color.  
ISBN 978-1-4614-9562-8

**Due: February 28, 2014**

A. Grove, CSU Channel Islands, Camarillo, USA; G. Berg, CSU-Channel Islands, Camarillo, USA (Eds.)

## Social Business

### Theory, Practice, and Critical Perspectives

Conceptualized and put into practice by Nobel Peace Prize Laureate and Presidential Medal of Freedom recipient Dr. Muhammad Yunus, social businesses work to address social ills such as poverty, lack of health care, gaps in education and environmental challenges. This book explores the ideation, practice and evaluation of the concept of social business. Not just theoretical foundations but several case studies of social businesses around the world and state-of-the-art assessment of the issues that arise in the planning, marketing and evaluation of social businesses, are featured in this book. This cutting-edge collection of articles, presented by the California Institute for Social[...]

### Features

Conceptualized and put into practice by Nobel Peace Prize Laureate and Presidential Medal of Freedom recipient Dr. Muhammad Yunus, social businesses work to address social ills such as poverty, lack of health care, gaps in education, and environmental challenges. This book explores the ideation, practice and evaluation of the concept of social business. Not just theoretical foundations, but several case [...]

### Contents

Part I: Introduction: Background and Theory.- Part II: Case Studies.- Part III: Practice: Lessons Learned About Designing Social Businesses.

### Fields of interest

Non-Profit Enterprises / Corporate Social Responsibility; Entrepreneurship; Sustainable Development

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-45274-1](http://www.springer.com/978-3-642-45274-1)

### Hardcover

2014. VIII, 258 p. 22 illus., 17 illus. in color.  
ISBN 978-3-642-45274-1

**Due: February 28, 2014**

G. Halevi, Technion, Tel Aviv, Israel

## Industrial Management -- Control and Profit

### A Technical Approach

This volume presents controlling tools for management in order to be in a position to communicate with control engineers concerning technological decisions. The main objective of manufacturing management is to make profit. However, in traditional manufacturing systems none of the separate stages in the process support this objective. Management is not expert in any of these stages and therefore is dependent on specific experts at each stage and must follow their decisions. Each stage has its own first priority which is not profit and cost. This means that management does not have real control over these functional stages, nor over the process as a whole. This book presents controlling[...]

### Features

This volume presents controlling tools for management in order to be in a position to communicate with control engineers concerning technological decisions. The main objective of manufacturing management is to make profit. However, in traditional manufacturing systems none of the separate stages in the process support this objective. Management is not expert in any of these stages, and therefore is [...]

### Contents

1 Introduction.- Part one: Management control engineering.- 2 Product design.- 3 Process planning.- 4 Lot size & Profit.- 5 Traditional production planning.- 6 Flexible production planning.- 7 Quality control SQC & SPC.- Part two: Engineering support management.- 8 Inventory and management control.- 9 Resource planning.- 10 Master production planning.- 11 Determine delivery date and cost.- 12 company level of performance.- Index.

### Fields of interest

Production / Logistics; Industrial and Production Engineering; Engineering Design

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03469-0](http://www.springer.com/978-3-319-03469-0)

### Hardcover

2014. 250 p. (Lecture Notes in Management and Industrial Engineering, Vol. 1)  
ISBN 978-3-319-03469-0

**Due: April 28, 2014**

R. Hall, University of Southern California, Los Angeles, USA (Ed.)

## Patient Flow

### Reducing Delay in Healthcare Delivery

This book is dedicated to improving healthcare through reducing delays experienced by patients. With an interdisciplinary approach, this new edition, divided into five sections, begins by examining healthcare as an integrated system. Chapter 1 provides a hierarchical model of healthcare, rising from departments, to centers, regions and the "macro system." A new chapter demonstrates how to use simulation to assess the interaction of system components to achieve performance goals, and Chapter 3 provides hands-on methods for developing process models to identify and remove bottlenecks, and for developing facility plans. Section 2 addresses crowding and the consequences of delay. Two new[...]

### Features

This book is dedicated to improving healthcare through reducing delays experienced by patients. With an interdisciplinary approach, this new edition, divided into five sections, begins by examining healthcare as an integrated system. Chapter 1 provides a hierarchical model of healthcare, rising from departments, to centers, regions and the "macro system." A new chapter demonstrates how to use simulation to [...]

### Contents

Modeling Patient Flows Through the Healthcare System.- Interdependency of Hospital Departments and Hospital-Wide Patient Flows.- Hospitals and Clinical Facilities, Processes and Design for Patient Flow.- Emergency Department Crowding, The Nature of the Problem and Why it Matters.- The Consequences of Emergency Department Crowding and Delays for Patients.- Access to Surgery and Medical Consequences of Delays.- Breakthrough Demand-Capacity Management Strategies to Improve Hospital Flow, Safety, and Satisfaction.- Managing Patient Appointments in Primary Care.- Waiting Lists for Surgery.- [...]

### Fields of interest

Operation Research / Decision Theory; Health Administration; Operations Research, Mathematical Programming

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9511-6](http://www.springer.com/978-1-4614-9511-6)

### Hardcover

2013. XII, 553 p. 107 illus. (International Series in Operations Research & Management Science, Vol. 206)  
ISBN 978-1-4614-9511-6

**Due: December 31, 2013**

K. Hallmann, German Sport University Cologne, Cologne, Germany; K. Petry, German Sport University Cologne, Cologne, Germany (Eds.)

## Comparative Sport Development

### Systems, Participation and Public Policy

The aim of this book is to provide an overview of perspectives and approaches to sports development focusing on sport systems, sport participation and public policy towards sports. It includes twelve European countries covering all regions of Europe and eleven countries from around the globe. The objective is to present an overview of the diversity of approaches taken to sport development, focusing on the different sport systems and how sport is financed, the underlying applications of sport policy and how it is reflected in sport participation. This book takes a comparative approach which is reflected in each chapter following a similar structure. The diversity of sports systems in[...]

### Features

The aim of this book is to provide an overview of perspectives and approaches to sports development focusing on sport systems, sport participation and public policy towards sports. It includes twelve European countries covering all regions of Europe and eleven countries from around the globe. The objective is to present an overview of the diversity of approaches taken to sport development, focusing on the [...]

### Contents

1. Introduction to sport development, sport participation and sport policies including theoretical framework. PART I: Europe.- 2. Belgium.- 3. Estonia.- 4. Finland.- 5. France.- 6. Germany.- 7. Hungary.- 8. Ireland.- 9. The Netherlands.- 10. Poland.- 11. Russia.- 12. Spain.- 13. UK.- PART II: The Rest of the World.- 14. Israel.- 15. China.- 16. Japan.- 17. India.- 18. Australia.- 19. New Zealand.- 20. South Africa.- 21. Uganda.- 22. Argentina.- 23. Brazil.- 24. USA.- 25. Canada.- PART III: Conclusion.- 26. Conclusion.

### Fields of interest

Economic Policy; Management/Business for Professionals; Business & Economics (general)

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-8904-7](http://www.springer.com/978-1-4614-8904-7)

### Hardcover

2013. X, 355 p. 56 illus., 5 illus. in color. (Sports Economics, Management and Policy, Vol. 8)  
ISBN 978-1-4614-8904-7

**usually dispatched within 3 to 5 business days**

M.R. Hammock, Middle Tennessee State University, Nashville, USA; J.W. Mixon, Berry College, Waynesville, USA

## Microeconomic Theory and Computation

### Applying the Maxima Open-Source Computer Algebra System

Economists can use computer algebra systems to manipulate symbolic models, derive numerical computations, and analyze empirical relationships among variables. Maxima is an open-source multiplatform computer algebra system that rivals proprietary software. Maxima's symbolic and computational capabilities enable economists and financial analysts to develop a deeper understanding of models by allowing them to explore the implications of differences in parameter values, providing numerical solutions to problems that would be otherwise intractable, and by providing graphical representations that can guide analysis. This book provides a step-by-step tutorial for using this program to [...]

### Features

Economists can use computer algebra systems to manipulate symbolic models, derive numerical computations, and analyze empirical relationships among variables. Maxima is an open-source multiplatform computer algebra system that rivals proprietary software. Maxima's symbolic and computational capabilities enable economists and financial analysts to develop a deeper understanding of models by allowing them to [...]

### Contents

1 Introduction.- 2 Simple Economic Models.- 3 Demand Theory: Preferences.- 4 Demand Theory: Constraints and Optimization.- 5 Preferences and Demand.- 6 Production Theory.- 7 Cost Theory.- 8 Firm and Industry Supply in the Short-run.- 9 Long-run Supply.- 10 Competitive Markets: Extensions and Application.- 11 General Equilibrium.- 12 Price-Searcher Markets.- 13 Nonlinear Pricing: Capturing Consumer Surplus.- 14 Oligopoly.- 15 Time.- 16 Uncertainty.

### Fields of interest

Microeconomics; Econometrics; Game Theory, Economics, Social and Behav. Sciences; Mathematical Software

### Target groups

Graduate

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9416-4](http://www.springer.com/978-1-4614-9416-4)

### Hardcover

2013. XIX, 385 p. 275 illus., 8 illus. in color.  
ISBN 978-1-4614-9416-4

**usually dispatched within 3 to 5 business days**

**December 31, 2013**

R.M. Harris, Centre for Research in Education, Mawson Lakes, Australia; Th.W. Short, Centre for Research in Education, Mawson Lakes, Australia (Eds.)

## Workforce Development

### Perspectives and Issues

This book captures the essence of current workforce development perspectives and draws on extensive global research to uncover a range of issues confronting organisations. Taking primarily an Australian outlook after the global financial crisis and tracing the progress of a national industry sector, each chapter delves into a major area of interest for leaders. Overall, the authors make the case that workforce development is an amalgam of activities influenced by context, politics and economic development. As the world becomes increasingly connected and mobile, workforce development is proving to be a major activity for organisations because it impacts their longer-term survival and [...]

### Features

This book captures the essence of current workforce development perspectives and draws on extensive global research to uncover a range of issues confronting organisations. Taking primarily an Australian outlook after the global financial crisis and tracing the progress of a national industry sector, each chapter delves into a major area of interest for leaders. Overall, the authors make the case that [...]

### Contents

1. Exploring the Notion of Workforce Development.- Part I Sustainability, Growth and Diversity.- 2. Attracting and Retaining Staff: The Role of Branding and Industry Image.- 3. International Developments in Skills Migration: A Case Study of the Opportunities, Threats and Dilemmas for Australia.- 4. Career Paths: Challenges and Opportunities.- 5. Skills Recognition and Recognition of Prior Learning for Workforce Development: Challenges and Possibilities.- 6. Recognition of the Skills and Knowledge of Indigenous Employees.- 7. Women and Engineering: A Workforce Development Issue.- Part II [...]

### Fields of interest

Personnel Management; Professional and Vocational Education

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-981-4560-57-3](http://www.springer.com/978-981-4560-57-3)

### Hardcover

2014. XVIII, 387 p. 23 illus.

ISBN 978-981-4560-57-3

usually dispatched within 3 to 5 business days

S. Heep

## China in Global Finance

### Domestic Financial Repression and International Financial Power

Against the backdrop of China's increasingly influential role in the international financial architecture, this book seeks to characterize and evaluate China's financial power potential. It does so by analyzing the relationship between domestic financial repression and international financial power in the context of the political economy of the developmental state. On the basis of a novel theoretical framework for the analysis of the financial power potential of developmental states, the book provides an in-depth analysis of China's approach to currency internationalization, its creditor status and its policies towards the Bretton Woods institutions while contrasting the country's [...]

### Features

Against the backdrop of China's increasingly influential role in the international financial architecture, this book seeks to characterize and evaluate China's financial power potential. It does so by analyzing the relationship between domestic financial repression and international financial power in the context of the political economy of the developmental state. On the basis of a novel theoretical framework [...]

### Contents

1 Introduction.- 2 Financial Power and the Developmental State.- 3 Financial Repression and Structural Financial Power.- 4 Financial Repression and Currency Internationalization.- 5 Financial Repression and Relational Financial Power.- 6 Developmental States in the Bretton Woods Institutions.- 7 Conclusion.

### Fields of interest

Emerging Markets / Globalization; Political Economy; Finance / Banking; International Relations; Financial Economics; International Economics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02465-3](http://www.springer.com/978-3-319-02465-3)

### Hardcover

2014. XVI, 156 p. (Global Power Shift)

ISBN 978-3-319-02465-3

Due: January 31, 2014

J.-L. Hervás-Oliver, Universitat Politècnica de València, Valencia, Spain; M. Peris-Ortiz (Eds.)

## Management Innovation

### Antecedents, Complementarities and Performance Consequences

Under a framework in which technology and organizational innovation are markedly separated, this book advances knowledge on the topic by exploring the antecedents of a firm's adoption of organizational innovation and its performance consequences. The concept of organizational innovation encompasses the introduction of new administrative organizational and managerial activities, although currently it is accepted that these terms overlap. There are two different kinds of organizational innovation, usually inter-related: structural innovations (organizational arrangement and the division of labour within it) and managerial innovations (the way a firm organizes its activities or its [...])

### Features

Under a framework in which technology and organizational innovation are markedly separated, this book advances knowledge on the topic by exploring the antecedents of a firm's adoption of organizational innovation and its performance consequences. The concept of organizational innovation encompasses the introduction of new administrative organizational and managerial activities, although [...]

### Contents

Management Innovation: An Introduction.- Supermodularity in the complex management and technological innovation cross-roads.- Managing management innovation in the UK.- Management innovation: antecedents of its adoption.- Understanding technological and managerial complementarities.- Organizational innovation.- Management innovation and its organizational effects.- Unfolding longitudinal data for management innovation adopters.- Management innovation in Germany.

### Fields of interest

Technology Management; Organization / Planning; Business Strategy / Leadership

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03133-0](http://www.springer.com/978-3-319-03133-0)

### Hardcover

2014. VI, 160 p. 17 illus., 3 illus. in color. (Springer Proceedings in Business and Economics)

ISBN 978-3-319-03133-0

Due: February 28, 2014

S.O. Idowu, K. Çaliyurt, Trakya Universitesi, Edirne, Turkey (Eds.)

## Corporate Governance

An International Perspective

This book brings together a representative collection of perspectives on the way how corporate governance is being aligned with the social responsibility of an organization and the accountability of its management both in large corporations and in medium sized businesses. Examples are given from various industries and branches as well as from different countries and regions across the globe. All examples are commented and explained in detail. Written by a group of selected academic teachers this book is suitable for adoption as a resource for a case driven approach to teaching "Corporate Governance" courses at an upper undergraduate or graduate level.

### Features

This book brings together a representative collection of perspectives on the way how corporate governance is being aligned with the social responsibility of an organization and the accountability of its management both in large corporations and in medium sized businesses. Examples are given from various industries and branches as well as from different countries and regions across the globe. All examples are [...]

### Contents

Part I: Corporate Governance in Europe.- Part II: Corporate governance in Africa.- Part III: Corporate Governance in Asia.- Part IV: Final Words.

### Fields of interest

Organization / Planning; Business Strategy / Leadership; Emerging Markets / Globalization; Non-Profit Enterprises / Corporate Social Responsibility; Ethics

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-45166-9](http://www.springer.com/978-3-642-45166-9)

### Hardcover

2014. Approx. 450 p.

ISBN 978-3-642-45166-9

**Due: February 28, 2014**

K. Ito, Hitotsubashi University, Kunitachi, Japan; M. Nakano, Hitotsubashi University, Kunitachi, Japan (Eds.)

## International Perspectives on Accounting and Corporate Behavior

Despite the globalization of accounting standards occurring through convergence to International Financial Reporting Standards, local accounting systems are deeply intertwined with each country's unique institutions such as its corporate system, disclosure practices and enforcement mechanisms. First, this book empirically analyzes the effects of globalization and localization of accounting rules on corporate behavior such as earnings management, signaling, investment behavior and dividend payout policy. Second, the book unravels the economic consequences of disclosure based on the concept of self-disciplining enforcement such as management forecasts, environmental disclosures and risk[...]

### Features

Despite the globalization of accounting standards occurring through convergence to International Financial Reporting Standards, local accounting systems are deeply intertwined with each country's unique institutions such as its corporate system, disclosure practices, and enforcement mechanisms. First, this book empirically analyzes the effects of globalization and localization of accounting rules on corporate [...]

### Contents

1 Overview (Kunio Ito). Part 1 Earnings Attributes and Corporate Behavior.- 2 What do Smoothed Earnings Tell Us about the Future? (Yusuke Takasu and Makoto Nakano).- 3 The Effect of Accounting Conservatism on Corporate Investment Behavior (Souhei Ishida and Kunio Ito).- 4 Matching expenses with revenues around the world (Tetsuyuki Kagaya ).- 5 Does Comprehensive Income Influence Dividends? Empirical Evidence from Japan (Kunio Ito and Takuma Kochiyama).- 6 Accounting Policy Choice for Negative Goodwill (Yukari Takahashi).- 7 Fair Value Accounting of Pension Liabilities and Discretionary[...]

### Fields of interest

Accounting / Auditing; Business Taxation; Business & Management Science; Finance / Banking

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-4-431-54791-4](http://www.springer.com/978-4-431-54791-4)

### Hardcover

2014. X, 350 p. 43 illus., 34 illus. in color. (Advances in Japanese Business and Economics, Vol. 6)

ISBN 978-4-431-54791-4

**Due: January 31, 2014**

M. Kolbusa, EXECUTIVE Consulting GmbH, Hamburg, Germany

## Implementation Management

High-Speed Strategy Implementation

Current technological, demographic and globalization trends are not only leading to intensified competition; they also indicate that new business models are rapidly emerging but only to disappear again just as quickly. Timely recognition of the new changes, jettisoning of old approaches and rapid implementation of the currently required changes within a company are now decisive competitive factors. Those who best survive (and thrive) in the future will be those who dramatically increase their success rate within this change process. Building on his best-selling book "The Strategy Scout" Matthias Kolbusa explains the decisive principles in this rapidly changing business environment.

### Features

Current technological, demographic and globalization trends are not only leading to intensified competition; they also indicate that new business models are rapidly emerging, but only to disappear again just as quickly. Timely recognition of the new changes, jettisoning of old approaches, and rapid implementation of the currently required changes within a company are now decisive competitive factors. Those who [...]

### Contents

The Difference Between Goal, Strategy, Tactics and Execution.- The Implementation Dilemma.- The Quintessence of Implementation Success – Concept Development.- Method Cancer – Diagnosis, Elimination and Avoidance.- How Not to Be Confused – Mastering Complexity.- The Million Dollar Question – What About Integration?.- Staying on the Ball – Consistency Instead of Severity.- Moving Up a Gear – Implementation Gravitation and Implementation Excellence.- Overview – Quick Steps to Accelerate Implementation.- Appendix.

### Fields of interest

Business Strategy / Leadership; Organization / Planning; Project Management

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-642-42035-1](http://www.springer.com/978-3-642-42035-1)

### Hardcover

2014. I, 269 p. 44 illus. (Management for Professionals)

ISBN 978-3-642-42035-1

**Due: January 31, 2014**

P. Korhonen, Aalto University, Helsinki, Finland; H. Moskowitz, Purdue University, West Lafayette, USA; J. Wallenius, Aalto University, Helsinki, Finland

## The Rocky Road to Publishing in the Management and Decision Sciences

This book documents the history of two research papers, from the first drafts to the final polished published articles, including the reviewer comments and the author responses. The documentary provides unique insights into the publishing process, which at times is filled with uncertainties, not only for young researchers. The book discusses lessons learned and also provides an experienced editor's and reviewer's perspective. In the light of the high pressure on young faculty to publish successfully, this book offers itself as a guide to publishing efficiently and effectively in a highly competitive scientific environment.

### Features

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### Contents

Part 1: Prologue.- Part 2: Case Study 1 (Choice Behaviour in Interactive MCDM: A Rocky road).- Part 3: Case Study 2 (Can a Linear Value Function Explain Choices? An Experimental Study: A Not So Rocky Road).- Part 4: Epilogue.

### Fields of interest

Operation Research / Decision Theory; Operations Research, Mathematical Programming; Business & Management Science

### Target groups

Research

### Type of publication

Brief

More on [www.springer.com/978-3-642-42047-4](http://www.springer.com/978-3-642-42047-4)

### Softcover

2014. VIII, 181 p. 15 illus. (SpringerBriefs in Business) ISBN 978-3-642-42047-4

**Due: January 31, 2014**

P. Koundouri, Athens University of Economics and Business, Athens, Greece; N.A. Papandreu, Andreas G. Papandreu Foundation, Athens, Greece (Eds.)

## Water Resources Management Sustaining Socio-Economic Welfare

**The Implementation of the European Water Framework Directive in Asopos River Basin in Greece**

The aim of this book is to offer a river-basin management plan which is directly implementable and consistent with the European Union - Water Framework Directive (EU WFD). The contributors, who are leading world experts in their respective fields, develop an integrated water resources management plan for the Asopos river basin in Greece which is economically efficient, socially equitable and environmentally sustainable. The program offers explicit technical and investment solutions, socioeconomic and legal instruments and recommendations for institutional restructuring. The introductory chapter describes the water situation in Greece and assesses the potential of timely implementation[...]

### Features

The aim of this book is to offer a river-basin management plan which is directly implementable and consistent with the European Union - Water Framework Directive (EU WFD). The contributors, who are leading world experts in their respective fields, develop an integrated water resources management plan for the Asopos river basin in Greece which is economically efficient, socially equitable and environmentally [...]

### Contents

Contributors.- Preface.- Chapter 1: A Bird's Eye View of the Greek Water Situation: The Potential for the Implementation of the EU WFD.- Chapter 2: Introducing the Case Study, the Asopos River Basin in Greece.- Chapter 3: The Economic Characterization of Asopos River Basin.- Chapter 4: Simulating Residential Water Demand and Water Pricing Issues.- Chapter 5: An Econometric Analysis of Agricultural Production, Focusing on the Shadow Price of Groundwater: Policies Towards Socio-Economic Sustainability.- Chapter 6: A Choice Experiment for the Estimation of the Economic Value of the River[...]

### Fields of interest

Environmental Economics; Waste Management / Waste Technology; Social Sciences (general); Earth Sciences (general); Water, general; Statistics (general)

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-94-007-7635-7](http://www.springer.com/978-94-007-7635-7)

### Hardcover

2014. XXIII, 181 p. 27 illus., 22 illus. in color. (Global Issues in Water Policy, Vol. 7) ISBN 978-94-007-7635-7

**usually dispatched within 3 to 5 business days  
December 31, 2013**

D. Köhn, KfW Entwicklungsbank, Frankfurt am Main, Germany (Ed.)

## Microfinance 3.0

**Reconciling Sustainability with Social Outreach and Responsible Delivery**

This book focuses on the achievements, current trends and further potential of microfinance to scale-up and serve many more clients with financial services that enable them to improve their living conditions. The book asks what it takes to achieve sustainable impact: to know your clients and to understand their needs, to treat them in a fair and transparent way, and to safeguard the synthesis between the financial and social dimension of sustainable microfinance. The book also sheds light on the future funding landscape and what is necessary to bring more commercial funders on board while ensuring that these new funders will continue the commitment to responsible finance. While being[...]

### Features

This book focuses on the achievements, current trends and further potential of microfinance to scale-up and serve many more clients with financial services that enable them to improve their living conditions. The book asks what it takes to achieve sustainable impact: to know your clients and to understand their needs, to treat them in a fair and transparent way, and to safeguard the synthesis between the [...]

### Contents

Microfinance in India: Lessons from the Andhra Crisis.- Armageddon or Adolescence? Making Sense of Microfinance's Recent Travails.- Core Values of Microfinance Under Scrutiny: Back to Basics?.- Microcredit Interest Rates and Their Determinants: 2004 - 2011.- Financial Services That Clients Need: The 3.0 Business Models, Reconciling Outreach with Sustainability.- "Microfinance 3.0" - Perspectives for Sustainable Financial Service Delivery.- Microfinance Beyond the Standard? Evaluating Adequacy and Performance of Agricultural Microcredit.- The Role of DFIs in the Emerging 3.0 Responsible[...]

### Fields of interest

Development Economics; Financial Economics; Finance / Banking; Business Strategy / Leadership; Ethics; Economic Growth

### Target groups

Professional/practitioner

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-41703-0](http://www.springer.com/978-3-642-41703-0)

### Hardcover

2013. XI, 199 p. 38 illus. ISBN 978-3-642-41703-0

**usually dispatched within 3 to 5 business days  
December 31, 2013**

C. Leardini, University of Verona, Verona, Italy; G. Rossi, University of Udine, Udine, Italy; S. Moggi, University of Verona, Verona, Italy

## Board Governance in Bank Foundations

### The Italian Experience

Bank foundations serve an important purpose in the Italian nonprofit sector. This book presents the legal grounds, areas of intervention, and basic tools involved in the asset management and grant-making activities that such organizations undertake. A special emphasis focuses on the analyses of the organizational structure of bank foundations and the relevant aspects of governance, particularly with regard to the composition, roles, and responsibilities of bank foundation boards. The general reduction in the resources to which they have access requires a new strategy that clearly defines long-term goals and the necessary procedures to achieve them. The topic of strategic planning is [...]

### Features

Bank foundations serve an important purpose in the Italian nonprofit sector. This book presents the legal grounds, areas of intervention, and basic tools involved in the asset management and grant-making activities that such organizations undertake. A special emphasis focuses on the analyses of the organizational structure of bank foundations and the relevant aspects of governance, particularly with regard to [...]

### Contents

Italian Bank Foundations and Governance.- Outlining Italian Bank Foundations.- Governance Roles and Responsibilities.- Composition of the Boards.- Governance and Strategic Planning.- Appendix.

### Fields of interest

Non-Profit Enterprises / Corporate Social Responsibility; Finance / Banking; Organization / Planning

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41305-6](http://www.springer.com/978-3-642-41305-6)

### Hardcover

2014. IV, 123 p. 13 illus., 5 illus. in color. (Contributions to Management Science)  
ISBN 978-3-642-41305-6

**Due: February 28, 2014**

C.-F. Lee, Rutgers University, New Brunswick, USA; J.C. Lee (Eds.)

## Handbook of Financial Econometrics and Statistics

The Handbook of Financial Econometrics and Statistics provides, in three volumes and over 100 chapters, a comprehensive overview of the primary methodologies in econometrics and statistics as applied to financial research. Including overviews of key concepts by the editors and in-depth contributions from leading scholars around the world, the Handbook is the definitive resource for both classic and cutting-edge theories, policies, and analytical techniques in the field. Volume 1 (Parts I and II) covers all of the essential theoretical and empirical approaches. Volumes 2 and 3 feature contributed entries that showcase the application of financial econometrics and statistics to such[...]

### Features

The Handbook of Financial Econometrics and Statistics provides, in three volumes and over 100 chapters, a comprehensive overview of the primary methodologies in econometrics and statistics as applied to financial research. Including overviews of key concepts by the editors and in-depth contributions from leading scholars around the world, the Handbook is the definitive resource for both classic and [...]

### Contents

Introduction to Financial Econometrics and Statistics.- Experience, Information Asymmetry, and Rational Forecast Bias.- An Overview of Modeling Dimensions for Performance Appraisal of Global Mutual Funds.- Simulation as a Research Tool for Market Architects.- Motivations for Issuing Puttable Debt: An Empirical Analysis.- Multi Risk-Premia Model of U.S. Bank Returns: An Integration of CAPM and APT.- Non-Parametric Bounds for European Option Prices.- Can Time-Varying Copulas Improve Mean-Variance Portfolio?- Determinations of Corporate Earnings Forecast Accuracy: Taiwan Market[...]

### Fields of interest

Finance / Banking; Quantitative Finance; Statistics for Business, Economics, Mathematical Finance, Insurance; Econometrics

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-1-4614-7749-5](http://www.springer.com/978-1-4614-7749-5)

### Hardcover

2014. Approx. 1500 p. In 3 volumes, not available separately.

ISBN 978-1-4614-7749-5

**Due: April 30, 2014**

### Hardcover

2014. Approx. 1500 p. Print + eReference. In 3 volumes, not available separately.

ISBN 978-1-4614-7751-8

**Due: April 30, 2014**

R. Levaggi, University of Brescia, Brescia, Italy; M. Montefiori, University of Genoa, Genova, Italy (Eds.)

## Health Care Provision and Patient Mobility

### Health Integration in the European Union

Patient mobility across Europe is markedly increasing and new generations will actively ask to be treated by the health-care system that best meets their needs. At a political level, the EU issued the EU Directive no. 24/2011/CE of 9th March 2011 concerning the application of patients' rights in cross-border health care and has contributed to improving the level of freedom of choice for the European citizen, but it does not seem to have increased actual patient mobility across Europe. Freedom to choose is necessary to grant the people of Europe the same access to public-sector health-care services. The latter is a key instrument for an efficiently functioning "single market" ensuring[...]

### Features

Patient mobility across Europe is markedly increasing and new generations will actively ask to be treated by the health-care system that best meets their needs. At a political level, the EU issued the EU Directive no. 24/2011/CE of 9th March 2011 concerning the application of patients' rights in cross-border health care and has contributed to improving the level of freedom of choice for the European [...]

### Contents

Patient choice, mobility and competition among health care providers.- Using Discrete Choice Experiments to understand preferences in health care.- Implications of the EU patients' rights directive in cross-border healthcare on the German sickness fund system.- The possible effects of health professional mobility on access to care for patients.- Patient choice and mobility in the UK Health System: Internal and external markets.- What drives patient mobility across Italian regions? Evidence from hospital discharge data.- The impact of federalism on the healthcare system in terms of[...]

### Fields of interest

Health Economics; Migration; Statistics for Social Science, Behavioral Science, Education, Public Policy, and Law; Computational Mathematics and Numerical Analysis; Economic Policy; Public Finance & Economics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-88-470-5479-0](http://www.springer.com/978-88-470-5479-0)

### Hardcover

2014. X, 244 p. 13 illus. (Developments in Health Economics and Public Policy, Vol. 12)

ISBN 978-88-470-5479-0

**Due: December 31, 2013**

N. Longley, University of Massachusetts, Amherst, USA

## An Absence of Competition

The Sustained Competitive Advantage of the Monopoly Sports Leagues

This book takes a multi-disciplinary approach to analyzing the nature of 'competition' and 'competitive advantage' within the U.S. pro sport industry. By many measures, the four major pro sports leagues in the U.S. – the National Football League (NFL), National Basketball Association (NBA), National Hockey League (NHL), and Major League Baseball (MLB) – are now some of the most successful business entities in the country. While these established leagues have generally been highly profitable throughout their respective existences, the past two decades have been particularly lucrative, with franchise values in all four leagues growing rapidly, and at levels well beyond market rates of[...]

### Features

This book takes a multi-disciplinary approach to analyzing the nature of "competition" and "competitive advantage" within the U.S. pro sport industry. By many measures, the four major pro sports leagues in the U.S.–the National Football League (NFL), National Basketball Association (NBA), National Hockey League (NHL), and Major League Baseball (MLB)–are now some of the most successful business entities in [...]

### Contents

1 Introduction.- 2 Some Conceptual Foundations: A Primer on the Economic Structure of Professional Sport.- 3 The USFL as a Case Study.- 4 A Brief History of Post-World War II Rival Leagues.- 5 Explaining Competitiveness: Alternate Theoretical Frameworks.- 6 Property-Based Resources: Franchise Locations, Stadiums, and Players.- 7 Knowledge-Based Resources.- Managerial Competencies.- 8 The Way Ahead: The Prospects for the Re-Emergence of Rival Leagues.- Index.

### Fields of interest

Economics; Management/Business for Professionals; Media Management

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9484-3](http://www.springer.com/978-1-4614-9484-3)

### Hardcover

2013. XII, 119 p. (Sports Economics, Management and Policy, Vol. 5)

ISBN 978-1-4614-9484-3

**Due: December 31, 2013**

K.C.P. Low, S.O. Idowu, London Metropolitan University, London, United Kingdom; S.L. Ang, University of Brunei Darussalam, Gadong, Brunei Darussalam (Eds.)

## Corporate Social Responsibility in Asia

### Practice and Experience

This book presents a rich collection of research studies on the theory and practice of CSR in Asia. It includes valuable contributions of practice-oriented researchers from various Asian countries such as Brunei, China, India, Indonesia, Japan, Korea, Malaysia, and Singapore, and from several non-Asian countries, such as Australia, Canada and the USA. The book presents a comprehensive overview of the practice of CSR in Asia. Normally CSR is seen in the Western angles, but here, in this book, Asian philosophies and thoughts are also examined. Touted as the first of its kind, the book also compares Western and Asian perspectives on CSR and presents them in the light of Asian[...]

### Features

This book presents a rich collection of research studies on the theory and practice of CSR in Asia. It includes valuable contributions of practice-oriented researchers from various Asian countries such as Brunei, China, India, Indonesia, Japan, Korea, Malaysia, and Singapore, and from several non-Asian countries, such as Australia, Canada and the USA. The book presents a comprehensive overview of the practice [...]

### Contents

Part One: East and South Asia.- Part Two: Brunei and South East Asia/United States of America.- Part Three: Pacific Asia.

### Fields of interest

Non-Profit Enterprises / Corporate Social Responsibility; Business Strategy / Leadership; Regional Science

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-01531-6](http://www.springer.com/978-3-319-01531-6)

### Hardcover

2014. XXV, 203 p. 16 illus. (CSR, Sustainability, Ethics & Governance)

ISBN 978-3-319-01531-6

**usually dispatched within 3 to 5 business days**

K. Ludlow, Monash University, VIC, Australia; S.J. Smyth, University of Saskatchewan, Saskatoon, Canada; J. Falck-Zepeda, International Food Policy Research Inst., Washington, DC, USA (Eds.)

## Socio-Economic Considerations in Biotechnology Regulation

Within the context of the Convention on Biological Diversity (CBD), the Cartagena Protocol on Biosafety (CPB) was established as an implementing agreement. The CPB is an international agreement establishing the rights of recipient countries to be notified of and to approve or reject the domestic import and/or production of living modified organisms (LMOs). Decisions regarding import/production are to be on the basis of a biosafety assessment. Article 26.1 of the CPB allows for the (optional) inclusion of socio-economic considerations (SECs) into that biosafety assessment process. This book compiles expert assessments of the issues relevant to SEC assessment of LMOs and fundamental for[...]

### Features

Within the context of the Convention on Biological Diversity (CBD), the Cartagena Protocol on Biosafety (CPB) was established as an implementing agreement. The CPB is an international agreement establishing the rights of recipient countries to be notified of and to approve or reject the domestic import and/or production of living modified organisms (LMOs). Decisions regarding import/production are to be on the [...]

### Contents

Introduction to Regulating LMOs.- The State of Science-based Regulation and GM crops.- Socio-Economic Considerations and the Regulations of LMOs.- Benefits to Producers and Society.- Consumer Choice.- Environmental Impacts.- Ethical/Equity.- Food Security.- Health Impacts.- Impacts on Biodiversity.- Indigenous Knowledge.- Intellectual Property Rights.- Labor Impacts.- Market Access and Trade.- Producer Choice.- Religious/Cultural.- Animal Welfare.- Potential Consequences from the Inclusion of Socio-economics in Decision Making.- A Decision Making Framework for Implementation Issues.-[...]

### Fields of interest

Agricultural Economics; Food Science; R & D / Technology Policy

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9439-3](http://www.springer.com/978-1-4614-9439-3)

### Hardcover

2014. XII, 313 p. 15 illus., 5 illus. in color. (Natural Resource Management and Policy, Vol. 37)

ISBN 978-1-4614-9439-3

**usually dispatched within 3 to 5 business days**

**December 31, 2013**

A. Lundstrom, C. Zhou, MidSweden University, Shenyang, Beijing, China (P.R.); Y. von Friedrichs, E. Sundin (Eds.)

## Social Entrepreneurship

Leveraging Economic, Political, and Cultural Dimensions

This contributed volume features state-of-the-art research from ten different countries on implementation, institutionalization and the future prospects of social entrepreneurship. This volume aims at bringing together research that considers the context of economy, politics and cultural issues combining with the needs of social and human development. By conceptualizing the notion of social entrepreneurship and societal entrepreneurship, this volume aims to disseminate the numerous streams of research and theory of social entrepreneurship to educators, libraries, scholars, non-profit researchers, public policy makers, practitioners, undergraduate and graduate students, and any[...]

### Features

This contributed volume features state-of-the-art research from ten different countries on implementation, institutionalization and the future prospects of social entrepreneurship. This volume aims at bringing together research that considers the context of economy, politics and cultural issues combining with the needs of social and human development. By conceptualizing the notion of social entrepreneurship [...]

### Contents

Part 1: Rethinking Social Entrepreneurship.- Part 2: Implementing Social Entrepreneurship.- Part 3: The Institutionalization of Social Entrepreneurship.- Part 4: The Future of Social Entrepreneurship.

### Fields of interest

Entrepreneurship; Non-Profit Enterprises / Corporate Social Responsibility; Technology Management; Social Policy

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-01395-4](http://www.springer.com/978-3-319-01395-4)

### Hardcover

2014. VI, 363 p. 26 illus.  
ISBN 978-3-319-01395-4

**usually dispatched within 3 to 5 business days**

D. Maltritz, University of Erfurt, Erfurt, Germany; M. Berlemann, Helmut-Schmidt-University Hamburg, Hamburg, Germany (Eds.)

## Financial Crises, Sovereign Risk and the Role of Institutions

The recent world economic crisis showed very clearly that financial crises and sovereign defaults are severe threats to economic and social prosperity. In addition, it became apparent that currency crises and banking crises often occur together and are closely related to sovereign debt crises and defaults. The present book contains new research on various important issues related to financial crises and sovereign default risk by leading experts in the field. The book discusses new modelling approaches to financial crises, defaults and their interdependencies. It also sheds light on the consequences of different sorts of crises for the trust in the institutions which are concerned with[...]

### Features

The recent world economic crisis showed very clearly that financial crises and sovereign defaults are severe threats to economic and social prosperity. In addition, it became apparent that currency crises and banking crises often occur together and are closely related to sovereign debt crises and defaults. The present book contains new research on various important issues related to financial crises [...]

### Contents

Introduction.- Gold-backed Sovereign Bonds - An Effective Alternative to OMTs.- Trust in the European Central Bank Throughout the Worldwide Financial Crisis and the European Debt Crisis.- SIFIs in the Cross Sea - How Are Large German Banks Adjusting to a Rough Economic Environment and a New Regulatory Setting?.- The Endogenous Fragility at European Periphery.- The Danger of Tax Havens for Financial Stability.- The Evolution of International Geo-Political Risk 1956-2001.- Financial Crises and Sovereign Default: Dependencies, Timing and Uncertainty in a Stochastic Framework.- The Risk of[...]

### Fields of interest

Financial Economics; Public Finance & Economics; Macroeconomics / Monetary Economics; European Integration; Finance / Banking; International Economics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03103-3](http://www.springer.com/978-3-319-03103-3)

### Hardcover

2013. IX, 197 p. 42 illus.  
ISBN 978-3-319-03103-3

**Due: January 31, 2014**

W. Marty, Swiss Bond Commission, Stallikon, Switzerland

## Portfolio Analytics

An Introduction to Return and Risk Measurement

This textbook first introduces the reader to return measurement and then goes on to compare the time-weighted rate of return (TWR) with the money-weighted rate of return (MWR). To emphasize the importance of risk in conjunction with return, different tracking errors are analyzed and ex-post versus ex-ante risk figures are compared. The author then proceeds to modern portfolio theory (MPT) and illustrates how the constraints interfere substantially in the construction of optimized portfolios. As a conclusion, the book provides the reader with all the essential aspects of investment controlling.

### Features

This textbook first introduces the reader to return measurement and then goes on to compare the time-weighted rate of return (TWR) with the money-weighted rate of return (MWR). To emphasize the importance of risk in conjunction with return, different tracking errors are analyzed and ex-post versus ex-ante risk figures are compared. The author then proceeds to modern portfolio theory (MPT) and illustrates [...]

### Contents

1. Introduction.- 2. Return analysis.- 3. Risk Measurement.- 4. Performance Measurements.- 5. Investment Controlling.

### Fields of interest

Finance / Banking; Quantitative Finance; Financial Economics; Business Mathematics; Statistics for Business, Economics, Mathematical Finance, Insurance; Accounting / Auditing

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03508-6](http://www.springer.com/978-3-319-03508-6)

### Hardcover

2014. X, 229 p. 53 illus., 14 illus. in color. (Springer Texts in Business and Economics)  
ISBN 978-3-319-03508-6

**Due: January 31, 2014**

P. Mateos, University College London, London, United Kingdom

## Names, Ethnicity and Populations

Tracing Identity in Space

Ethnicity has become one of the most studied human dimensions in social and biomedical sciences over the past decade. However, there are important shortcomings in the means available to researchers to define and classify human group difference in past, as well as contemporary populations. Personal naming conventions usually adhere to unwritten social norms and customs that with time end up producing distinctive cultural, ethnic, linguistic, religious and geographic patterns in name distributions. This book follows the fascinating journey of personal names across the world, using maps and networks to identify alternative combinations of ethnic and geographic origins in contemporary[...]

### Features

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### Contents

Part I: Theory: Identity and names.- Part II: Methods: Name-based ethnicity classifications.- Part III: Applications: Mapping names and ethnicity.

### Fields of interest

Regional Science; Human Geography; Economic Geography; Demography; Migration

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45412-7](http://www.springer.com/978-3-642-45412-7)

### Hardcover

2014. Approx. 260 p. 6 illus. in color. (Advances in Spatial Science)  
ISBN 978-3-642-45412-7

**Due: March 6, 2014**

M. Matsui, Kanagawa University, Yokohama-shi, Japan

## Manufacturing and Service Enterprise with Risks II

The Physics and Economics of Management

This book presents recent work in the physics and economics of management through the developmental theory and practice of management science/operations research (MS/OR) that goes beyond the author's earlier book on the same subject. (Volume 125 in Springer's MS/OR series) This current work makes a useful contribution to the next-generation discrete system of science and management for a better society. The scope of the book is focused on the science and management of the 3M&I-Time system in the discrete world, where that system is a complex class consisting of humans, material/machine, money and time. The system is treated by a stochastic/intelligence (medium) approach. The science of[...]

### Features

This book presents recent work in the physics and economics of management through the developmental theory and practice of management science/operations research (MS/OR) that goes beyond the author's earlier book on the same subject. (Volume 125 in Springer's MS/OR series) This current work makes a useful contribution to the next-generation discrete system of science and management for a better [...]

### Contents

Problem and Preliminaries.- Management Issues in the Cloud-ICT Age.- Discrete Science and Knowledge Form.- Basic Method for Higher Management.- Traffic Accounting Method.- Progressive Control Method.- Developments for Higher Management.- Performance System for Real-Time Management.- Invisible Balancing/Collaborations of Enterprises.- Soft Tools for Post-ERP/SCM.- SALPS for Stochastic Assembly Lines.- DSMAP for Demand-to-Supply Planning.

### Fields of interest

Operation Research / Decision Theory; Operations Research, Mathematical Programming; Production / Logistics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-4-431-54618-4](http://www.springer.com/978-4-431-54618-4)

### Hardcover

2014. VIII, 150 p. 92 illus., 33 illus. in color. (International Series in Operations Research & Management Science, Vol. 202)  
ISBN 978-4-431-54618-4

**Due: February 28, 2014**

P. McKiernan, University of Strathclyde, Glasgow, United Kingdom; D. Purg (Eds.)

## Hidden Champions in CEE and Turkey

Carving Out a Global Niche

This book presents hidden champions in Central and Eastern Europe (CEE) and Turkey that have been studied as a joint project between CEEMAN and IEDC-Bled School of Management, Slovenia. This is an outcome of extensive research undertaken by over 30 researchers and covers 15 countries from Russia to Albania; covering many contexts, political systems, cultures and infrastructures. The reader is provided with a detailed introduction to the concept of hidden champions and describes the cases studied in this project. This book is an invaluable resource providing a culmination of interdisciplinary, cross-study chapters ranging from leadership to performance drivers; from[...]

### Features

This book presents hidden champions in Central and Eastern Europe (CEE) and Turkey that have been studied as a joint project between CEEMAN and IEDC-Bled School of Management, Slovenia. This is an outcome of extensive research undertaken by over 30 researchers and covers 15 countries from Russia to Albania; covering many contexts, political systems, cultures and infrastructures. The reader is provided with a [...]

### Contents

1.Introduction.- 2.Research Methodology.- 3.Leadership of Hidden Champions from Vision to Communityship.- 4.Three Bivalent-Performance Factors of Hidden Champions Ownership, Organizational Culture and Organizational Governance.- 5.Innovation Behaviour of Hidden Champions.- 6.International Marketing.- 7.In Search of Sustainable Business in Central and Eastern Europe.- 8.Financial Aspects of HCs Business Models.- 9.Hidden Champions of Albania.- 10.Hidden Champions of Belarus.- 11.Hidden Champions of Bosnia and Herzegovina.- 12.Hidden Champions of Croatia.- 13.Hidden Champions of Estonia.- [...]

### Fields of interest

Technology Management; Emerging Markets / Globalization; Entrepreneurship; Regional Science; Business Strategy / Leadership

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-40503-7](http://www.springer.com/978-3-642-40503-7)

### Hardcover

2013. X, 435 p. 5 illus.  
ISBN 978-3-642-40503-7

**Due: December 19, 2013**

J.M. Morales, Tech Univ of Denmark, Dept Applied, Lyngby, Denmark; A.J. Conejo, H. Madsen, Tech Univ of Denmark, Dept Info, Lyngby, Denmark; P. Pinson, M. Zugno

## Integrating Renewables in Electricity Markets

### Operational Problems

This addition to the ISOR series addresses the analytics of the operations of electric energy systems with increasing penetration of stochastic renewable production facilities, such as wind- and solar-based generation units. As stochastic renewable production units become ubiquitous throughout electric energy systems, an increasing level of flexible backup provided by non-stochastic units and other system agents is needed if supply security and quality are to be maintained. Within the context above, this book provides up-to-date analytical tools to address challenging operational problems such as: • The modeling and forecasting of stochastic renewable power production. • The [...]

### Features

This addition to the ISOR series addresses the analytics of the operations of electric energy systems with increasing penetration of stochastic renewable production facilities, such as wind- and solar-based generation units. As stochastic renewable production units become ubiquitous throughout electric energy systems, an increasing level of flexible backup provided by non-stochastic units and other [...]

### Contents

Introduction.- Renewable Energy Sources - Modeling and Forecasting.- Clearing the Day-Ahead Market with a High Penetration of Stochastic Production.- Balancing Markets.- Managing Uncertainty with Flexibility.- Impact of Stochastic Renewable Energy Generation on Market Quantities.- Trading Stochastic Production in Electricity Pools.- Virtual Power Plants.- Facilitating Renewable Integration by Demand Response.- Random Variables and Stochastic Processes.- Basics of Optimization.- Introduction to Stochastic Programming.- Introduction to Robust Optimization.- GAMS Codes.

### Fields of interest

Operation Research / Decision Theory; Power Electronics, Electrical Machines and Networks; Operations Research, Mathematical Programming

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4614-9410-2](http://www.springer.com/978-1-4614-9410-2)

### Hardcover

2014. XVI, 429 p. 92 illus., 12 illus. in color. (International Series in Operations Research & Management Science, Vol. 205)

ISBN 978-1-4614-9410-2

usually dispatched within 3 to 5 business days

December 31, 2013

G.M. Mudacumura, Cheyney University, Cheyney, USA; G. Morçöl, Penn State – Harrisburg, Middletown, USA (Eds.)

## Challenges to Democratic Governance in Developing Countries

Despite the large amounts of human and financial resources invested to foster democratic governance in developing countries, statistics show that the majority of these countries have not yet achieved significant improvements in living standards. While some regions make strides towards improving the living conditions of their citizens, Sub-Saharan Africa, for instance, is still trapped in poverty with more than 40% of its 600 million people living below the internationally recognized absolute poverty line of one US dollar per day. Poor governance and corruption should be highlighted as the most important systemic factors contributing to poverty in developing countries. As a result the [...]

### Features

Despite the large amounts of human and financial resources invested to foster democratic governance in developing countries, statistics show that the majority of these countries have not yet achieved significant improvements in living standards. While some regions make strides towards improving the living conditions of their citizens, Sub-Saharan Africa, for instance, is still trapped in poverty with more [...]

### Contents

Accountability & Transparency: Cornerstones of Democratic Governance.- Will Ghana Avoid the resource Curse?.- Tackling Cultural Corruption.- Perceptions of Societal Corruption and Levels of Trust in Government.- Citizen Engagement in Fostering Democratic Governance in Rwanda.- Organizational Culture and its Influence on Corruption: NGOs in Kenya.- Role of legislation for social accountability: a comparison of South Africa and Zambia.- Prosecute and punish: Attempts by Kenya to curb political and administrative corruption.- Corruption in African Countries: A Symptom of Leadership and [...]

### Fields of interest

Public Administration; Development Economics; Comparative Politics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03142-2](http://www.springer.com/978-3-319-03142-2)

### Hardcover

2014. XII, 287 p. 16 illus., 15 illus. in color. (Public Administration, Governance and Globalization, Vol. 11)

ISBN 978-3-319-03142-2

Due: December 31, 2013

P.C. Murschetz, Universität Salzburg, Salzburg, Austria (Ed.)

## State Aid for Newspapers

### Theories, Cases, Actions

Ever since newspaper companies first turned to their governments for support in the 1950s, print media has been supported by state aid in many parts of the world. Today, the principles and practicalities of these subsidies have been called into question, endangering the secure funding of expensive high-quality press output. This book provides a comprehensive analysis of today's global challenges in the print news media's struggle for survival. It presents current practices concerning government subsidies to newspapers for political, economic, and socio-cultural purposes against the background of declining readership and revenues, increased inter-media competition, austerity budgets [...]

### Features

Ever since newspaper companies first turned to their governments for support in the 1950s, print media has been supported by state aid in many parts of the world. Today, the principles and practicalities of these subsidies have been called into question, endangering the secure funding of expensive high-quality press output. This book provides a comprehensive analysis of today's global challenges in [...]

### Contents

Preface.- Part I: Introduction.- 1 Context, Purpose and Structure of the Book.- 2 State Aid for Newspapers.- Part II: Theories.- 3 State Support for News.- 4 Industrial Subsidies.- 5 Newspaper Subsidies and Journalistic Quality.- 6 State Aid to the Press in the EU.- 7 Press Governance.- Part III: Cases and Actions.- 8 Australia: State Aid to Newspapers.- 9 Austria: Press Subsidies in Search of a New Design.- 10 Belgium: Big Changes in a Small News Economy.- 11 Bulgaria: Press Subsidies in the Shadows.- 12 Finland: The Rise and Fall of a Democratic Subsidy Scheme.- 13 France: Press [...]

### Fields of interest

Media Management; Public Finance & Economics; Industrial Organization

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-35690-2](http://www.springer.com/978-3-642-35690-2)

### Hardcover

2014. Approx. 620 p. 29 illus. (Media Business and Innovation)

ISBN 978-3-642-35690-2

Due: January 31, 2014

R. Müller, University of St. Gallen, St. Gallen, Switzerland; A. Wittmer, University of St. Gallen, St. Gallen, Switzerland; C. Drax, P3 Group, Lorsch, Germany (Eds.)

## Aviation Risk and Safety Management

Methods and Applications in Aviation Organizations

The International Civil Aviation Organization's (ICAO) decision to require aviation organizations to adopt Safety Management Systems poses a major problem especially for small and medium sized aviation companies. The complexity of regulations overstrains the aviation stakeholders who seek to fully advantage from them but have no clear guidance. The aim of the book is to show the implementation of such a new system with pragmatic effort in order to gain a gradation for smaller operators. This approach should illustrate the leeway in order to adapt the processes and to show the interfaces between Corporate Risk Management and Safety Management. The book shows how to build a system with [...]

### Features

The International Civil Aviation Organization's (ICAO) decision to require aviation organizations to adopt Safety Management Systems poses a major problem especially for small and medium sized aviation companies. The complexity of regulations overstrains the aviation stakeholders who seek to fully advantage from them but have no clear guidance. The aim of the book is to show the implementation of such a new [...]

### Contents

Introduction.-Theoretical Background of Risk and Safety Management.-Practical Implications of Risk and Safety Management.-Implementation and Optimization of Risk and Safety Management.

### Fields of interest

Organization / Planning; Operation Research / Decision Theory; Law of the Sea, Air and Outer Space; Quality Control, Reliability, Safety and Risk

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-02779-1](http://www.springer.com/978-3-319-02779-1)

### Hardcover

2014. Approx. 200 p. 20 illus. (Management for Professionals)

ISBN 978-3-319-02779-1

Due: February 28, 2014

M.K. Nandakumar, Indian Institute of Management Kozhikode, Kunnamangalam, Kozhikode, India; S. Jharkharia, Indian Institute of Management Kozhikode, Kunnamangalam, Kozhikode, India; A.S. Nair, Indian Institute of Management Kozhikode, Kunnamangalam, Kozhikode, India (Eds.)

## Organisational Flexibility and Competitiveness

The proposed book is intended to provide a conceptual framework of 'Organisational Flexibility and Competitiveness' supported by research studies in various types of flexibilities exhibited by an organisation. The need for enterprise flexibility in an era of rapidly advancing technology, increasing competition, and globalization, is apparent. Flexibility can be thought of as an ability of the enterprise to quickly and efficiently respond to market changes and to bring new products and services quickly to the market place. Beyond this definition, a truly flexible enterprise should proactively change the market through its ability to create truly new and innovative products and [...]

### Features

The volume is intended to provide a conceptual framework of 'Organisational Flexibility and Competitiveness' supported by research studies in various types of flexibilities exhibited by an organisation. The need for enterprise flexibility in an era of rapidly advancing technology, increasing competition, and globalization, is apparent. Flexibility can be thought of as an ability of the enterprise to quickly [...]

### Contents

Strategic Flexibility and Competitiveness.- Adapt: A Critical Pillar of Strategy Execution Process.- Flexibility and Sustainability of Mentorship Model for Entrepreneurship Development: An Exploratory Study.- Strategic Flexibility, Information System Flexibility and Enterprise Performance Management.- A Value Optimising Structure in Virtual Enterprises for Manufacturing Systems.- Competitiveness of Key Segment in Solar Photovoltaic Industry in India: An Exploratory Study.- New Perspectives for Industrial Competitiveness: Exploring the Role of IITs.- Organizational and Human Resources [...]

### Fields of interest

Business Strategy / Leadership; Organization / Planning; Personnel Management; Production / Logistics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-81-322-1667-4](http://www.springer.com/978-81-322-1667-4)

### Hardcover

2014. I, 439 p. 55 illus. (Flexible Systems Management)

ISBN 978-81-322-1667-4

Due: January 31, 2014

K. North, G. Kumta

## Knowledge Management

Value Creation Through Organizational Learning

This textbook on Knowledge Management is a result of more than twenty years of research, teaching and consulting experience of the authors. This is the first comprehensive text which brings together European, Asian and American perspectives on knowledge-based value creation. This book is intended not only for academic education but also for providing guidance to managers, consultants, trainers, coaches and those interested to learn about organizations in a knowledge economy in business, public administration and non-profit organizations. Many case studies, examples, questions, assignments as well as easy to use knowledge management tools make this work a compendium for learning, and [...]

### Features

This textbook on Knowledge Management is a result of more than twenty years of research, teaching and consulting experience of the authors. This is the first comprehensive text which brings together European, Asian and American perspectives on knowledge-based value creation. This book is intended not only for academic education but also for providing guidance to managers, consultants, trainers, coaches and [...]

### Contents

1 On the Way to a Knowledge Society.- 2 Knowledge in Organisations.- 3 Organisational Forms to Leverage Knowledge.- 4 Knowledge is Human.- 5 Strategies for Managing Knowledge.- 6 Context Specific Knowledge Management Strategies.- 7 How Can Information and Communication Technology Support Knowledge Work.- 8 Measuring and Safeguarding Knowledge.- 9 How to Put Knowledge Management into Practice.

### Fields of interest

Technology Management; Personnel Management; Organization / Planning; Industrial Organization

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03697-7](http://www.springer.com/978-3-319-03697-7)

### Hardcover

2014. XXVI, 352 p. 84 illus. (Springer Texts in Business and Economics)

ISBN 978-3-319-03697-7

Due: January 31, 2014

J. O'Neill, CMAS Holdings LLC, New York, USA; E.M. Noam, Columbia Institute for Tele-Infoma, New York, USA; D. Gerbarg, DVI, Ltd, New York, USA (Eds.)

## Broadband as a Video Platform

Strategies for Africa

This volume features contributions from a conference held in Lusaka, Zambia, to explore the role and prospects of broadband in Africa as a video platform—with emphasis on the strategies and building blocks for deployment and advancement. While it may seem that such networks and their applications are not a realistic scenario for developing countries, it would be short-sighted and economically dangerous to ignore the emerging trends. The pace of introduction of next-generation networks in industrialized countries is rapid and the developing world will not be able to stand aside. The risks of falling behind are great and in any country there will be elements of business and society who[...]

### Features

This volume features contributions from a conference held in Lusaka, Zambia, to explore the role and prospects of broadband in Africa as a video platform—with emphasis on the strategies and building blocks for deployment and advancement. While it may seem that such networks and their applications are not a realistic scenario for developing countries, it would be short-sighted and economically [...]

### Contents

Preface.- Foreword.- 1 Introduction.- 2 Media Entertainment as Development Strategy.- 3 Let Them Eat Movies: (How) Will Next Generation Broadband Diffuse Through Africa?.- 4 The State of Broadband in Africa: What's here and What's coming?.- 5 The Cost of Deploying a Successful Video Broadband Business in Africa and the Cost of Not Deploying.- 6 Implications of Broadband Video on National and International Media Systems.- 7 What to Expect from Platforms and Applications.- 8 Technology Trends on Connect Africa.- 9 The Impact of Policy on the Performance of the ICT Sector.- 10 Information[...]

### Fields of interest

Media Management; Development Economics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03616-8](http://www.springer.com/978-3-319-03616-8)

### Hardcover

2014. XIX, 205 p. 83 illus., 72 illus. in color. (The Economics of Information, Communication, and Entertainment)

ISBN 978-3-319-03616-8

**Due: January 31, 2014**

K.-M. Osei-Bryson, O. Ngwenyama (Eds.)

## Advances in Research Methods for Information Systems Research

Data Mining, Data Envelopment Analysis, Value Focused Thinking

Advances in social science research methodologies and data analytic methods are changing the way research in information systems is conducted. New developments in statistical software technologies for data mining (DM) such as regression splines or decision tree induction can be used to assist researchers in systematic post-positivist theory testing and development. Established management science techniques like data envelopment analysis (DEA), and value focused thinking (VFT) can be used in combination with traditional statistical analysis and data mining techniques to more effectively explore behavioral questions in information systems research. As adoption and use of these research[...]

### Features

Advances in social science research methodologies and data analytic methods are changing the way research in information systems is conducted. New developments in statistical software technologies for data mining (DM) such as regression splines or decision tree induction can be used to assist researchers in systematic post-positivist theory testing and development. Established management science techniques [...]

### Contents

Introduction.- Logical Foundations of Social Science Research.- Overview on Decision Tree Induction.- Using Decision Tree Induction for Theory Development.- A Hybrid Decision Tree-based Method for Exploring Cumulative Abnormal Returns.- An Ethnographic Decision Tree Modeling: An Exploration of Telecentre Usage in the Human Development Context.- Using Association Rules Mining to Facilitate Qualitative Data Analysis in Theory Building.- Overview on Multivariate Adaptive Regression Splines.- Reexamining the Impact of Information Technology Investment on Productivity Using Regression Tree[...]

### Fields of interest

Business Information Systems; Data Mining and Knowledge Discovery; Information Systems and Communication Service

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9462-1](http://www.springer.com/978-1-4614-9462-1)

### Hardcover

2014. VII, 231 p. 52 illus., 30 illus. in color. (Integrated Series in Information Systems, Vol. 34)

ISBN 978-1-4614-9462-1

**usually dispatched within 3 to 5 business days**

K.-M. Osei-Bryson, Virginia Commonwealth University, Richmond, USA; G. Mansingh, University of the West Indies, Mona, Kingston, Jamaica; L. Rao, University of the West Indies, Mona, Kingston, Jamaica (Eds.)

## Knowledge Management for Development

Domains, Strategies and Technologies for Developing Countries

A number of developing countries, including small island states have common problems that have affected their development and growth. Knowledge Management (KM) initiatives can be used to address some of these issues, but these developing countries need to understand what is needed to implement them, in order to improve economic conditions. While many of these countries have access to technologies that can be used to assist in knowledge management, relevant and low cost KM initiatives need to be considered in improving their existing KM processes. Sectors critical to the growth of these developing countries include health care, crime management, disaster recovery management, small and[...]

### Features

A number of developing countries, including small island states, have common problems that have affected their development and growth. Knowledge Management (KM) initiatives can be used to address some of these issues, but these developing countries need to understand what is needed to implement them, in order to improve economic conditions. While many of these countries have access to technologies that can [...]

### Contents

Chapter 1 Towards Understanding and Applying Knowledge Management and Knowledge Management Systems in Developing Countries: Some Conceptual Foundations.- Chapter 2 Towards a Community-Centered Knowledge Management Architecture for Disaster Management in Sub-Saharan Africa.- Chapter 3 Managing Expert Knowledge to Assist in the Management of Coffee Pests and Diseases in Jamaica.- Chapter 4 Implementation of a Multiagent Supervisory System for an Agricultural Products Sourcing Network.- Chapter 5 Progressive Usage of Business and Spatial Intelligence for Decision Support in the Delivery of[...]

### Fields of interest

Emerging Markets / Globalization; Information Systems and Communication Service; Economic Systems

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4899-7391-7](http://www.springer.com/978-1-4899-7391-7)

### Hardcover

2014. XX, 230 p. 37 illus., 15 illus. in color. (Integrated Series in Information Systems, Vol. 35)

ISBN 978-1-4899-7391-7

**Due: January 31, 2014**

G. Owusu, P. O'Brien, J. McCall, N.F. Doherty (Eds.)

## Transforming Field and Service Operations

Methodologies for Successful Technology-Driven Business Transformation

The drive to realise operational efficiencies, improve customer service, develop new markets and accelerate the introduction of new products has substantially increased the complexity of field service operations. To maximise the efficiency and effectiveness of these operations, organisations have embarked on a wide range of transformation programmes that have sought to introduce automation through the use of workforce management technologies. Despite the potential business value that can be provided by such transformation programmes, too often, the automation technologies have not been fully utilised and their expected benefits have as such not been realised. Scholars of organisation[...]

### Features

The drive to realise operational efficiencies, improve customer service, develop new markets, and accelerate the introduction of new products has substantially increased the complexity of field service operations. To maximise the efficiency and effectiveness of these operations, organisations have embarked on a wide range of transformation programmes that have sought to introduce automation through the use [...]

### Fields of interest

Business Information Systems; Computer Appl. in Administrative Data Processing; Organization / Planning

### Target groups

Research

### Type of publication

Professional book

More on [www.springer.com/978-3-642-44969-7](http://www.springer.com/978-3-642-44969-7)

### Hardcover

2014. XII, 276 p. 73 illus., 45 illus. in color.  
ISBN 978-3-642-44969-7

**Due: January 31, 2014**

L. Pate, Decision Systems International, Littleton, USA; C. Wankel (Eds.)

## Emerging Research Directions in Social Entrepreneurship

This book takes an inside-out approach to examine the broad topic of social entrepreneurship. Instead of looking inward at what social entrepreneurship is, this book looks forward from the view of successful social entrepreneurs to answer the important question, "Where is social entrepreneurship going next?" First, the volume looks at the essential qualities of social entrepreneurs, including the importance of humility as a trait in the social entrepreneur, the way in which social entrepreneurs define themselves as such, and if and how opportunity recognition differs in social and traditional entrepreneurs. Next, the volume looks at the impact of social entrepreneurial businesses on [...]

### Features

This book takes an inside-out approach to examine the broad topic of social entrepreneurship. Instead of looking inward at what social entrepreneurship is, this book looks forward from the view of successful social entrepreneurs to answer the important question, "Where is social entrepreneurship going next?" First, the volume looks at the essential qualities of social entrepreneurs, including the importance of [...]

### Contents

Introduction.- Part One: Essential Qualities of Social Entrepreneurs.- Part Two: The Wider Impact of Social Entrepreneurship.- Part Three: Social Entrepreneurship and Global Change.- Conclusion.

### Fields of interest

Entrepreneurship; International and Comparative Education; Ethics; Social Work

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-94-007-7895-5](http://www.springer.com/978-94-007-7895-5)

### Hardcover

2014. Approx. 310 p. 20 illus. (Advances in Business Ethics Research, Vol. 4)  
ISBN 978-94-007-7895-5

**Due: March 2014**

P.E. Petrakis, P.C. Kostis, D.G. Valsamis

## European Economics and Politics in the Midst of the Crisis

From the Outbreak of the Crisis to the Fragmented European Federation

This book presents an overview of the economics and politics implemented in the European Union and especially the Eurozone during the crisis of 2008-2012. Although it focuses on these four years, the analysis starts from the establishment of the European Union and covers the period up to the outbreak of the Cypriot banking crisis in mid-2013. The long-term creation of structural changes in European economics and politics is associated with a growth lag within the global economic environment dynamics. The economic and political consequences of the crisis and the development of new institutions will shape the future growth dynamics towards a Fragmented European Federation.

### Features

This book presents an overview of the economics and politics implemented in the European Union and especially the Eurozone during the crisis of 2008-2012. Although it focuses on these four years, the analysis starts from the establishment of the European Union and covers the period up to the outbreak of the Cypriot banking crisis in mid-2013. The long-term creation of structural changes in European [...]

### Contents

The European Crisis.- The Structural Elements of the Crisis.- The Policy Response.- The Political Economy of European Synthesis and the Medium Future.

### Fields of interest

Economic Policy; European Integration; Macroeconomics / Monetary Economics; Public Finance & Economics; Development Economics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41343-8](http://www.springer.com/978-3-642-41343-8)

### Hardcover

2014. X, 270 p. 93 illus., 3 illus. in color.  
ISBN 978-3-642-41343-8

**Due: January 31, 2014**

P.E. Petrakis

## Culture, Growth and Economic Policy

It is a wide-spread belief that the cultural background inherited in a society affects the requirements of economic development. This relationship requires theoretical and empirical justification. The present book provides this together with an analysis of the development of cultural background itself. Cultural background is embodied in political institutions, in transactions, knowledge, incentives, in social capital, even in the tangibles of the economy. Thus, economic development is shaped and the rate of growth is affected. Conversely, economic development affects cultural background. When this interaction takes place at a non-developmental cultural background level, which is[...]

### Features

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### Contents

Introduction.- The Foundations: Human Needs and Cultural Background.- Culture in Economic Thinking.- Cultural Background and Economic System.- The Effect of Cultural Background on Incentives, Growth and Distribution and Vice Versa.- Cultural Background and Rationality.- The Cultural Dimensions and the Cultural Background Change: Cultural Surveys.- Collectivism as an Air or Obstacle to Economic Growth.- Power Distance, Uncertainty, Time and Growth.- The Cultural Background Change.- Cultural Background, Growth and Policy: Economic Growth and Cultural Background.- Cultural Background,[...]

### Fields of interest

Economic Growth; Cultural Studies; Development Economics; Economic Theory; Political Economy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41439-8](http://www.springer.com/978-3-642-41439-8)

### Hardcover

2014. 250 p.  
ISBN 978-3-642-41439-8

**Due: March 31, 2014**

N. Pfeffermann, ISEIC Pfeffermann Consulting, Bremen, Germany; T. Minshall, University of Cambridge, Cambridge, United Kingdom; L. Mortara, University of Cambridge, Cambridge, United Kingdom (Eds.)

## Strategy and Communication for Innovation

The innovation economy sets new standards for global business and requires efficient innovation management to plan, execute and evaluate innovation activities, establish innovation capability and coordinate resources and capacities for innovation on an intra- and inter-organizational level. Communication has become a critical factor underpinning successful innovation. As a new communication field, innovation communication facilitates the successful launches of new products and services, the establishment of stakeholder relationships, and the strengthening of corporate reputation in the long-run. Consequently, firms today need to develop a strong portfolio of communication tools as an[...]

### Features

The innovation economy sets new standards for global business and requires efficient innovation management to plan, execute and evaluate innovation activities, establish innovation capability and coordinate resources and capacities for innovation on an intra- and inter-organizational level. Communication has become a critical factor underpinning successful innovation. As a new communication field, innovation [...]

### Contents

Part I - Strategic Perspectives on Innovation.- Part II - Communicative Perspectives on Innovation.- Part III - Integrated Perspectives on Innovation.- Part IV - Best Practices and Case Examples.

### Fields of interest

Technology Management; Engineering Economics, Organization, Logistics, Marketing; Industrial Organization

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41478-7](http://www.springer.com/978-3-642-41478-7)

### Hardcover

2014. XV, 529 p. 61 illus., 29 illus. in color.  
ISBN 978-3-642-41478-7

**Due: December 28, 2013**

P.S. Pulat, The University of Oklahoma, Norman, USA; S.C. Sarin, Virginia Tech, Blacksburg, USA; R. Uzsoy, North Carolina State University, Raleigh, USA (Eds.)

## Essays in Production, Project Planning and Scheduling

A Festschrift in Honor of Salah Elmaghraby

From the Preface:This festschrift is devoted to recognize the career of a man who not only witnessed the growth of operations research from its inception, but also contributed significantly to this growth. Dr. Salah E. Elmaghraby received his doctorate degree from Cornell University in 1958, and since then, his scholarly contributions have enriched the fields of production planning and scheduling and project scheduling. This collection of papers is contributed in his honor by his students, colleagues, and acquaintances. It offers a tribute to the inspiration received from his work, and from his guidance and advice over the years, and recognizes the legacy of his many contributions.Dr.[...]

### Features

From the Preface:This festschrift is devoted to recognize the career of a man who not only witnessed the growth of operations research from its inception, but also contributed significantly to this growth. Dr. Salah E. Elmaghraby received his doctorate degree from Cornell University in 1958, and since then, his scholarly contributions have enriched the fields of production planning and scheduling and [...]

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Ubiquitous OR in Production Systems.- Integrated Production Planning and Pricing Decisions in Congestion-Prone Capacitated Production Systems.- Refined EM Method for Solving Linearly Constrained Global Optimization Problems.- The Price of Anarchy for a Network of Queues in Heavy Traffic.- A Comparative Study of Procedures for the Multinomial Selection Problem.- Vulnerability Discussion in Multimodal Freight Systems.- Scheduling and Financial Planning in Stochastic Activity Networks.- A Risk Integrated Methodology for Project Planning Under Uncertainty.- Dynamic Resource Constrained[...]

### Fields of interest

Operation Research / Decision Theory; Production / Logistics; Operations Research, Mathematical Programming

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9055-5](http://www.springer.com/978-1-4614-9055-5)

### Hardcover

2014. XIV, 414 p. 102 illus., 30 illus. in color. (International Series in Operations Research & Management Science, Vol. 200)  
ISBN 978-1-4614-9055-5

**usually dispatched within 3 to 5 business days  
December 31, 2013**

H. Rampersad, Business Schools of the Americas, Miramar, USA;  
S. Hussain, Saleh Hussain Consultancy, Manama, Bahrain

## Authentic Governance

### Aligning Personal Governance with Corporate Governance

Over the past years, we have heard and read plenty about how executives should behave more responsibly in the light of corporate governance. Despite all these efforts, many implementations of corporate governance provide no protection from potentially catastrophic ethical failures. This book emphasizes the introduction of a new corporate governance blueprint for addressing these concerns in a more authentic, organic and holistic way. It is a roadmap toward a high-performance ethical culture. By way of this innovative system, Dr. Hubert Rampersad and Saleh Hussain, MBA, are launching a revolutionary concept that actively has human capital embedded in corporate governance in a manner[...]

### Features

Over the past years, we have heard and read plenty about how executives should behave more responsibly in the light of corporate governance. Despite all these efforts, many implementations of corporate governance provide no protection from potentially catastrophic ethical failures. This book emphasizes the introduction of a new corporate governance blueprint for addressing these concerns in a more [...]

### Contents

Preface.- 1 Introduction.- 2 Authentic Governance Model.- Part I: Authentic Personal Governance.- 3 Personal Ambition.- 4 Personal Balanced Scorecard.- 5 Personal Governance.- 6 Alignment with Yourself.- Part II: Authentic Corporate Governance.- 7 Corporate Ambition.- 8 Corporate Balanced Scorecard.- 9 Corporate Governance.- 10 Alignment with your organization.- Epilogue.- Appendices.- References and Recommended Reading.- Authors' Profiles.

### Fields of interest

Management/Business for Professionals; Business Strategy / Leadership; Ethics

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03112-5](http://www.springer.com/978-3-319-03112-5)

### Hardcover

2014. X, 203 p. 20 illus. in color. (Management for Professionals)

ISBN 978-3-319-03112-5

**Due: January 31, 2014**

Th.A. Rhoads, Towson University, Towson, USA

## The Call Up to the Majors

### A Systematic Approach to the Economics of Minor League Baseball

Just like any other business, Major League Baseball (MLB) seeks to continually increase brand awareness and brand value. Maintaining high consumer demand for its product is an important element of this business strategy. It is the unique relationship that MLB has with Minor League Baseball (MiLB)—and more precisely, the fact that the fan base for MLB and MiLB are very similar—that allows the MLB brand to reach outside of the major leagues, into the minor leagues, and into the way the minor league game is structured and played. Major League teams provide each of their Minor League affiliates with players and coaches in order to develop baseball players who can eventually play for the[...]

### Features

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### Contents

1.Introduction.- 2.Structure of MiLB and comparison to MLB.- 3.Comparison of MiLB to other sports.- 4.Value of the MLB brand.- 5.Regulations imposed by MLB on MiLB.- 6.Competitive Balance in MiLB.- 7.Regionalizing affiliates.- 8.Spring Training agglomeration affects.- 9.Conclusion.

### Fields of interest

Business & Economics (general); Development Economics; Economic Policy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-8923-8](http://www.springer.com/978-1-4614-8923-8)

### Hardcover

2014. Approx. 200 p. 20 illus., 10 illus. in color. (Sports Economics, Management and Policy, Vol. 7)

ISBN 978-1-4614-8923-8

**Due: February 2014**

X. Richet, Université Sorbonne Nouvelle-Paris 3, Paris, France; V. Delteil, Université Sorbonne Nouvelle - Paris 3, Paris, France; P. Dieuaide, Université Sorbonne Nouvelle - Paris 3, Paris, France (Eds.)

## Strategies of Multinational Corporations and Social Regulations

### European and Asian Perspectives

This contributed volume seeks to provide a unique window on the globalization process by analyzing the dynamics of Foreign Direct Investment (FDI) in Europe and Asia, as well as its influence on the renewal of public policies and regulations, both transnational and local. It discusses the link between the trans-nationalization of productive and business systems and the renewal of local regulations in the light of concerns over competitiveness and attractiveness, as well as new social tensions. Multinational corporations (MNCs) as key actors of globalization are central for understanding the new interactions between the global, regional and local dimensions as well as for highlighting[...]

### Features

This contributed volume seeks to provide a unique window on the globalization process by analyzing the dynamics of Foreign Direct Investment (FDI) in Europe and Asia, as well as its influence on the renewal of public policies and regulations, both transnational and local. It discusses the link between the trans-nationalization of productive and business systems and the renewal of local regulations in the [...]

### Contents

Introduction.- Part I: FDI Flows and Institutional Dynamics in Europe and Asia.- Part II: Redesigning of Public Policies to Meet Competitiveness and Attractiveness Challenges, while Dealing with Business Lobbying.- Part III: Multinational Companies across Home and Host Countries: Transfer, Hybridization, Adaptation of Business Model and Labour Relations?.- Part IV: Reshaping Industrial Relations and Labour Activism in Multinational Companies.

### Fields of interest

Emerging Markets / Globalization; Labor Economics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-41368-1](http://www.springer.com/978-3-642-41368-1)

### Hardcover

2014. VI, 218 p. 16 illus., 13 illus. in color.

ISBN 978-3-642-41368-1

**Due: March 28, 2014**

M.P. Rodríguez-Bolivar, University of Granada, Granada, Spain (Ed.)

## Measuring E-government Efficiency

The Opinions of Public Administrators and Other Stakeholders

E-government has the potential to improve public services, information transparency, and the engagement of civic participation of the public sector management. This book analyzes the achievement of expectations created by public managers, policy-makers, and stakeholders with regard to the implementation of e-government policies and applications. It also tries to determine whether e-government applications have been introduced as a fad or according to real demands from citizenry and if efforts within e-government have been effective. This book investigates how public managers and policy-makers imagine e-government policies and the impact of those policies on their management and[...]

### Features

E-government has the potential to improve public services, information transparency, and the engagement of civic participation of the public sector management. This book analyzes the achievement of expectations created by public managers, policy-makers, and stakeholders with regard to the implementation of e-government policies and applications. It also tries to determine whether e-government applications [...]

### Contents

Foreword.- Preface.- List of contributors.- List of reviewers.- Contents (Index).- Introduction.- Part I. Theories on measuring e-government efficiency.- Part II. Case studies on perceptions about efficiency of e-government technologies by public sector officials and politicians.- Part III. Case studies on perceptions about efficiency of e-government technologies by stakeholders.- Conclusions and future research.

### Fields of interest

Public Administration; Technology Management; Political Science, general

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9981-7](http://www.springer.com/978-1-4614-9981-7)

### Hardcover

2014. Approx. 250 p. 17 illus. (Public Administration and Information Technology, Vol. 5)  
ISBN 978-1-4614-9981-7

**Due: May 2, 2014**

M. Sakawa, Hiroshima University, Higashi-Hiroshima, Japan; H. Yano, Graduate School of Humanities and Social, Nagoya, Japan; I. Nishizaki

## Linear and Multiobjective Programming with Fuzzy Stochastic Extensions

Although several books or monographs on multi-objective optimization under uncertainty have been published, there seems to be no book which starts with an introductory chapter of linear programming and is designed to incorporate both fuzziness and randomness into multiobjective programming in a unified way. In this book, five major topics, linear programming, multiobjective programming, fuzzy programming, stochastic programming, and fuzzy stochastic programming, are presented in a comprehensive manner. Especially, the last four topics together comprise the main characteristics of this book, and special stress is placed on interactive decision making aspects of multiobjective[...]

### Features

Although several books or monographs on multi-objective optimization under uncertainty have been published, there seems to be no book which starts with an introductory chapter of linear programming and is designed to incorporate both fuzziness and randomness into multiobjective programming in a unified way. In this book, five major topics, linear programming, multiobjective programming, fuzzy programming, [...]

### Contents

Introduction.- Linear Programming.- Multiobjective Linear Programming.- Fuzzy Linear Programming.- Stochastic Linear Programming.- Interactive Fuzzy Multiobjective Stochastic Linear Programming.- Purchase and Transportation Planning for Food Retailing.- Linear Algebra.- Nonlinear Programming.- Usage of Excel Solver.

### Fields of interest

Operation Research / Decision Theory; Operations Research, Mathematical Programming; Probability Theory and Stochastic Processes

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4614-9398-3](http://www.springer.com/978-1-4614-9398-3)

### Hardcover

2013. XIII, 339 p. 59 illus., 21 illus. in color. (International Series in Operations Research & Management Science, Vol. 203)  
ISBN 978-1-4614-9398-3

**usually dispatched within 3 to 5 business days  
December 31, 2013**

R. Salomone, G. Saija, University of Messina, Messina, Italy (Eds.)

## Pathways to Environmental Sustainability

Methodologies and Experiences

This book brings together, in a single volume, an overview of multiple applications of the concept of environmental sustainability, featuring examples of useful methodologies and tools for pursuing environmental targets, experiences and case studies spanning a variety of sectors, embracing both industry and research projects; and case studies applied to very different territorial contexts. The first section of the book covers methodologies and tools for environmental sustainability, including Industrial Ecology, Urban Metabolism, Life Cycle Assessment, analysis of industrial water footprint and such chemical technologies as Hypercritical Separation Technology (HYST). Part Two provides[...]

### Features

This book brings together, in a single volume, an overview of multiple applications of the concept of environmental sustainability, featuring examples of useful methodologies and tools for pursuing environmental targets, experiences and case studies spanning a variety of sectors, embracing both industry and research projects; and case studies applied to very different territorial contexts. The first [...]

### Contents

Preface.- Part I: Methodologies and tools for environmental sustainability.- 1 Food for thought: seeking the essence of Industrial Symbiosis.- 2 LCA and linear programming for the environmental optimization of waste management systems: a simulation.- 3 Urban Metabolism: many open questions for future answers.- 4 Water footprint to support environmental management: an overview.- 5 Marketing strategies for the agri-food sector: adaptation requirements and contradictions.- 6 Hypercritical Separation Technology (HYST): a sustainable technology for agricultural by-products valorization.- 7[...]

### Fields of interest

Economic Systems; Environment (general); Environmental Management; Sustainable Development; Environmental Economics; Management/Business for Professionals

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03825-4](http://www.springer.com/978-3-319-03825-4)

### Hardcover

2014. I, 274 p. 49 illus.  
ISBN 978-3-319-03825-4

**Due: February 28, 2014**

Th. Scherngell (Ed.)

## The Geography of Networks and R&D Collaborations

The geography of networks and R&D collaborations, in particular the spatial dimension of interactions between organisations performing joint R&D, have attracted a burst of attention in the last decade, both in the scientific study of the networks and in the policy sector. The volume is intended to bring together a selection of articles providing novel theoretical and empirical insights into the geographical dynamics of such networks and R&D collaborations, using new, systematic data sources and employing cutting-edge spatial analysis and spatial econometric techniques. It comprises a section on analytic advances and methodology and two thematic sections on structure and spatial[...]

### Features

The geography of networks and R&D collaborations, in particular the spatial dimension of interactions between organisations performing joint R&D, have attracted a burst of attention in the last decade, both in the scientific study of the networks and in the policy sector. The volume is intended to bring together a selection of articles providing novel theoretical and empirical insights into the [...]

### Contents

Editorial Introduction.- Part A: Analytic Advances and Methodology.- Part B: Structure and Spatial Characteristics of R&D Networks.- Part C: Impact of R&D Networks and Policy Implications.- Epilogue.

### Fields of interest

Regional Science; Economic Geography; R & D / Technology Policy; Industrial Organization

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-02698-5](http://www.springer.com/978-3-319-02698-5)

### Hardcover

2014. VII, 381 p. 71 illus., 23 illus. in color. (Advances in Spatial Science)

ISBN 978-3-319-02698-5

**Due: December 31, 2013**

F. Schleer-van Gellecom (Ed.)

## Advances in Non-linear Economic Modeling

### Theory and Applications

In recent years nonlinearities have gained increasing importance in economic and econometric research, particularly after the financial crisis and the economic downturn after 2007. This book contains theoretical, computational and empirical papers that incorporate nonlinearities in econometric models and apply them to real economic problems. It intends to serve as an inspiration for researchers to take potential nonlinearities in account. Researchers should be aware of applying linear model-types spuriously to problems which include non-linear features. It is indispensable to use the correct model type in order to avoid biased recommendations for economic policy.

### Features

In recent years non-linearities have gained increasing importance in economic and econometric research, particularly after the financial crisis and the economic downturn after 2007. This book contains theoretical, computational and empirical papers that incorporate non-linearities in econometric models and apply them to real economic problems. It intends to serve as an inspiration for researchers to take [...]

### Contents

Non-Linearities Related to the Financial Sector: Mitnik, S., Semmler, W.: Estimating a Banking-Macro Model Using a Multi-Regime VAR.- Martínez-García, E.: U.S. Business Cycles, Monetary Policy and the External Finance Premium.- Gallegati, M.: Early Warning Signals of Financial Stress: A "Wavelet-Based" Composite Indicators Approach.- Non-Linearities in Other Fields of Research: Sandberg, R.: Least Absolute Deviation Based Unit Root Tests in Smooth Transition Type of Models.- Benati, L., Lubik, T.A.: The Time-Varying Beveridge Curve.- Charemza, W., Kharin, Y., Maevskiy, V.: Bilinear[...]

### Fields of interest

Econometrics; Macroeconomics / Monetary Economics; Economic Theory; Financial Economics

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-42038-2](http://www.springer.com/978-3-642-42038-2)

### Hardcover

2014. IX, 262 p. 59 illus. (Dynamic Modeling and Econometrics in Economics and Finance, Vol. 17)

ISBN 978-3-642-42038-2

**Due: December 31, 2013**

S. Sreejesh, IFHE University, Hyderabad, India; S. Mohapatra

## Mixed Method Research Design

### An Application in Consumer-Brand Relationships (CBR)

This book is a comprehensive guide to design and conduct the research in management-related field, such as marketing management and human resources management. It provides an overview of the real research conducted by authors throughout their careers and explains the important and growing research design used in management research-mixed method research design. Video tutorials are also included for complete qualitative data collection and data analysis. These videos are included to help readers understand the research and apply the techniques using the recommended software programs. Mixed Method Research Design: An Application in Consumer-Brand Relationships (CBR) begins with an[...]

### Features

This book is a comprehensive guide to design and conduct the research in management-related field, such as marketing management and human resources management. It provides an overview of the real research conducted by authors throughout their careers and explains the important and growing research design used in management research-mixed method research design. Video tutorials are also included for [...]

### Contents

Introduction.- Literature Review.- Theoretical Development and Hypotheses.- Research Methodology.- Analysis and Results.- Discussion, Implications and Conclusions.

### Fields of interest

Market Research; Personnel Management; Marketing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02686-2](http://www.springer.com/978-3-319-02686-2)

### Hardcover

2014. XIII, 174 p. 27 illus. With online files/update. ISBN 978-3-319-02686-2

**usually dispatched within 3 to 5 business days**

C. Staudter, UMS (Consulting) GmbH, Frankfurt, Germany; C. Hugo, P. Bosselmann, UMS (Consulting) GmbH, Frankfurt am Main, Germany; J.-P. Mollenhauer, UMS (Consulting) GmbH, Frankfurt, Germany; R. Meran, UMS (Consulting) GmbH, Frankfurt, Germany; O. Roenpage, UMS (Consulting) GmbH, Frankfurt, Germany; S. Lunau, UMS (Consulting) GmbH, Frankfurt, Germany (Ed.)

## Design for Six Sigma + LeanToolset

### Mindset for Successful Innovations

The Toolset is a comprehensive collection of the relevant Design for Six Sigma+Lean tools, which are necessary for successfully implementing innovations. All tools are presented in a clear structure, providing a good overview of the methodology. The chronology of the listed tools corresponds to the procedure in a Design for Six Sigma+Lean development project with the stages Define, Measure, Analyze, Design, and Verify. Due to this unique structure by which tools can be found and applied quickly we created a book that facilitates project work in practical use enormously. Migrating from a tool based approach to a question based approach is a decisive success factor in our opinion enabling[...]

### Features

The Toolset is a comprehensive collection of the relevant Design for Six Sigma+Lean tools, which are necessary for successfully implementing innovations. All tools are presented in a clear structure, providing a good overview of the methodology. The chronology of the listed tools corresponds to the procedure in a Design for Six Sigma+Lean development project with the stages [...]

### Contents

Define.- Measure.- Analyze.- Design.- Verify.

### Fields of interest

Technology Management; Production / Logistics; Quality Control, Reliability, Safety and Risk

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-642-41454-1](http://www.springer.com/978-3-642-41454-1)

### Hardcover

2013. XIII, 553 p. 155 illus. (Management for Professionals)

ISBN 978-3-642-41454-1

**Due: January 28, 2014**

K. Storbacka, R. Pennanen

## Solution Business

### Designing a Platform for Organic Growth

Success in solution business starts by accepting that solution business is a separate business model, not simply another product category or an extension of the existing product business. This book identifies the business model areas that firms need to focus on when transforming into solution business. It further organizes these areas into three sets of capabilities and practices: commercialization, industrialization and solution platforms. This is the first book to take a comprehensive view of success in solution business and its relevance therefore extends to all functions of firms wanting to become solution providers as well as to many managerial levels. The book will also help you[...]

### Features

Success in solution business starts by accepting that solution business is a separate business model, not simply another product category or an extension of the existing product business. This book identifies the business model areas that firms need to focus on when transforming into solution business. It further organizes these areas into three sets of capabilities and practices: commercialization, [...]

### Contents

Driving Growth and Profit With Solution Business.- Develop Solutions: Identifying New Value Creation Opportunities.- Create Demand: Generating Sales Opportunities.- Sell Solution: Turning an Opportunity to an Order.- Deliver Solution: Securing Customer Value Creation and Firm Value Capture.- Solution Platform: Foundation for Sustainable Success.- Making It Happen: Are You Ready for Solution Business?.

### Fields of interest

Business Strategy / Leadership; Organization / Planning; Sales / Distribution / Call Center / Customer Service; Technology Management; Production / Logistics

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-03975-6](http://www.springer.com/978-3-319-03975-6)

### Hardcover

2014. 180 p. (Management for Professionals)

ISBN 978-3-319-03975-6

**Due: February 28, 2014**

N. Taher, B. Al-Hajjar

## Energy and Environmental Concerns and Opportunities in Saudi Arabia

The vast oil resources in Saudi Arabia have for decades encouraged a generous system of oil subsidies, making the Kingdom one of the leading countries in the world with the cheapest domestic price of oil. Such subsidies have, however, encouraged inefficient utilization of oil, which is largely consumed in the power, water and transportation sectors, contributing substantially to CO2 emission in the country. These problems are exacerbated by demographic dynamics, urbanization, changes in income and consumption patterns, and industrialization. On current trends of domestic consumption patterns, Saudi Arabia will consume the whole of the oil it will produce by 2030, which will reflect[...]

### Features

The vast oil resources in Saudi Arabia have for decades encouraged a generous system of oil subsidies, making the Kingdom one of the leading countries in the world with the cheapest domestic price of oil. Such subsidies have, however, encouraged inefficient utilization of oil, which is largely consumed in the power, water and transportation sectors, contributing substantially to CO2 emission in the country. [...]

### Contents

Environmental Challenges, Regulations and Institutions in Saudi Arabia.- Environmental Concerns and Policies in Saudi Arabia.- Environmental Investments.- Incentive Structures.- Environmental Business Channels.- The Way Forward.

### Fields of interest

Economic Policy; Economic Growth; Energy Policy, Economics and Management

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02981-8](http://www.springer.com/978-3-319-02981-8)

### Hardcover

2014. XXIX, 203 p. 76 illus.

ISBN 978-3-319-02981-8

**Due: December 31, 2013**

L. Talmon-Gros

## Development Patterns of Material Productivity

### Convergence or Divergence?

Increasing concerns regarding the world's natural resources and sustainability continue to be a major issue for global development. As a result several political initiatives and strategies for green or resource-efficient growth both on national and international levels have been proposed. A core element of these initiatives is the promotion of an increase of resource or material productivity. This dissertation examines material productivity developments in the OECD and BRICS countries between 1980 and 2008. By applying the concept of convergence stemming from economic growth theory to material productivity the analysis provides insights into both aspects: material productivity[...]

### Features

Increasing concerns regarding the world's natural resources and sustainability continue to be a major issue for global development. As a result several political initiatives and strategies for green or resource-efficient growth both on national and international levels have been proposed. A core element of these initiatives is the promotion of an increase of resource or material productivity. This dissertation [...]

### Contents

Introduction.- Overuse, Scarcity and the Debate About Sustainable Development.- The Relationship Between Technological Progress and Material Consumption.- Convergence - Theory, Econometrics and Empirics.- Material Productivity Measurement.- Empirical Evidence on the Development of Material Consumption and Material Productivity.- Research Question.- Data and Descriptive Statistics.- Examination of Material Productivity Convergence.- Discussion.- Conclusion.

### Fields of interest

Environmental Economics; Economic Growth; Sustainable Development; Econometrics; Technology Management

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02537-7](http://www.springer.com/978-3-319-02537-7)

### Hardcover

2014. XX, 264 p. 25 illus., 7 illus. in color. (Contributions to Economics)

ISBN 978-3-319-02537-7

**Due: January 31, 2014**

S. Vali, Fordham University, New York, USA

## Principles of Mathematical Economics

Under the assumption of a basic knowledge of algebra and analysis, micro and macro economics, this self-contained and self-sufficient textbook is targeted towards upper undergraduate audiences in economics and related fields such as business, management and the applied social sciences. The basic economics core ideas and theories are exposed and developed, together with the corresponding mathematical formulations. From the basics, progress is rapidly made to sophisticated nonlinear, economic modelling and real-world problem solving. Extensive exercises are included, and the textbook is particularly well-suited for computer-assisted learning.

### Features

Under the assumption of a basic knowledge of algebra and analysis, micro and macro economics, this self-contained and self-sufficient textbook is targeted towards upper undergraduate audiences in economics and related fields such as business, management and the applied social sciences. The basic economics core ideas and theories are exposed and developed, together with the corresponding mathematical [...]

### Contents

Household Expenditure.- Variables, a Short Taxonomy.- Sets and Functions.- Market Equilibrium Model.- Rates of Change and the Derivative.- Optimal Level of Output and Long Run Price.- Nonlinear Models.- Additional Topics in Perfect and Imperfect Competition.- Logarithmic and Exponential Functions.- Production Function, Least-Cost Combination.- Economic Dynamics.- Mathematics of Interest Rates and Finance.- Matrices and Their Applications.

### Fields of interest

Business & Economics (general); Mathematics (general)

### Target groups

Upper undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-94-6239-035-5](http://www.springer.com/978-94-6239-035-5)

### Hardcover

2014. XXVIII, 491 p. 121 illus., 60 illus. in color. (Mathematics Textbooks for Science and Engineering, Vol. 3)

ISBN 978-94-6239-035-5

**usually dispatched within 3 to 5 business days  
December 31, 2013**

J. Vitting Andersen, A. Nowak, University of Warsaw, Warsaw, Poland

## An Introduction to Socio-Finance

This introductory text is devoted to exposing the underlying nature of price formation in financial markets as a predominantly sociological phenomenon that relates individual decision-making to emergent and co-evolving social and financial structures. Two different levels of this sociological influence are considered: First, we examine how price formation results from the social dynamics of interacting individuals, where interaction occurs either through the price or by direct communication. Then the same processes are revisited and examined at the level of larger groups of individuals. In this book, models of both levels of socio-finance are presented, and it is shown, in particular, [...]

### Features

This introductory text is devoted to exposing the underlying nature of price formation in financial markets as a predominantly sociological phenomenon that relates individual decision-making to emergent and co-evolving social and financial structures. Two different levels of this sociological influence are considered: First, we examine how price formation results from the social dynamics of [...]

### Contents

The Traditional Approach to Finance.- Behavioral Finance.- Financial Markets as Interacting Individuals: Price Formation From Models of Complexity.- A Psychological Galilean Principle for Price Movements: Fundamental Framework for Technical Analysis.- Catching Animal Spirits: Using Complexity Theory to Detect Speculative Moments of the Markets.- Social Framing Creating Bull Markets of the Past: Growth Theory of Financial Markets.- Complexity Theory and Systemic Risk in the World's Financial Markets.- Communication and the Stock Market.- References.- Index.

### Fields of interest

Financial Economics; Socio- and Econophysics, Population and Evolutionary Models; Quantitative Finance

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-41943-0](http://www.springer.com/978-3-642-41943-0)

### Hardcover

2013. XIII, 185 p. 44 illus., 9 illus. in color.

ISBN 978-3-642-41943-0

**Due: December 31, 2013**

U.R. Wagle

## The Heterogeneity Link of the Welfare State and Redistribution

Ethnic Heterogeneity, Welfare State Policies, Poverty, and Inequality in High Income Countries

This book situates ethnic heterogeneity in the larger discussion of the welfare state and its redistributive outcomes, poverty and inequality. By using comprehensive, longitudinal data covering 1980 to 2010 from 17 high income countries, this analysis helps achieve a major milestone in comparative welfare state research both conceptually and methodologically. Conceptually, it elevates the relevance of growing ethnic heterogeneity in thinking about how politics and economics of the welfare state operate, collectively impacting the magnitudes of poverty and inequality. Methodologically, the analysis conducted in this book provides broader empirical tests for the many propositions and[...]

### Features

Using data covering 1980 to 2005 across 17 high income countries, this book offers a thorough and systematic analysis of the relevance of population heterogeneity in determining variations in welfare state policies as well as inequality and poverty. Comparative analysis provides a new look into the ongoing drive for welfare state retrenchment amidst increasing heterogeneity across many countries and its [...]

### Contents

Introduction.- Ethnic Heterogeneity.- The Welfare State.- Poverty and Inequality.- Ethnic Heterogeneity and the Welfare State.- Ethnic Heterogeneity and Poverty and Inequality.- Conclusion.- References.- Index.

### Fields of interest

Development Economics; Social Structure, Social Inequality; Comparative Politics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02814-9](http://www.springer.com/978-3-319-02814-9)

### Hardcover

2013. XIII, 302 p. 18 illus. in color.  
ISBN 978-3-319-02814-9

**usually dispatched within 3 to 5 business days**

W.H. Wallace

## The American Monetary System

An Insider's View of Financial Institutions, Markets and Monetary Policy

Today's financial system is considerably more complex than in years past, as new financial instruments have been introduced that are not well understood even by the people and institutions that invest in them. Numerous high-risk opportunities are available, and the number of people who unwittingly wander into such ventures seems to grow daily. There is also the realization that people's lives are affected by the financial system without their overt participation in it. Despite no active participation, pensions can be emasculated by a sudden decline in interest rates, or a rise in rates can increase the monthly payments on a mortgage, credit cards or other debt. This book looks at the[...]

### Features

Today's financial system is considerably more complex than in years past, as new financial instruments have been introduced that are not well understood even by the people and institutions that invest in them. Numerous high-risk opportunities are available, and the number of people who unwittingly wander into such ventures seems to grow daily. There is also the realization that people's lives are affected by [...]

### Contents

Introduction.- Part I.- Historical Perspectives on Money, Financial Institutions and Markets.- What Gives Money Its Value? -- From Gold to Paper.- What is Driving the Financial World Today?.- Part II Banking: Asset & Liability Management; Banking Supervision & Regulation.- How Are Banks Funded?.- How Do Banks Use Their Funds?.- Who Owns the Banks? Bank Capital and the Basel Accord.- How Safe Are Our Banks?.- Part III Financial Markets and the Management of Financial Risk.- What Makes the System Work?.- Who Finances American Industry? - The Relative Roles of Commercial and[...]

### Fields of interest

Macroeconomics / Monetary Economics; Economic Systems; Public Finance & Economics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02906-1](http://www.springer.com/978-3-319-02906-1)

### Hardcover

2014. X, 340 p. 15 illus., 12 illus. in color.  
ISBN 978-3-319-02906-1

**Due: December 31, 2013**

P.J.J. Welfens

## Social Security and Economic Globalization

Economic globalization is a complex phenomenon where the links between social security expenditures and globalization are not well understood so far. This study summarizes new key findings and highlights new theoretical insights in the field of social security systems, labor standards, taxation and economic globalization. Moreover, new thoughts on the links between social security systems and migration as well as between free trade areas and social market economy development are presented. The book analyzes the role of a changing age dependency using a Branson model and it derives implications for the stock market price index, the exchange rate and the interest rate. Economic[...]

### Features

Economic globalization is a complex phenomenon where the links between social security expenditures and globalization are not well understood so far. This study summarizes new key findings and highlights new theoretical insights in the field of social security systems, labor standards, taxation and economic globalization. Moreover, new thoughts on the links between social security systems and migration as [...]

### Contents

Introduction.- Key Problems.- Theoretical Aspects of Globalization, Economic Growth, Social Security.- Conclusions.- Appendix.

### Fields of interest

Social Policy; International Economics; Social Structure, Social Inequality; Public Finance & Economics; Labor Economics; Economic Growth

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40879-3](http://www.springer.com/978-3-642-40879-3)

### Hardcover

2013. XIV, 147 p. 28 illus.  
ISBN 978-3-642-40879-3

**Due: December 31, 2013**

P. Wu, Central Queensland University, Rockhampton, Australia;  
S.P. Low, National University of Singapore, Singapore, Singapore

## Lean and Cleaner Production

### Applications in Prefabrication to Reduce Carbon Emissions

This book explains how in moving towards Cleaner Production, the Lean Production Philosophy can be applied to reduce carbon emissions in prefabrication - one major source of the Greenhouse Gas (GHG) emissions which contribute to global climate change. This book examines theories and principles in the Lean Production Philosophy to develop situation-based carbon reduction strategies for precast concrete manufacturers and contractors in terms of Site layout, Supply Chain, Production, Stocks and Installation Management. It presents the empirical findings of surveys and case studies with managers and professionals working for precasters and contractors in Singapore, findings which provide[...]

### Features

This book explains how in moving towards Cleaner Production, the Lean Production Philosophy can be applied to reduce carbon emissions in prefabrication - one major source of the Greenhouse Gas (GHG) emissions which contribute to global climate change. This book examines theories and principles in the Lean Production Philosophy to develop situation-based carbon reduction strategies for precast concrete [...]

### Contents

Introduction.- Sustainable Development and Global Climate Change.- Lean Production Philosophy.- The Precast Concrete Industry.- Modelling the Lean Production Philosophy.- Research Design and Methodology.- Applications in Precast Concrete Factories.- Case study of a Precast Concrete Factory.- Precast Concrete Products in Construction Sites.- Case study of a Construction Site.- Carbon Labelling and Reflections.- Conclusions and Recommendations.- References.

### Fields of interest

Business & Economics (general); Environmental Economics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-42061-0](http://www.springer.com/978-3-642-42061-0)

### Hardcover

2013. XXII, 344 p. 76 illus., 31 illus. in color.  
ISBN 978-3-642-42061-0

**Due: January 31, 2014**

J. vom Brocke, M. Rosemann (Eds.)

## Handbook on Business Process Management 1

### Introduction, Methods, and Information Systems

Business Process Management (BPM) has become one of the most widely used approaches for the design of modern organizational and information systems. The conscious treatment of business processes as significant corporate assets has facilitated substantial improvements in organizational performance but is also used to ensure the conformance of corporate activities. This Handbook presents in two volumes the contemporary body of knowledge as articulated by the world's leading BPM thought leaders. This first volume focuses on arriving at a sound definition of Business Process Management approaches and examines BPM methods and process-aware information systems. As such, it provides[...]

### Features

Business Process Management (BPM) has become one of the most widely used approaches for the design of modern organizational and information systems. The conscious treatment of business processes as significant corporate assets has facilitated substantial improvements in organizational performance but is also used to ensure the conformance of corporate activities. This Handbook presents in two volumes the [...]

### Contents

Introduction.- Methods.- Information Systems.

### Fields of interest

Business Information Systems; Information Systems Applications (incl.Internet)

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-45099-0](http://www.springer.com/978-3-642-45099-0)

### Hardcover

2014. Approx. 700 p. (International Handbooks on Information Systems)  
ISBN 978-3-642-45099-0

**Due: February 28, 2014**

J. vom Brocke, M. Rosemann, QUT, Rosemann, Australia (Eds.)

## Handbook on Business Process Management 2

### Strategic Alignment, Governance, People and Culture

Business Process Management (BPM) has become one of the most widely used approaches for the design of modern organizational and information systems. The conscious treatment of business processes as significant corporate assets has facilitated substantial improvements in organizational performance but is also used to ensure the conformance of corporate activities. This Handbook presents in two volumes the contemporary body of knowledge as articulated by the world's leading BPM thought leaders. This second volume focuses on the managerial and organizational challenges of Business Process Management such as strategic and cultural alignment, governance and the education of BPM[...]

### Features

Business Process Management (BPM) has become one of the most widely used approaches for the design of modern organizational and information systems. The conscious treatment of business processes as significant corporate assets has facilitated substantial improvements in organizational performance but is also used to ensure the conformance of corporate activities. This Handbook presents in two volumes the [...]

### Contents

Strategic Alignment.- Governance.- People and culture.

### Fields of interest

Business Information Systems; Information Systems Applications (incl.Internet)

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-45102-7](http://www.springer.com/978-3-642-45102-7)

### Hardcover

2014. Approx. 700 p. (International Handbooks on Information Systems)  
ISBN 978-3-642-45102-7

**Due: February 28, 2014**

## Energy

H. Chen, Institute of Process Engineering, CAS, Beijing, China (P.R.)

### Biotechnology of Lignocellulose

#### Theory and Practice

This book presents and summarizes the new thoughts, new methods and new achievements that have emerged in the biotechnology of lignocellulose in recent years. It proposes new concepts including the primary refining, fractionation, multi-level utilization and selective structural separation of lignocellulose, etc. By approaching lignocellulose as a multi-level resource, biotechnology could have a significant effect on ecological agriculture, bio-energy, the chemical and paper making industries, etc., ultimately establishing distinctive eco-industrial parks for lignocellulose. Additionally, this book provides systematic research methods for the biotechnology of lignocellulose including[...]

#### Features

This book presents and summarizes the new thoughts, new methods and new achievements that have emerged in the biotechnology of lignocellulose in recent years. It proposes new concepts including the primary refining, fractionation, multi-level utilization and selective structural separation of lignocellulose, etc. By approaching lignocellulose as a multi-level resource, biotechnology could have a significant [...] .

#### Contents

Brief Introduction to the Biotechnology of Lignocellulose.- Chemical Composition and Structure of Natural Lignocellulose.- Biological Fundamentals for Biotechnology of Lignocellulose.- Pretreatment and Primary Refining of Lignocelluloses.- Applications of Lignocellulose Biotechnology in Ecological Agriculture.- Applications of Lignocellulose Biotechnology in Bioenergy.- Applications of Lignocellulose Biotechnology in Chemical Industry.- Applications of Lignocellulose Biotechnology in Chemical Industry.- Applications of Lignocellulose Biotechnology in Other Industries.- Ecological[...]

#### Fields of interest

Renewable and Green Energy; Plant Breeding / Biotechnology; Biochemical Engineering; Biomaterials; Microbial Ecology; Microengineering

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-94-007-6897-0](http://www.springer.com/978-94-007-6897-0)

Distribution rights in China: Chemical Industrial Press

#### Hardcover

Originally Chinese version Xianweisu Shengwu Jishu, 2nd ed., published by Chemical Industry Press, 2011. Jointly published with Chemical Industry Press 2014. X, 569 p. 71 illus., 28 illus. in color. ISBN 978-94-007-6897-0

**Due: March 28, 2014**

M. Jacobson, D. Ciolkosz (Eds.)

### Wood-Based Energy in the Northern Forests

This unique book provides the first comprehensive overview of wood based bioenergy in the northern hardwood forests of the Eastern United States. This includes a holistic look at the topic of wood based bioenergy, as well as focused analyses of key topics. This book is relevant to engineers, project developers, foresters, economists, sociologists, environmental scientists and natural resource managers. Most chapters also provide practical hands-on advice for the practitioner, and provide a valuable resource for anyone who is considering developing a woody bioenergy project.

#### Features

This unique book provides the first comprehensive overview of wood based bioenergy in the northern hardwood forests of the Eastern United States. This includes a holistic look at the topic of wood based bioenergy, as well as focused analyses of key topics. This book is relevant to engineers, project developers, foresters, economists, sociologists, environmental scientists and natural resource managers. [...]

#### Contents

Introduction and Overview.- Forestry in the Northeast.- Biomass Availability, Supply and Demand.- Carbon Cycle Implications of Forest Bioenergy Production.- Breeding and Genetics for Future Feedstocks.- Biomass Harvesting Systems and Logistics.- Residential Wood Heat in the Northeast.- Commercial Combustion and CHP systems.- The Wood Pellet Industry in the Northeast.- Biofuel Production.- Emissions and Health Impacts of Wood Biomass Combustion.- Social Considerations.- Financing for Project Development.

#### Fields of interest

Renewable and Green Energy; Energy Policy, Economics and Management; Renewable and Green Energy; Forestry Management; Wood Science & Technology

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9477-5](http://www.springer.com/978-1-4614-9477-5)

#### Hardcover

2013. XVII, 235 p. 64 illus., 42 illus. in color. ISBN 978-1-4614-9477-5

**usually dispatched within 3 to 5 business days  
December 31, 2013**

H.-W. Schock, Helmholtz-Zentrum, Berlin, Germany; J. Windeln, STSM a. Member IBM Academy of Technology, Mainz, Germany (Eds.)

### Computational Materials Science for Thin-Film Solar Cells

#### How to Increase Efficiency

Scientists and engineers in academic and industrial research experience a strong evolving discipline: Computational Materials Science. This discipline provides materials insights that are not readily achievable by experiments, and it offers the opportunity to design materials and composites "ab-initio". This book presents the methods and the practical use of Computational Materials Science using two distinct examples: the development of optimized or alternative materials for CIGS (Copper-Indium-Gallium-di-Selenide) photovoltaics and the optimization of CIGS thin film solar cells for maximum efficiency. After a general introduction the theoretical background of the book is illustrated:[...]

#### Features

Scientists and engineers in academic and industrial research experience a strong evolving discipline: Computational Materials Science. This discipline provides materials insights that are not readily achievable by experiments, and it offers the opportunity to design materials and composites "ab-initio". This book presents the methods and the practical use of Computational Materials Science using two [...]

#### Contents

High Performance Computing.- Thin Film Solar Cells.- Density Functional Theory.- Monte Carlo Simulations.- Cluster Expansions.- Software.- Simulations.- Implications for Thin Film Cell Process Optimizations.

#### Fields of interest

Renewable and Green Energy; Optical and Electronic Materials; Renewable and Green Energy; Computational Science and Engineering

#### Target groups

Research

#### Type of publication

Monograph

More on [www.springer.com/978-3-642-24284-7](http://www.springer.com/978-3-642-24284-7)

#### Hardcover

2014. 300 p. 55 illus., 5 illus. in color. ISBN 978-3-642-24284-7

**Due: March 28, 2014**

V.P. Utgikar, University of Idaho, Idaho Falls, Idaho Falls, USA

## Hydrogen

Science, Engineering, and Energy Systems

The limitations of fossil fuel supply and the need for decarbonization of energy systems presage the dawn of the hydrogen economy. However, realizing this vision will require developing and implementing solutions to engineering and technology challenges in hydrogen production, storage, utilization and distribution. "Hydrogen: Science, Engineering, and Energy Systems" presents a comprehensive overview of these issues. Hydrogen production alternatives are examined and the competing options analyzed on the basis of fundamental scientific principles. Similar discussions are included on other aspects of the hydrogen economy, not only answering questions of "how" and "what", but also [...]

### Features

The limitations of fossil fuel supply and the need for decarbonization of energy systems presage the dawn of the hydrogen economy. However, realizing this vision will require developing and implementing solutions to engineering and technology challenges in hydrogen production, storage, utilization and distribution. "Hydrogen: Science, Engineering, and Energy Systems" presents a comprehensive overview of [...]

### Contents

Fossil Energy Resources.- Climate Change.- Hydrogen Characteristics.- Hydrogen Production Principles.- Production from Carbon Compounds.- Production from Water.- Hydrogen Utilization – Transportation and Power.- Hydrogen Storage.- Primary Energy Alternatives.- Environmental Impact of Hydrogen.- Hydrogen Safety.- Infrastructure for Hydrogen Economy.- Techno-Economic Considerations.- The Future of Hydrogen in Energy Systems.

### Fields of interest

Renewable and Green Energy; Renewable and Green Energy; Industrial Chemistry / Chemical Engineering; Economic Growth; Climate Change; Automotive Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-84800-392-7](http://www.springer.com/978-1-84800-392-7)

### Hardcover

2014. 600 p. 115 illus.  
ISBN 978-1-84800-392-7

**Due: December 29, 2013**

## Engineering

N.W. Adelman-Larsen, Flex Acoustics, Kgs. Lyngby, Denmark

## Rock & Pop Venues

Acoustic and Architectural Design

Popular music plays a substantial role in most people's life. The demand and financial revenue of Rock and pop concerts is large and still increasing. Though 80% of the music turnover is done in Rock and Pop Music, books assess only Classical concert and opera houses. However, the requirements for pop music halls are different from classical Music and opera houses. This book closes this gap including the following features: In part one, the book A. Gives an objective methodology to assess Rock and Pop Music Venues. B. Shows essential construction details and choices of building materials in the design of new venues or the renovation of old ones. In part two, the book C. Presents a set of [...]

### Features

Popular music plays a substantial role in most people's life. The demand and financial revenue of Rock and pop concerts is large and still increasing. Though 80% of the music turnover is done in Rock and Pop Music, books assess only Classical concert and opera houses. However, the requirements for pop music halls are different from classical Music and opera houses. This book closes this gap including [...]

### Contents

History of Pop and Rock Sound.- Terms, Language.- The Gallery of Rock, Pop and Jazz Venues.- Acoustical Principles.- Assessment of Real Halls.- Design Principles.- The Acoustics during a Gig.

### Fields of interest

Engineering Acoustics; Building Types and Functions; Acoustics; Building Construction, HVAC, Refrigeration

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-642-45235-2](http://www.springer.com/978-3-642-45235-2)

### Hardcover

2014. Approx. 400 p.  
ISBN 978-3-642-45235-2

**Due: February 28, 2014**

A. Adhikari, Parvatibai Chowgule College, Margao, India; J. Adhikari, W. Pedrycz, University of Alberta, Edmonton, Canada

## Data Analysis and Pattern Recognition in Multiple Databases

Pattern recognition in data is a well known classical problem that falls under the ambit of data analysis. As we need to handle different data, the nature of patterns, their recognition and the types of data analyses are bound to change. Since the number of data collection channels increases in the recent time and becomes more diversified, many real-world data mining tasks can easily acquire multiple databases from various sources. In these cases, data mining becomes more challenging for several essential reasons. We may encounter sensitive data originating from different sources - those cannot be amalgamated. Even if we are allowed to place different data together, we are certainly [...]

### Features

Pattern recognition in data is a well known classical problem that falls under the ambit of data analysis. As we need to handle different data, the nature of patterns, their recognition and the types of data analyses are bound to change. Since the number of data collection channels increases in the recent time and becomes more diversified, many real-world data mining tasks can easily acquire multiple [...]

### Contents

From the Contents: Synthesizing Different Extreme Association Rules in Multiple Data Sources.- Clustering items in time-stamped databases induced by stability.- Mining global patterns in multiple large databases.- Clustering Local Frequency Items in Multiple Data Sources.- Mining Patterns of Select Items in Different Data Sources.

### Fields of interest

Computational Intelligence; Pattern Recognition; Data Mining and Knowledge Discovery

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03409-6](http://www.springer.com/978-3-319-03409-6)

### Hardcover

2014. XIII, 238 p. 97 illus. (Intelligent Systems Reference Library, Vol. 61)  
ISBN 978-3-319-03409-6

**Due: December 31, 2013**

C. Al-Ekabi, ESPI - European Space Policy Institute, Vienna, Austria; B. Baranes, ESPI - European Space Policy Institute, Vienna, Austria; P. Hulsroj, ESPI - European Space Policy Institute, Vienna, Austria; A. Lahcen, ESPI - European Space Policy Institute, Vienna, Austria (Eds.)

## Yearbook on Space Policy 2011/2012

### Space in Times of Financial Crisis

The Yearbook on Space Policy is the reference publication analyzing space policy developments. Each year it presents issues and trends in space policy and the space sector as a whole. Its scope is global and its perspective is European. The Yearbook also links space policy with other policy areas. It highlights specific events and issues, and provides useful insights, data and information on space activities. The Yearbook on Space Policy is edited by the European Space Policy Institute (ESPI) based in Vienna, Austria. It combines in-house research and contributions of members of the European Space Policy Research and Academic Network (ESPRAN), coordinated by ESPI. The Yearbook is [...]

### Features

The Yearbook on Space Policy is the reference publication analyzing space policy developments. Each year it presents issues and trends in space policy and the space sector as a whole. Its scope is global and its perspective is European. The Yearbook also links space policy with other policy areas. It highlights specific events and issues, and provides useful insights, data and information on space activities. [...]

### Contents

From the Contents: Part I European Space Activities in the Global Context.- Developments in Space Policies, Programmes and Technologies throughout the World and in Europe.- Part II The Effect of the Financial Crisis on Political Decision-Making.- The Psychology and Reality of the Financial Crisis in Terms of Space Cooperation.- Part III Chronology: June 2011 – May 2012.- Bibliography of Space Policy Publications July 2011 – June 2012.

### Fields of interest

Aerospace Technology and Astronautics; Political Science, general; Law of the Sea, Air and Outer Space; R & D / Technology Policy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-7091-1648-7](http://www.springer.com/978-3-7091-1648-7)

### Hardcover

2014. X, 420 p. 57 illus., 47 illus. in color. (Yearbook on Space Policy)  
ISBN 978-3-7091-1648-7

**Due: January 31, 2014**

M. Alioto, Università di Siena, Siena, Italy; E. Consoli, Maxim Integrated, Catania, Italy; G. Palumbo, University of Catania, Catania, Italy

## Flip-Flop Design in Nanometer CMOS -

### from High Speed to Low Energy

This book provides a unified treatment of Flip-Flop/latch design and selection in nanometer CMOS VLSI systems. The design aspects related to the energy-delay tradeoff in Flip-Flops and latches are discussed, given their optimal selection according to the application, and the detailed circuit design in nanometer CMOS VLSI systems. Design strategies are derived in a coherent framework that includes explicitly nanometer effects, including leakage, layout parasitics and process/voltage/temperature variations. The related design tradeoffs are explored in a wide range of applications and energy-performance targets. A wide range of existing and recently proposed Flip-flop and latch [...]

### Features

This book provides a unified treatment of Flip-Flop/latch design and selection in nanometer CMOS VLSI systems. The design aspects related to the energy-delay tradeoff in Flip-Flops and latches are discussed, given their optimal selection according to the application, and the detailed circuit design in nanometer CMOS VLSI systems. Design strategies are derived in a coherent framework that includes explicitly [...]

### Contents

The Logical Effort Method.- Design in the Energy-Delay Space.- Clocked Storage Elements.- Flip-Flop Optimized Design.- Analysis and Comparison in the Energy Delay-Area Domain.- Energy-Efficient Clock Slope.- Ultra-Fast and Energy-Efficient Pulsed Latch Topologies.- Impact of Variations and Comparative Analysis.

### Fields of interest

Circuits and Systems; Electronic Circuits and Devices; Processor Architectures; Nanotechnology and Microengineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01996-3](http://www.springer.com/978-3-319-01996-3)

### Hardcover

2014. 300 p. 150 illus.  
ISBN 978-3-319-01996-3

**Due: April 28, 2014**

F. Amato, R. Ambrosino, M. Ariola, C. Cosentino, G. De Tommasi, Università degli Studi di Napoli, Napoli, Italy

## Finite-Time Stability and Control

Finite-time stability (FTS) is a more practical concept than classical Lyapunov stability, useful for checking whether the state trajectories of a system remain within pre-specified bounds over a finite time interval. In a linear systems framework, FTS problems can be cast as convex optimization problems and solved by the use of effective off-the-shelf computational tools such as LMI solvers. Finite-time Stability and Control exploits this benefit to present the practical applications of FTS and finite-time control-theoretical results to various engineering fields. The text is divided into two parts:- linear systems; and- hybrid systems. The building of practical [...]

### Features

Finite-time stability (FTS) is a more practical concept than classical Lyapunov stability, useful for checking whether the state trajectories of a system remain within pre-specified bounds over a finite time interval. In a linear systems framework, FTS problems can be cast as convex optimization problems and solved by the use of effective off-the-shelf computational tools such as LMI solvers. Finite-time [...]

### Contents

Part I: Linear Systems.- Finite-time Stability Analysis of Continuous-Time Linear Systems.- Controller Design for the Finite-Time Stabilization of Continuous-Time Linear Systems.- Robustness Issues.- Finite-time Stability of Discrete-Time Linear Systems.- Finite-time Stability Analysis via PQLFs.- Part II: Hybrid Systems.- Finite-time Stability of Impulsive Dynamical Linear Systems.- Controller Design for the Finite-time Stability of Impulsive Dynamical Linear Systems.- Robustness Issues for Impulsive Dynamical Linear Systems.

### Fields of interest

Control; Systems Theory, Control; Industrial Chemistry / Chemical Engineering; Automotive Engineering; Aerospace Technology and Astronautics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5663-5](http://www.springer.com/978-1-4471-5663-5)

### Softcover

2014. XII, 146 p. 37 illus., 14 illus. in color. (Lecture Notes in Control and Information Sciences, Vol. 453)  
ISBN 978-1-4471-5663-5

**usually dispatched within 3 to 5 business days  
December 31, 2013**

H.M. Ammari, University of Michigan-Dearborn, Dearborn, USA (Ed.)

## The Art of Wireless Sensor Networks

### Volume 1: Fundamentals

During the last one and a half decades, wireless sensor networks have witnessed significant growth and tremendous development in both academia and industry. "The Art of Wireless Sensor Networks: Volume 1 - Fundamentals" focuses on the fundamentals concepts in the design, analysis, and implementation of wireless sensor networks. It covers the various layers of the lifecycle of this type of network from the physical layer up to the application layer. Its rationale is that the first volume covers contemporary design issues, tools, and protocols for radio-based two-dimensional terrestrial sensor networks. All the book chapters in this volume include up-to-date research work spanning[...]

### Features

During the last one and a half decades, wireless sensor networks have witnessed significant growth and tremendous development in both academia and industry. "The Art of Wireless Sensor Networks: Volume 1 - Fundamentals" focuses on the fundamentals concepts in the design, analysis, and implementation of wireless sensor networks. It covers the various layers of the lifecycle of this type of network [...]

### Contents

Part I Introduction and Applications.- Part II Wireless Communications and Medium Access Control.- Part III Routing.- Part IV Topology and Mobility Management.- Part V Localization and Task Management.- Part VI Data Management.- Part VII Data Gathering.- Part VIII Security.- Part IX Middleware.- Part X Sensor Technology, Standards, and Operating Systems.

### Fields of interest

Communications Engineering, Networks; Circuits and Systems; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40008-7](http://www.springer.com/978-3-642-40008-7)

### Hardcover

2014. XIII, 829 p. 293 illus., 146 illus. in color. (Signals and Communication Technology)  
ISBN 978-3-642-40008-7

**Due: December 16, 2013**

H.M. Ammari (Ed.)

## The Art of Wireless Sensor Networks

### Volume 2: Advanced Topics and Applications

During the last one and a half decades, wireless sensor networks have witnessed significant growth and tremendous development in both academia and industry. A large number of researchers, including computer scientists and engineers, have been interested in solving challenging problems that span all the layers of the protocol stack of sensor networking systems. Several venues, such as journals, conferences, and workshops, have been launched to cover innovative research and practice in this promising and rapidly advancing field. Because of these trends, I thought it would be beneficial to provide our sensor networks community with a comprehensive reference on as much of the findings as[...]

### Features

During the last one and a half decades, wireless sensor networks have witnessed significant growth and tremendous development in both academia and industry. A large number of researchers, including computer scientists and engineers, have been interested in solving challenging problems that span all the layers of the protocol stack of sensor networking systems. Several venues, such as journals, conferences, [...]

### Contents

Part I Introduction and Stochastic Modeling.- Part II Barrier and Spatiotemporal Coverage.- Part III Tracking, Estimation, and Counting.- Part IV Coverage and Localization in Three-Dimensional Wireless Sensor Networks.- Part V Topology Control and Routing in Three-Dimensional Wireless Sensor Networks.- Part VI Underground and Underwater Sensor Networks.- Part VII Multimedia and Body Sensor Networks.- Part VIII Social Sensing.

### Fields of interest

Communications Engineering, Networks; Circuits and Systems; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40065-0](http://www.springer.com/978-3-642-40065-0)

### Hardcover

2014. XII, 696 p. 250 illus., 151 illus. in color. (Signals and Communication Technology)  
ISBN 978-3-642-40065-0

**Due: December 16, 2013**

M. Angelillo, University of Salerno, Fisciano, Italy (Ed.)

## Mechanics of Masonry Structures

The experience of people working with different perspectives in different fields of masonry modeling, from mathematics to applied engineering and practice, is brought together in this book. It presents both the theoretical background and an overview of the state-of-the-art in static and dynamic masonry modeling.

### Features

The experience of people working with different perspectives in different fields of masonry modeling, from mathematics to applied engineering and practice, is brought together in this book. It presents both the theoretical background and an overview of the state-of-the-art in static and dynamic masonry modeling.

### Contents

Masonry behavior and modeling.- Mathematics of the masonry-like model and limit analysis.- A numerical method for solving BVP of masonry-like solids.- Practical applications of unilateral models to Masonry Equilibrium.- Modeling the interfaces in masonry structures.- Micro, macro and multiscale models for masonry structures.- Homogenization and seismic assessment: review and recent trends.

### Fields of interest

Structural Mechanics; Continuum Mechanics and Mechanics of Materials; Building Construction, HVAC, Refrigeration; Theoretical and Applied Mechanics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-7091-1773-6](http://www.springer.com/978-3-7091-1773-6)

### Hardcover

2014. VI, 350 p. 170 illus. (CISM International Centre for Mechanical Sciences, Vol. 551)  
ISBN 978-3-7091-1773-6

**Due: April 28, 2014**

G. Antonelli, Università di Cassino, Cassino, Italy

## Underwater Robots

This book, now at the third edition, addresses the main control aspects in underwater manipulation tasks. The mathematical model with significant impact on the control strategy is discussed. The problem of controlling a 6-degrees-of-freedom autonomous underwater vehicle is deeply investigated and a survey of fault detection/tolerant strategies for unmanned underwater vehicles is provided. Inverse kinematics, dynamic and interaction control for underwater vehicle-manipulator systems are then discussed. The code used to generate most of the numerical simulations is made available and briefly discussed.

### Features

This book, now at the third edition, addresses the main control aspects in underwater manipulation tasks. The mathematical model with significant impact on the control strategy is discussed. The problem of controlling a 6-degrees-of-freedom autonomous underwater vehicle is deeply investigated and a survey of fault detection/tolerant strategies for unmanned underwater vehicles is provided. Inverse [...]

### Contents

Modelling of Underwater Robots.- Dynamic Control of 6-DOF AUVs.- Fault Detection/Tolerance Strategies for AUVs and ROVs.- Experiments of Dynamic Control of a 6-DOF AUV.- Kinematic Control of UVMs.- Dynamic Control of UVMs.- Interaction Control of UVMs.- Dynamic Control of 6-DOF AUVs.- Fault Detection/Tolerance Strategies for AUVs and ROVs.- Experiments of Dynamic Control of a 6-DOF AUV.- Kinematic Control of UVMs.- Dynamic Control of UVMs.- Interaction Control of UVMs.

### Fields of interest

Robotics and Automation; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02876-7](http://www.springer.com/978-3-319-02876-7)

### Hardcover

2014. XXVII, 279 p. 151 illus., 62 illus. in color. (Springer Tracts in Advanced Robotics, Vol. 96)  
ISBN 978-3-319-02876-7

**usually dispatched within 3 to 5 business days**

H. Arslan, University of South Florida, Tampa, USA

## Modeling, Simulation, Testing, and Measurements of Wireless Communication Systems

### A Laboratory-Based Approach

The high demand for communications anywhere and anytime has been the driving force for the development of wireless services and technologies. Wireless technologies and services have evolved significantly over the last couple of decades, from simple paging to real-time voice communication and recently to very high rate data communications. This dramatic change has an effect on society in many aspects, enabling people to communicate in ways unimaginable in the past and contributing to the quality of life that is enjoyed today by many. In this book, wireless communication systems and concepts are introduced from a practical and laboratory perspective with a goal to provide readers with [...]

### Features

The high demand for communications anywhere and anytime has been the driving force for the development of wireless services and technologies. Wireless technologies and services have evolved significantly over the last couple of decades, from simple paging to real-time voice communication and recently to very high rate data communications. This dramatic change has an effect on society in many aspects, [...]

### Contents

Radios and SDR – relation to Lab equipments.- Modern Measurement Tools and Equipments.- Understanding Various System.- Measurements and Techniques Testing a basic radio system, sub-system, and components.- Digital Modulation.- Pulse Shaping Filtering.- Multi-Dimensional Signal Analysis.- Joint Time-Frequency Analysis.- Radio Channel and sounding.- Synchronization to digital signals.- Interference and its effect on the system.- Impairments in communication systems and modeling the impairments.- Understanding nonlinear distortions in the RF front end.

### Fields of interest

Communications Engineering, Networks; Coding and Information Theory

### Target groups

Research

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-94-007-3954-3](http://www.springer.com/978-94-007-3954-3)

### Hardcover

2014. 300p.  
ISBN 978-94-007-3954-3

**Due: March 28, 2014**

P. Babarzi, Budapest University of Technology and, Budapest, Hungary; J. Tapolcai, Budapest University of Technology and Ec, Budapest, Hungary; P.-H. Ho, University of Waterloo, Waterloo, Canada

## Internet Optical Infrastructure

### Issues on Monitoring and Failure Restoration

This book covers the issues of monitoring, failure localization, and restoration in the Internet optical backbone, and focuses on the progress of state-of-the-art in both industry standard and academic research. The authors summarize, categorize, and analyze the developed technology in the context of Internet fault management and failure recovery under the Generalized Multi-Protocol Label Switching (GMPLS), via both aspects of network operations and theories.

### Features

This book covers the issues of monitoring, failure localization, and restoration in the Internet optical backbone, and focuses on the progress of state-of-the-art in both industry standard and academic research. The authors summarize, categorize, and analyze the developed technology in the context of Internet fault management and failure recovery under the Generalized Multi-Protocol Label Switching (GMPLS), [...]

### Contents

Part I Fault Management under Generalized Multi-Protocol Label Switching (GMPLS).- GMPLS for Internet Control and Management – An Overview.- Fault Management under GMPLS.- Part II Monitoring and Failure Localization in All-Optical Networks.- Failure Localization via a Central Controller.- Distributed Failure Localization.- Monitoring Burst (m-burst).- Part III An All-Optical Restoration Framework with M-Trails.- Framework Introduction.- Monitoring Resource Hidden.

### Fields of interest

Microwaves, RF and Optical Engineering; Communications Engineering, Networks; Information Systems and Communication Service

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-7737-2](http://www.springer.com/978-1-4614-7737-2)

### Hardcover

2014. 300 p. 80 illus.  
ISBN 978-1-4614-7737-2

**Due: June 15, 2014**

Y. Baek, Boise State University, Boise, USA; R. Ko, University of Waikato, Hamilton, New Zealand; T. Marsh, James Cook University, Townsville, Australia (Eds.)

## Trends and Applications of Serious Gaming and Social Media

This book highlights the challenges and potential of educational learning or industry-based training using serious games and social media platforms. In particular, the book addresses applications used in businesses and education-related organizations in Asia, where the framework and experience of serious games have been used to address specific problems in the real world. The topics that will be present in this book includes future of serious games and immersive technologies and their impact on society; online and mobile games; achievement systems in serious games; persuasive technology and games for saving and money management; malware analytics for social networking; serious games[...]

### Features

This book highlights the challenges and potential of educational learning or industry-based training using serious games and social media platforms. In particular, the book addresses applications used in businesses and education-related organizations in Asia, where the framework and experience of serious games have been used to address specific problems in the real world. The topics that will be present in [...]

### Contents

The Future of Serious Games and Immersive Technologies and their Impact on Society.- The road to e-services: online and mobile games as enablers.- Achievement Systems Explained Identifying Triggers within Persuasive Technology and Games For Saving and Money Management.- Malware Analytics for Social Networking.- Serious Games and the Gamification of Mental Health Interventions.- Educational Implications Of Social Network Games.- An Analysis Of A Social Network Game In View Of Consumption Education Class.- Learning subject knowledge and acquiring 21st century skills through game[...]

### Fields of interest

Computational Intelligence; User Interfaces and Human Computer Interaction; Educational Technology; Media Sociology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-981-4560-25-2](http://www.springer.com/978-981-4560-25-2)

### Hardcover

2014. 180 p. 50 illus., 20 illus. in color. (Gaming Media and Social Effects)  
ISBN 978-981-4560-25-2

**Due: July 28, 2014**

R. Balasubramanian, V.J. Santos, Arizona State University, Tempe, USA (Eds.)

## The Human Hand as an Inspiration for Robot Hand Development

“The Human Hand as an Inspiration for Robot Hand Development” presents an edited collection of authoritative contributions in the area of robot hands. The results described in the volume are expected to lead to more robust, dependable, and inexpensive distributed systems such as those endowed with complex and advanced sensing, actuation, computation, and communication capabilities. The twenty-four chapters discuss the field of robotic grasping and manipulation viewed in light of the human hand’s capabilities and push the state-of-the-art in robot hand design and control. Topics discussed include human hand biomechanics, neural control, sensory feedback and perception, and robotic[...]

### Features

“The Human Hand as an Inspiration for Robot Hand Development” presents an edited collection of authoritative contributions in the area of robot hands. The results described in the volume are expected to lead to more robust, dependable, and inexpensive distributed systems such as those endowed with complex and advanced sensing, actuation, computation, and communication capabilities. The twenty-four chapters [...]

### Contents

Constraints and Flexibility in Cortical Control of the Hand.- Synergistic Control of Hand Muscles Through Common Neural Input.- Transmission of Musculotendon Forces to the Index Finger.- The Control and Perception of Finger Forces.

### Fields of interest

Robotics and Automation; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03016-6](http://www.springer.com/978-3-319-03016-6)

### Hardcover

2014. XI, 427 p. 210 illus., 97 illus. in color. (Springer Tracts in Advanced Robotics, Vol. 95)  
ISBN 978-3-319-03016-6

**Due: January 31, 2014**

M. Benson

## The Art of Software Thermal Management for Embedded Systems

This book introduces Software Thermal Management (STM) as a means of reducing power consumption in a computing system in order to manage heat, improve component reliability and increase system safety. Readers will benefit from this pragmatic guide to the field of STM for embedded systems and its catalog of software power management techniques. Since thermal management is a key bottleneck in embedded systems design, this book focuses on root cause of heat in embedded systems: power. Since software has an enormous impact on power consumption in an embedded system, this book urges software engineers to manage heat effectively by understanding, categorizing and developing new ways to [...]

### Features

This book introduces Software Thermal Management (STM) as a means of reducing power consumption in a computing system, in order to manage heat, improve component reliability, and increase system safety. Readers will benefit from this pragmatic guide to the field of STM for embedded systems and its catalog of software power management techniques. Since thermal management is a key bottleneck in embedded [...]

### Contents

Introduction to Software Thermal Management.- Landscape: History, Present Barriers and The Road Forward.- Roots: a Bedrock of Giants.- Techniques: Putting the Silicon to Work.- Frameworks: Choreographing the Parts.- Frontiers: The Future of Software Thermal Management.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Software Engineering; Energy Efficiency (incl. Buildings)

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-1-4939-0297-2](http://www.springer.com/978-1-4939-0297-2)

### Hardcover

2014. XIII, 137 p. 51 illus., 2 illus. in color.  
ISBN 978-1-4939-0297-2

**Due: January 31, 2014**

Y. Bestaoui Sebbane, Université d'Evry Val-d'Essonne, Evry, France

## Planning and Decision Making for Aerial Robots

This book provides an introduction to the emerging field of planning and decision making for aerial robots. An aerial robot is the ultimate form of Unmanned Aerial Vehicle, an aircraft endowed with built-in intelligence, requiring no direct human control and able to perform a specific task. It must be able to fly within a partially structured environment, to react and adapt to changing environmental conditions and to accommodate for the uncertainty that exists in the physical world. An aerial robot can be termed as a physical agent that exists and flies in the real 3D world, can sense its environment and act on it to achieve specific goals. So throughout this book, an aerial robot[...]

### Features

This book provides an introduction to the emerging field of planning and decision making for aerial robots. An aerial robot is the ultimate form of Unmanned Aerial Vehicle, an aircraft endowed with built-in intelligence, requiring no direct human control and able to perform a specific task. It must be able to fly within a partially structured environment, to react and adapt to changing environmental [...]

### Contents

Preface.- 1 Introduction.- 2 Motion Planning.- 3 Deterministic Decision Making.- 4 Decision Making Under Uncertainty.- 5 Multi Aerial Robot Planning.- 6 General Conclusions.- Index.

### Fields of interest

Control, Robotics, Mechatronics; Aerospace Technology and Astronautics; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03706-6](http://www.springer.com/978-3-319-03706-6)

### Hardcover

2014. XIII, 439 p. 17 illus., 14 illus. in color. (Intelligent Systems, Control and Automation: Science and Engineering, Vol. 71)

ISBN 978-3-319-03706-6

**Due: January 31, 2014**

F. Brandonisio, Tyndall National Institute, Cork, Ireland; M.P. Kennedy, University College Cork, Cork, Ireland

## Noise-Shaping All-Digital Phase-Locked Loops

Modeling, Simulation, Analysis and Design

This book presents a novel approach to the analysis and design of all-digital phase-locked loops (ADPLLs), technology widely used in wireless communication devices. The authors provide an overview of ADPLL architectures, time-to-digital converters (TDCs) and noise shaping. Realistic examples illustrate how to analyze and simulate phase noise in the presence of sigma-delta modulation and time-to-digital conversion. Readers will gain a deep understanding of ADPLLs and the central role played by noise-shaping. A range of ADPLL and TDC architectures are presented in unified manner. Analytical and simulation tools are discussed in detail. Matlab code is included that can be reused to[...]

### Features

This book presents a novel approach to the analysis and design of all-digital phase-locked loops (ADPLLs), technology widely used in wireless communication devices. The authors provide an overview of ADPLL architectures, time-to-digital converters (TDCs) and noise shaping. Realistic examples illustrate how to analyze and simulate phase noise in the presence of sigma-delta modulation and time-to-digital [...]

### Contents

Introduction.- Phase Digitization in All-Digital PLLs.- A Unifying Framework for TDC Architectures.- Analytical Predictions of Phase Noise in ADPLLs.- Advantages of Noise Shaping and Dither.- Efficient Modeling and Simulation of Accumulator-Based ADPLLs.- Modelling and Estimating Phase Noise with Matlab.

### Fields of interest

Circuits and Systems; Signal, Image and Speech Processing; Electronics and Microelectronics, Instrumentation

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03658-8](http://www.springer.com/978-3-319-03658-8)

### Hardcover

2014. XIII, 177 p. 145 illus., 79 illus. in color. (Analog Circuits and Signal Processing)

ISBN 978-3-319-03658-8

**Due: January 31, 2014**

K. Breugel, Delft University of Technology, Delft, Netherlands; E.A.B. Koenders, Delft University of Technology, Delft, Netherlands

## Testing, Modelling and Engineering of Young Concrete

From Fundamentals to Practical Application

The book contains an overview and description of the main issues that go along with the hardening process of early age concrete. The book contains 9 chapters which, in general terms, reflect the main results deduced from work done by the authors in collaboration with their PhD students. The purpose of the work is to provide researchers and PhD students a general basis of knowledge in the field of hardening concrete and to bridge the gap between academic research results and applicability in practice. The book is intended for academic students and practitioners.

### Features

The book contains an overview and description of the main issues that go along with the hardening process of early age concrete. The book contains 9 chapters which, in general terms, reflect the main results deduced from work done by the authors in collaboration with their PhD students. The purpose of the work is to provide researchers and PhD students a general basis of knowledge in the field of [...]

### Contents

Temperature and shrinkage deformations.- Development of mechanical properties.- Stresses and Cracking in Early-Age Concrete.- Cracking probability of hardening concrete.- Reinforced high strength concrete.- Permeability.- From micro to macrolevel.- Practical application of theoretical models.

### Fields of interest

Building Materials; Characterization and Evaluation of Materials; Structural Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4020-8687-8](http://www.springer.com/978-1-4020-8687-8)

### Hardcover

2014. Approx. 195 p.  
ISBN 978-1-4020-8687-8

**Due: March 28, 2014**

A.L. Brooks, S. Brahmam, Missouri State University, Springfield, USA; L.C. Jain, University of Canberra, Canberra, Australia (Eds.)

## Technologies of Inclusive Well-Being

**Serious Games, Alternative Realities, and Play Therapy**

This book is the first single volume that brings together the topics of serious games, alternative realities, and play therapy. The focus is on the use of digital media for the therapeutic benefit and well-being of a wide range of people—spanning those with special needs to the elderly to entire urban neighborhoods. This book brings together these topics to demonstrate the increasing trans/inter/multi-disciplinary initiatives apparent today in science, medicine, and academic research—interdisciplinary initiative that are already profoundly impacting society.

### Features

This book is the first single volume that brings together the topics of serious games, alternative realities, and play therapy. The focus is on the use of digital media for the therapeutic benefit and well-being of a wide range of people—spanning those with special needs to the elderly to entire urban neighborhoods. This book brings together these topics to demonstrate the increasing [...]

### Contents

Part 1: Technologies for Rehabilitation .- Part 2: Technologies for Music Therapy and Expression .- Part 3: Technologies for Well-Being .- Part 4: Technologies for Education & Education for Rehabilitative Technologies .- Part 5: Disruptive Innovation.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Biomedical Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45431-8](http://www.springer.com/978-3-642-45431-8)

### Hardcover

2014. XI, 355 p. 73 illus., 54 illus. in color. (Studies in Computational Intelligence, Vol. 536)  
ISBN 978-3-642-45431-8

**Due: January 31, 2014**

C.I.R.P., C.I.R.P. Office, Paris, France (Ed.)

## CIRP Encyclopedia of Production Engineering

The CIRP Encyclopedia covers the state-of-art of advanced technologies, methods and models for production, production engineering and logistics. While the technological and operational aspects are in the focus, economical aspects are addressed too. The entries for a wide variety of terms were reviewed by the CIRP-Community, representing the highest standards in research. Thus, the content is not only evaluated internationally on a high scientific level but also reflects very recent developments.

### Features

The CIRP Encyclopedia covers the state-of-art of advanced technologies, methods and models for production, production engineering and logistics. While the technological and operational aspects are in the focus, economical aspects are addressed too. The definitions and short explanations for a wide variety of terms were reviewed by the CIRP-Community, representing the highest standards in research. Thus, the [...]

### Contents

Cutting.- Forming.- Assembly.- Manufacturing Systems.- Engineering Design.- Electro-Physical and Chemical Processes.- Abrasive Processes.- Machine Tools.- Precision Engineering and Metrology.- Surface Engineering.

### Fields of interest

Industrial and Production Engineering; Production / Logistics; Computer-Aided Engineering (CAD, CAE) and Design; Industrial Chemistry / Chemical Engineering

### Target groups

Research

### Type of publication

Encyclop(a)edia

More on [www.springer.com/978-3-642-20616-0](http://www.springer.com/978-3-642-20616-0)

### Hardcover

2014. 1500 p. 400 illus., 250 illus. in color. In 2 volumes, not available separately.  
ISBN 978-3-642-20616-0

**Due: March 2014**

### Hardcover

2014. 1500 p. 400 illus., 250 illus. in color. Print + eReference.  
ISBN 978-3-642-20618-4

**Due: March 2014**

P. Castaldo, University of Salerno, Salerno, Italy

## Integrated Seismic Design of Structure and Control Systems

The structural optimization procedure presented in this book makes it possible to achieve seismic protection through integrated structural/control system design. In particular, it is explained how slender structural systems with a high seismic performance can be achieved through inclusion of viscous and viscoelastic dampers as an integral part of the system. Readers are provided with essential introductory information on passive structural control and passive energy dissipation systems. Dynamic analyses of both single and multiple degree of freedom systems are performed in order to verify the achievement of pre-assigned performance targets, and it is explained how the optimal[...]

### Features

The structural optimization procedure presented in this book makes it possible to achieve seismic protection through integrated structural/control system design. In particular, it is explained how slender structural systems with a high seismic performance can be achieved through inclusion of viscous and viscoelastic dampers as an integral part of the system. Readers are provided with essential introductory [...]

### Contents

Passive Structural Control.- Passive Energy Dissipation Devices.- Dynamic Response of Systems Equipped with Viscous and Viscoelastic Dampers.- Modeling of Viscoelastic Dissipative Bracing Systems.- Integrated Design of Proportionally Damped Framed Structural Systems Equipped with Viscous Dampers.- Applying the Optimal Integrated Design Methodology.

### Fields of interest

Vibration, Dynamical Systems, Control; Control; Building Construction, HVAC, Refrigeration; Geotechnical Engineering & Applied Earth Sciences

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02614-5](http://www.springer.com/978-3-319-02614-5)

### Hardcover

2014. XI, 220 p. 236 illus. (Springer Tracts in Mechanical Engineering)  
ISBN 978-3-319-02614-5

**usually dispatched within 3 to 5 business days**

H. Chen, Jilin University, Changchun, China (P.R.); B. Gao, Jilin University, Changchun, China (P.R.)

## Nonlinear Estimation and Control of Automotive Drivetrains

Nonlinear Estimation and Control of Automotive Drivetrains discusses the control problems involved in automotive drivetrains, particularly in hydraulic Automatic Transmission (AT), Dual Clutch Transmission (DCT) and Automated Manual Transmission (AMT). Challenging estimation and control problems, such as driveline torque estimation and gear shift control, are addressed by applying the latest nonlinear control theories, including constructive nonlinear control (Backstepping, Input-to-State Stable) and Model Predictive Control (MPC). The estimation and control performance is improved while the calibration effort is reduced significantly. The book presents many detailed examples of[...]

### Features

Nonlinear Estimation and Control of Automotive Drivetrains discusses the control problems involved in automotive drivetrains, particularly in hydraulic Automatic Transmission (AT), Dual Clutch Transmission (DCT) and Automated Manual Transmission (AMT). Challenging estimation and control problems, such as driveline torque estimation and gear shift control, are addressed by applying the latest [...]

### Contents

Introduction.- Pressure estimation of wet clutch.- Torque phase control of clutch-to-clutch shift process.- Inertia phase control of clutch-to-clutch shift process.- Torque estimation of vehicle drive shaft.- Clutch disengagement timing control of AMT gear shift.- Clutch engagement control of AMT gear shift.- Data-driven start-up control of AMT vehicle.- Appendix.

### Fields of interest

Automotive Engineering; Control; Mechatronics; Vibration, Dynamical Systems, Control

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41571-5](http://www.springer.com/978-3-642-41571-5)

Distribution rights in China mainland: Science Press

### Hardcover

Jointly published with Science Press Beijing, Beijing, China

2014. XII, 260 p. 110 illus.

ISBN 978-3-642-41571-5

Due: January 31, 2014

A. Choukchou-Braham, University of Aboubekr Belkaid, Chetouane, Algeria; B. Cherki, University of Aboubekr Belkaid, Chetouane, Algeria; M. Djemai, K. Busawon

## Analysis and Control of Underactuated Mechanical Systems

This monograph provides readers with tools for the analysis, and control of systems with fewer control inputs than degrees of freedom to be controlled, i.e., underactuated systems. The text deals with the consequences of a lack of a general theory that would allow methodical treatment of such systems and the ad hoc approach to control design that often results, imposing a level of organization whenever the latter is lacking. The authors take as their starting point the construction of a graphical characterization or control flow diagram reflecting the transmission of generalized forces through the degrees of freedom. Underactuated systems are classified according to the three main[...]

### Features

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### Contents

Introduction.- Generalities and State-of-the-Art on the Control of Underactuated Mechanical Systems.- Underactuated Mechanical Systems from the Lagrangian formalism.- Classification of Underactuated Mechanical Systems.- Control Design Schemes for Underactuated Mechanical Systems.- Appendices: Theoretical Background on Nonlinear System Stability and Control.- Limits of Linearization and Dangers of Destabilization.- Differential Geometry.- Controllability of Continuous Systems.

### Fields of interest

Robotics and Automation; Aerospace Technology and Astronautics; Automotive Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02635-0](http://www.springer.com/978-3-319-02635-0)

### Hardcover

2014. XV, 138 p. 55 illus., 10 illus. in color.

ISBN 978-3-319-02635-0

usually dispatched within 3 to 5 business days

R. Cipolla, S. Battiato, Università di Catania, Catania, Italy; G.M. Farinella, Università di Catania, Catania, Italy (Eds.)

## Registration and Recognition in Images and Videos

Computer vision is the science and technology of making machines that see. It is concerned with the theory, design and implementation of algorithms that can automatically process visual data to recognize objects, track and recover their shape and spatial layout. The International Computer Vision Summer School - ICVSS was established in 2007 to provide both an objective and clear overview and an in-depth analysis of the state-of-the-art research in Computer Vision. The courses are delivered by world renowned experts in the field, from both academia and industry and cover both theoretical and practical aspects of real Computer Vision problems. The school is organized every year by[...]

### Features

Computer vision is the science and technology of making machines that see. It is concerned with the theory, design and implementation of algorithms that can automatically process visual data to recognize objects, track and recover their shape and spatial layout. The International Computer Vision Summer School - ICVSS was established in 2007 to provide both an objective and clear overview and an [...]

### Contents

The Visual Field: Simultaneous Order in Immediate Visual Awareness.- A Primer for Colour Computer Vision Descriptor learning for omnidirectional image matching.- Visual Correspondence, the Lambert-Ambient Shape Space and the Systematic Design of Feature Descriptors.- Classemes: a Compact Image Descriptor for Efficient Novel-Class Recognition and Search.- The Enhanced Flock of Trackers Registration and Segmentation in Medical Imaging.- Clustering Games About 3D Faces Socially-driven Computer Vision for Group Behavior Analysis.- Mobile Computational Photography with FCam.

### Fields of interest

Computational Intelligence; Image Processing and Computer Vision; Pattern Recognition; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-44906-2](http://www.springer.com/978-3-642-44906-2)

### Hardcover

2014. XVIII, 283 p. 111 illus., 81 illus. in color. (Studies in Computational Intelligence, Vol. 532)

ISBN 978-3-642-44906-2

usually dispatched within 3 to 5 business days

F. Concha

## Solid-Liquid Separation in the Mining Industry

This book covers virtually all of the engineering science and technological aspects of separating water from particulate solids in the mining industry. It starts with an introduction to the field of mineral processing and the importance of water in mineral concentrators. The consumption of water in the various stages of concentration is discussed, as is the necessity of recovering the majority of that water for recycling. The book presents the fundamentals under which processes of solid-liquid separation are studied, approaching mixtures of discrete finely divided solid particles in water as a basis for dealing with sedimentation in particulate systems. Suspensions, treated as[...]

### Features

This book covers virtually all of the engineering science and technological aspects of separating water from particulate solids in the mining industry. It starts with an introduction to the field of mineral processing and the importance of water in mineral concentrators. The consumption of water in the various stages of concentration is discussed, as is the necessity of recovering the majority of that water [...]

### Contents

Preface.- 1 Introduction.- 2 Theory of Mixtures.- 3 Particulate Systems.- 4 Sedimentation of Particulate Systems.- 5 Kynch Theory of Sedimentation.- 6 Flow Through Rigid Porous Media.- 7 Particle Aggregation by Coagulation and Flocculation.- 8 Thickening.- 9 Filtration.- 10 Suspension Rheology.- 11 Transporting Concentrates and Tailings.

### Fields of interest

Engineering Fluid Dynamics; Computational Science and Engineering; Fluid- and Aerodynamics; Operating Procedures, Materials Treatment

### Target groups

Research

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-02483-7](http://www.springer.com/978-3-319-02483-7)

### Hardcover

2014. XIV, 431 p. 324 illus., 189 illus. in color. (Fluid Mechanics and Its Applications, Vol. 105)  
ISBN 978-3-319-02483-7

**Due: December 31, 2013**

J. Dai, University of Maryland, College Park, USA; M.M. Ohadi, D. Das, University of Maryland, College Park, USA; M.G. Pecht

## Optimum Cooling of Data Centers

### Application of Risk Assessment and Mitigation Techniques

This book describes the use of free air cooling to improve the efficiency of, and cooling of, equipment for use in telecom infrastructures. Discussed at length is the cooling of communication installation rooms such as data centers or base stations, and this is intended as a valuable tool for the people designing and manufacturing key parts of communication networks. This book provides an introduction to current cooling methods used for energy reduction, and also compares present cooling methods in use in the field. The qualification methods and standard reliability assessments are reviewed, and their inability to assess the risks of free air cooling is discussed. The method of[...]

### Features

This book provides data center designers and operators with methods by which to assess and mitigate the risks associated with utilization of optimum cooling solutions. The goal is to provide readers with sufficient knowledge to implement measures such as free air cooling or direct liquid immersion cooling properly, or combination of existing and emerging cooling technologies in data centers, base stations, [...]

### Contents

Overview of Telecom Industry and Data Centers.- Cooling Methods to Improve Energy Efficiency in Telecom Industry and Data Centers.- Free Air Cooling.- Standards for Telecom Equipment and Data Centers.- Risks of Free Air Cooling.- Steps to Assess Parts for use under Free Air Cooling Condition.- Guidelines for Part Reliability Assessment.- Introduction to PHM.- Development of Sub-system and System for Free Air Cooling.- Future Trends.

### Fields of interest

Building Construction, HVAC, Refrigeration; Communications Engineering, Networks; Performance and Reliability

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-5601-8](http://www.springer.com/978-1-4614-5601-8)

### Hardcover

2014. XIV, 186 p. 74 illus., 36 illus. in color.  
ISBN 978-1-4614-5601-8

**usually dispatched within 3 to 5 business days**

M. Dascalu

## Analyzing Discourse and Text Complexity for Learning and Collaborating

### A Cognitive Approach Based on Natural Language Processing

With the advent and increasing popularity of Computer Supported Collaborative Learning (CSCL) and e-learning technologies, the need of automatic assessment and of teacher/tutor support for the two tightly intertwined activities of comprehension of reading materials and of collaboration among peers has grown significantly. In this context, a polyphonic model of discourse derived from Bakhtin's work as a paradigm is used for analyzing both general texts and CSCL conversations in a unique framework focused on different facets of textual cohesion. As specificity of our analysis, the individual learning perspective is focused on the identification of reading strategies and on providing a[...]

### Features

With the advent and increasing popularity of Computer Supported Collaborative Learning (CSCL) and e-learning technologies, the need of automatic assessment and of teacher/tutor support for the two tightly intertwined activities of comprehension of reading materials and of collaboration among peers has grown significantly. In this context, a polyphonic model of discourse [...]

### Contents

Individual Learning.- Collaborative Learning.- Overview of Empirical Studies.- Dialogism.

### Fields of interest

Computational Intelligence; Language Translation and Linguistics; Learning and Instruction; Complexity; Philosophy of Language

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03418-8](http://www.springer.com/978-3-319-03418-8)

### Hardcover

2014. XIV, 279 p. 75 illus., 4 illus. in color. (Studies in Computational Intelligence, Vol. 534)  
ISBN 978-3-319-03418-8

**usually dispatched within 3 to 5 business days**

J.P. Davim, University of Aveiro, Aveiro, Portugal (Ed.)

## Modern Mechanical Engineering

Research, Development and Education

This book covers modern subjects of mechanical engineering such as nanomechanics and nanotechnology, mechatronics and robotics, computational mechanics, biomechanics, alternative energies, sustainability as well as all aspects related with mechanical engineering education. The chapters help enhance the understanding of both the fundamentals of mechanical engineering and its application to the solution of problems in modern industry. This book is suitable for students, both in final undergraduate mechanical engineering courses or at the graduate level. It also serves as a useful reference for academics, mechanical engineering researchers, mechanical, materials and manufacturing[...]

### Features

This book covers modern subjects of mechanical engineering such as nanomechanics and nanotechnology, mechatronics and robotics, computational mechanics, biomechanics, alternative energies, sustainability as well as all aspects related with mechanical engineering education. The chapters help enhance the understanding of both the fundamentals of mechanical engineering and its application to the solution of [...]

### Contents

Sustainability in mechanical engineering discipline.- Application of solar distillation and solar drying technologies with phase change material storage.- Magneto-rheological fluid technology.- Tribological behaviour of rare-earth lubricating oils.- Structural dynamics and viscoelastic passive damping treatments.- Thermomechanical modeling of multiphase steels: Classical and modern engineering analysis.- Optimal real-time management automated production lines.- Modeling optimization of mechanical systems and processes.- Implementing STEP-NC: Exploring possibilities for the future of [...]

### Fields of interest

Mechanical Engineering; Nanotechnology; Control, Robotics, Mechatronics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45175-1](http://www.springer.com/978-3-642-45175-1)

### Hardcover

2014. VIII, 468 p. 360 illus. (Materials Forming, Machining and Tribology)  
ISBN 978-3-642-45175-1

**Due: January 31, 2014**

B. Derby, University of Manchester, Manchester, United Kingdom; A. Akhtar, University of Liverpool, Liverpool, United Kingdom

## Mechanical Properties of Aging Soft Tissues

This book is unique because it is the first to focus on both the structure and mechanics of ageing soft tissues, encompassing a range of tissues including skin, tendons, vasculature and plantar soft tissues. This book provides an overview of in vivo and in vitro measurement techniques including state-of-the-art methodologies, as well as focusing on the structural changes that occur within the main components of these tissues resulting in the detrimental mechanical property changes. The book is highly beneficial to a range of disciplines including materials scientists and engineers interested in biomechanics, structural biologists and clinicians. The book does not focus on one[...]

### Features

This book is unique because it is the first to focus on both the structure and mechanics of ageing soft tissues, encompassing a range of tissues including skin, tendons, vasculature and plantar soft tissues. This book provides an overview of in vivo and in vitro measurement techniques including state-of-the-art methodologies, as well as focusing on the structural changes that occur within the main components [...]

### Fields of interest

Biomedical Engineering; Geriatrics / Gerontology; Physiotherapy; Aging

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03969-5](http://www.springer.com/978-3-319-03969-5)

### Hardcover

2014. 300 p. (Engineering Materials and Processes)  
ISBN 978-3-319-03969-5

**Due: April 22, 2014**

R.C. Dewar, Australian National University, Canberra, Australia; C.H. Lineweaver, R.K. Niven, University of New South Wales at ADFA, Canberra, Australia; K. Regenaauer-Lieb, University of Western Australia, Crawley, Australia (Eds.)

## Beyond the Second Law

Entropy Production and Non-equilibrium Systems

The Second Law, a cornerstone of thermodynamics, governs the average direction of dissipative, non-equilibrium processes. But it says nothing about their actual rates or the probability of fluctuations about the average. This interdisciplinary book, written and peer-reviewed by international experts, presents recent advances in the search for new non-equilibrium principles beyond the Second Law, and their applications to a wide range of systems across physics, chemistry and biology. Beyond The Second Law brings together traditionally isolated areas of non-equilibrium research and highlights potentially fruitful connections between them, with entropy production playing the unifying [...]

### Features

The Second Law, a cornerstone of thermodynamics, governs the average direction of dissipative, non-equilibrium processes. But it says nothing about their actual rates or the probability of fluctuations about the average. This interdisciplinary book, written and peer-reviewed by international experts, presents recent advances in the search for new non-equilibrium principles beyond the Second Law, and their [...]

### Contents

Introduction.- Theoretical perspectives on entropy production.- Applications to non-equilibrium systems.

### Fields of interest

Complexity; Nonlinear Dynamics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40153-4](http://www.springer.com/978-3-642-40153-4)

### Hardcover

2014. XIV, 434 p. 99 illus., 19 illus. in color. (Understanding Complex Systems)  
ISBN 978-3-642-40153-4

**usually dispatched within 3 to 5 business days January 4, 2014**

M.-G. Di Benedetto, University of Rome, Di Benedetto, Italy; F. Bader (Eds.)

## Cognitive Communication and Cooperative HetNet Coexistence

This book, written by experts from universities and major industrial research laboratories, is devoted to the very hot topic of cognitive radio and networking for cooperative coexistence of heterogeneous wireless networks. Selected highly relevant advanced research is presented on spectrum sensing and progress toward the realization of accurate radio environment mapping, biomimetic learning for self-organizing networks, security threats (with a special focus on primary user emulation attack), and cognition as a tool for green next-generation networks. The research activities covered include work undertaken within the framework of the European COST Action IC0902, which is geared[...]

### Features

This book, written by experts from universities and major industrial research laboratories, is devoted to the very hot topic of cognitive radio and networking for cooperative coexistence of heterogeneous wireless networks. Selected highly relevant advanced research is presented on spectrum sensing and progress toward the realization of accurate radio environment mapping, biomimetic learning for self-organizing [...]

### Contents

Recent Advances on Wideband Spectrum Sensing for Cognitive Radio.- Complexity of Spectrum Activity and its effect on Opportunistic Access.- Analysis and Optimization of Energy Detection for Non-Flat Spectral Characteristics.- Spectrum Sensing Algorithms for Cognitive White-Space Systems.- New Blind Free Bands Detectors Exploiting Cyclic Autocorrelation Function Sparsity.- Intersystem Coexistence and Cooperation Through Cognitive Control Channels.- Cooperative Spectrum Sensing with Censoring of Cognitive Radios in Rayleigh Fading Under Majority Logic Fusion.- Medium Access Control in[...]

### Fields of interest

Communications Engineering, Networks; Signal, Image and Speech Processing; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01401-2](http://www.springer.com/978-3-319-01401-2)

### Hardcover

2014. X, 349 p. 129 illus., 7 illus. in color. (Signals and Communication Technology)  
ISBN 978-3-319-01401-2

**Due: January 31, 2014**

M.-G. Di Benedetto, Sapienza University of Rome, Rome, Italy; A. Cattoni, Aalborg University, Aalborg, Denmark; J. Fiorina, Supélec, Paris, France; F. Bader, École Supérieure d'Électricité, Rennes, France; L. De Nardis, Sapienza University of Rome, Rome, Italy (Eds.)

## Cognitive Radio and Networking for Heterogeneous Wireless Networks

### Recent Advances and Visions for the Future

This book, written by leading experts from academia and industry, offers a condensed overview on hot topics among the Cognitive Radios and Networks scientific and industrial communities (including those considered within the framework of the European COST Action IC0902) and presents exciting visions for the future. Examples of the subjects considered include the design of new filter bank-based air interfaces for spectrum sharing, medium access control design protocols, the design of cloud-based radio access networks, an evolutionary vision for the development and deployment of cognitive TCP/IP, and regulations relevant to the development of a spectrum sharing market. The concluding[...]

### Features

This book, written by leading experts from academia and industry, offers a condensed overview on hot topics among the Cognitive Radios and Networks scientific and industrial communities (including those considered within the framework of the European COST Action IC0902) and presents exciting visions for the future. Examples of the subjects considered include the design of new filter bank-based air interfaces [...]

### Contents

New types of air interface based on Filter Banks for spectrum sharing and coexistence by Medjahdi Y et al.- Cognitive Interference Alignment for Spectral Coexistence Interference Management Techniques by Krishna Sharma S et al.- Cooperative Spectrum Sensing in Cognitive Radio Networks by Tugcu T, et al.- Medium Access Control Protocols in Cognitive Radio Networks by Gavrilovska L et al.- Dynamic Channel Selection for Cognitive Femtocells by Cattoni A et al.- Challenges Towards a Cloud-RAN Realization by Andreas Georgakopoulos A et al.- Automatic best wireless network selection based on[...]

### Fields of interest

Communications Engineering, Networks; Artificial Intelligence (incl. Robotics); Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01717-4](http://www.springer.com/978-3-319-01717-4)

### Hardcover

2014. Approx. 300 p. 120 illus. (Signals and Communication Technology)  
ISBN 978-3-319-01717-4

**Due: April 4, 2014**

P. Di Giambardino, Sapienza Università di Roma, Rome, Italy; D. Iacoviello, Sapienza Università di Roma, Rome, Italy; R. Natal Jorge, Universidade do Porto, Porto, Portugal; J.M.R.S. Tavares, Universidade do Porto, Porto, Portugal (Eds.)

## Computational Modeling of Objects Presented in Images

### Fundamentals, Methods and Applications

This book contains extended versions of selected papers from the 3rd edition of the International Symposium CompIMAGE. These contributions include cover methods of signal and image processing and analysis to tackle problems found in medicine, material science, surveillance, biometric, robotics, defence, satellite data, traffic analysis and architecture, image segmentation, 2D and 3D reconstruction, data acquisition, interpolation and registration, data visualization, motion and deformation analysis and 3D vision.

### Features

This book contains extended versions of selected papers from the 3rd edition of the International Symposium CompIMAGE. These contributions include cover methods of signal and image processing and analysis to tackle problems found in medicine, material science, surveillance, biometric, robotics, defence, satellite data, traffic analysis and architecture, image segmentation, 2D and 3D reconstruction, [...]

### Contents

Preface.- The surveying and representation process applied to archaeology: a quest for invariants in a highly variable context, by Carlo Bianchini, Francesco Borgogni, Alfonso Ippolito, Luca J. Senatore.- Architectural heritage and 3D models, by Mario Centofanti, Stefano Brusaporci and Vittorio Lucchese.- Flow patterns in aortic circulation associated to the Mustard procedure, by Giuseppe D'Avenio, Salvatore Donatiello, Aurelio Secinaro, Alessandro Palombo, Bruno Marino, Antonio Amodeo, Mauro Grigioni.- Fuzzy image segmentation: an automatic unsupervised method, by Silvana G.[...]

### Fields of interest

Signal, Image and Speech Processing; Computer Imaging, Vision, Pattern Recognition and Graphics; Imaging / Radiology; Materials Science (general); Mathematics (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04038-7](http://www.springer.com/978-3-319-04038-7)

### Hardcover

2014. 300 p. (Lecture Notes in Computational Vision and Biomechanics, Vol. 15)  
ISBN 978-3-319-04038-7

**Due: February 28, 2014**

A. Dillmann, Deutsches Zentrum für Luft- und Raumfahrt, Göttingen, Germany; G. Heller, Airbus Deutschland, Bremen, Germany; E. Krämer, Universität Stuttgart, Stuttgart, Germany; H.-P. Kreplin, Deutsches Zentrum für Luft- und Raumfahrt, Göttingen, Germany; W. Nitsche, TU Berlin, Nitsche, Germany; U. Rist, Universität Stuttgart, Stuttgart, Germany (Eds.)

## New Results in Numerical and Experimental Fluid Mechanics IX

Contributions to the 18th STAB/DGLR Symposium, Stuttgart, Germany, 2012

This book presents contributions to the 18th biennial symposium of the German Aerospace Aerodynamics Association (STAB). The individual chapters reflect ongoing research conducted by the STAB members in the field of numerical and experimental fluid mechanics and aerodynamics, mainly for (but not limited to) aerospace applications, and cover both nationally and EC-funded projects. By addressing a number of essential research subjects, together with their related physical and mathematics fundamentals, the book provides readers with a comprehensive overview of the current research work in the field, as well as its main challenges and new directions. Current work on e.g. high aspect-ratio[...]

### Features

This book presents contributions to the 18th biennial symposium of the German Aerospace Aerodynamics Association (STAB). The individual chapters reflect ongoing research conducted by the STAB members in the field of numerical and experimental fluid mechanics and aerodynamics, mainly for (but not limited to) aerospace applications, and cover both nationally and EC-funded projects. By addressing a number of [...]

### Contents

Airplane Aerodynamics.- Optimization.- Laminar Flow Control and Transition.- Rotorcraft Aerodynamics.- Convective Flows.- Aerodynamics and Aeroacoustics of Ground Vehicles.- Aeroelasticity and Structural Dynamics.- Numerical Simulation.- Experimental Simulation and Test Techniques.- Aeroacoustics.- Biofluid Mechanics.

### Fields of interest

Engineering Fluid Dynamics; Numerical and Computational Physics; Aerospace Technology and Astronautics; Fluid- and Aerodynamics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03157-6](http://www.springer.com/978-3-319-03157-6)

### Hardcover

2014. XIII, 551 p. 427 illus., 105 illus. in color. (Notes on Numerical Fluid Mechanics and Multidisciplinary Design, Vol. 124)

ISBN 978-3-319-03157-6

Due: January 31, 2014

G. Dimitrakopoulos, Democritus University of Thrace, Xanthi, Greece

## Microarchitecture of Network-on-Chip Routers

This book provides a unified overview of network-on-chip router micro-architecture, the corresponding design opportunities and challenges, and existing solutions to overcome these challenges. The discussion focuses on the heart of a NoC, the NoC router, and how it interacts with the rest of the system. Coverage includes both basic and advanced design techniques that cover the entire router design space including router organization, flow control, pipelined operation, buffering architectures, as well as allocators' structure and algorithms. Router micro-architectural options are presented in a step-by-step manner beginning from the basic design principles. Even highly sophisticated[...]

### Features

This book provides a unified overview of network-on-chip router micro-architecture, the corresponding design opportunities and challenges, and existing solutions to overcome these challenges. The discussion focuses on the heart of a NoC, the NoC router, and how it interacts with the rest of the system. Coverage includes both basic and advanced design techniques that cover the entire router design space [...]

### Contents

Link-level flow control.- Link sharing.- Step-by-step Baseline Router Design.- Advanced Router design techniques.- Virtual-Channel-based Routers.- Pipelined Routers.- Allocators micro-architecture.- Merged Switch allocation and traversal.- Switch Radix-Latency-Throughput tradeoffs.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-4300-1](http://www.springer.com/978-1-4614-4300-1)

### Hardcover

2014. Approx. 300 p. 150 illus.

ISBN 978-1-4614-4300-1

Due: March 31, 2014

Th.J. Dolan, University of Illinois, Urbana, USA; R.W. Moir, Vallecitos Molten Salt Research, Livermore, USA; W. Manheimer, L.C. Cadwallader, M.J. Neumann

## Magnetic Fusion Technology

Magnetic Fusion Technology describes the technologies that are required for successful development of nuclear fusion power plants using strong magnetic fields. These technologies include: • magnet systems, • plasma heating systems, • control systems, • energy conversion systems, • advanced materials development, • vacuum systems, • cryogenic systems, • plasma diagnostics, • safety systems, and • power plant design studies. Magnetic Fusion Technology will be useful to students and to specialists working in energy research.

### Features

Magnetic Fusion Technology describes the technologies that are required for successful development of nuclear fusion power plants using strong magnetic fields. These technologies include: • magnet systems, • plasma heating systems, • control systems, • energy conversion systems, • advanced materials development, • vacuum systems, • cryogenic systems, • plasma diagnostics, • safety systems, and • power plant [...]

### Contents

Technology Issues.- Pulsed and Water-Cooled Magnets.- Superconducting Magnets.- Plasma Heating and Current Drive.- First Wall, Blanket, and Shield.- Control Systems.- Materials Issues.- Vacuum Systems.- Cryogenic Systems.- Plasma Diagnostic Systems.- Safety and Environment.- Power Plant Designs.- Fusion-Fission Hybrids.

### Fields of interest

Nuclear Engineering; Nuclear Energy; Magnetism, Magnetic Materials; Nuclear Physics, Heavy Ions, Hadrons; Nuclear Fusion; Plasma Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5555-3](http://www.springer.com/978-1-4471-5555-3)

### Hardcover

Originally published by Pergamon Press, New York, 1982

2014. XXV, 799 p. 505 illus. With online files/update. (Lecture Notes in Energy, Vol. 19)

ISBN 978-1-4471-5555-3

Due: January 31, 2014

A.L. Dorfmann, Tufts University, Medford, USA; R.W. Ogden

## Nonlinear Theory of Electroelastic and Magnetoelastic Interactions

This book provides a unified theory on nonlinear electro-magnetomechanical interactions of soft materials capable of large elastic deformations. The authors include an overview of the basic principles of the classic theory of electromagnetism from the fundamental notions of point charges and magnetic dipoles through to distributions of charge and current in a non-deformable continuum, time-dependent electromagnetic fields and Maxwell's equations. They summarize relevant theories of continuum mechanics, required to account for the deformability of material and present a constitutive framework for the nonlinear magneto- and electroelastic interactions in a highly deformable material. The[...]

### Features

This book provides a unified theory of nonlinear electro-magnetomechanical interactions of soft materials capable of large elastic deformations. The authors include an overview of the basic principles of the classical theory of electromagnetism from the fundamental notions of point charges and magnetic dipoles through to distributions of charge and current in a non-deformable continuum, time-dependent [...]

### Contents

Introduction.- Electromagnetic Theory.- Nonlinear Elasticity Background.- Nonlinear Electroelastic Interactions.- Electroelastic Boundary-Value Problems.- Nonlinear Magnetoelastic Interactions.- Magnetoelastic Boundary-Value Problems.- Variational Formulations in Electroelasticity and Magnetoelasticity.- Incremental Equations.- Electroelastic Stability.- Magnetoelastic Wave Propagation.- Basic Vector and Tensor Operations.- Index.

### Fields of interest

Electrical Engineering; Theoretical and Applied Mechanics; Continuum Mechanics and Mechanics of Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9595-6](http://www.springer.com/978-1-4614-9595-6)

### Hardcover

2014. X, 314 p. 19 illus.  
ISBN 978-1-4614-9595-6

**Due: February 28, 2014**

S. Dua, Louisiana Tech University, Ruston, USA; U.R. Acharya, P. Dua, Louisiana Tech University, Ruston, USA (Eds.)

## Machine Learning in Healthcare Informatics

The book is a unique effort to represent a variety of techniques designed to represent, enhance, and empower multi-disciplinary and multi-institutional machine learning research in healthcare informatics. The book provides a unique compendium of current and emerging machine learning paradigms for healthcare informatics and reflects the diversity, complexity and the depth and breath of this multi-disciplinary area. The integrated, panoramic view of data and machine learning techniques can provide an opportunity for novel clinical insights and discoveries.

### Features

The book is a unique effort to represent a variety of techniques designed to represent, enhance, and empower multi-disciplinary and multi-institutional machine learning research in healthcare informatics. The book provides a unique compendium of current and emerging machine learning paradigms for healthcare informatics and reflects the diversity, complexity and the depth and breath of this [...]

### Contents

From the Contents.- Introduction to Machine Learning in Healthcare Informatics.- Wavelet-Based Machine Learning Techniques for ECG Signal Analysis.- Application of Fuzzy Logic Control for Regulation of Glucose Level of Diabetic Patient.- A Study on Machine Learning in EEG Signal Analysis.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40016-2](http://www.springer.com/978-3-642-40016-2)

### Hardcover

2014. XII, 332 p. 119 illus., 50 illus. in color. (Intelligent Systems Reference Library, Vol. 56)  
ISBN 978-3-642-40016-2

**Due: December 31, 2013**

P.S. Dutta, Rensselaer Polytechnic Institute, Troy, USA

## Optoelectronics and Photonics Engineering

Optoelectronics and Photonics Engineering presents the fundamental physics concepts for modern optoelectronic and photonic devices. Rather than taking a traditional physics based approach to optoelectronics, the material presented here not only takes into consideration the underlying physics principles, but offers an engineering system design based approach. Coverage includes device designs necessary for various technological applications such as solid state lighting, light wave communication, display and photovoltaic energy generation. In addition, material presented encompasses integration processes for optical, electrical and opto-electronic components for specific systems[...]

### Features

Optoelectronics and Photonics Engineering presents the fundamental physics concepts for modern optoelectronic and photonic devices. Rather than taking a traditional physics based approach to optoelectronics, the material presented here not only takes into consideration the underlying physics principles, but offers an engineering system design based approach. Coverage includes device designs necessary [...]

### Contents

Introduction to Optoelectronics and Photonics Technologies.- Fundamentals of Light.- Optoelectronic and Photonic Materials.- Light Sources.- Photodetectors.- Solar Cells.- Optical Waveguides and Fibers.- Light Modulation.- Optoelectronic Integrated Circuits (OEICs).- Optoelectronic and Photonic Systems.

### Fields of interest

Microwaves, RF and Optical Engineering; Laser Technology and Physics, Photonics; Applied Optics, Optoelectronics, Optical Devices; Optical and Electronic Materials

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4614-2082-8](http://www.springer.com/978-1-4614-2082-8)

### Hardcover

2015. 950p.  
ISBN 978-1-4614-2082-8

**Due: March 31, 2015**

M. Emam, Université Catholique de Louvain, Louvain-la-Neuve, Belgium; C. Roda Neve, Université Catholique de Louvain, Louvain-la-Neuve, Belgium; J.-P. Raskin, Université Catholique de Louvain, Louvain-la-Neuve, Belgium

## RF Semiconductor Devices

This book covers the RF domain from the very basics to the more complicated, from the device level to the integrated circuits level. The discussion takes the reader from the beginning of conceiving an optimized silicon wafer for RF applications, through the RF oriented device conception and the in-depth RF device characterization, in order to achieve a fully optimized, RF integrated circuit. Throughout this cycle, performance optimization is addressed from various perspectives, including high temperature (an unavoidable side effect in today's devices), low power consumption (required in all portable applications), noise, nonlinearities, crosstalk, etc.

### Features

This book covers the RF domain from the very basics to the more complicated, from the device level to the integrated circuits level. The discussion takes the reader from the beginning of conceiving an optimized silicon wafer for RF applications, through the RF oriented device conception and the in-depth RF device characterization, in order to achieve a fully optimized, RF integrated circuit. Throughout this [...]

### Contents

High frequency behavior of semiconductor devices.- Wideband characterization methodology: Hands-on.- A wide variety of MOSFET Technologies.- Integration of RF Passive Elements.- Towards a Successful RF Circuit Design.

### Fields of interest

Circuits and Systems; Microwaves, RF and Optical Engineering; Semiconductors; Characterization and Evaluation of Materials

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-4246-2](http://www.springer.com/978-1-4614-4246-2)

### Hardcover

2014. Approx. 300 p. 150 illus.  
ISBN 978-1-4614-4246-2

**Due: March 3, 2014**

J.M. Framiñán Torres, Universidad de Sevilla, Isla de la Cartuja, Sevilla, Spain; R. Leisten, Universität Duisburg-Essen, Duisburg, Germany; R. Ruiz García, Universidad Politécnica de Valencia, Valencia, Spain

## Manufacturing Scheduling Systems

### An Integrated View on Models, Methods and Tools

The book is devoted to the problem of manufacturing scheduling, which is the efficient allocation of jobs (orders) over machines (resources) in a manufacturing facility. It offers a comprehensive and integrated perspective on the different aspects required to design and implement systems to efficiently and effectively support manufacturing scheduling decisions. Obtaining economic and reliable schedules constitutes the core of excellence in customer service and efficiency in manufacturing operations. Therefore, scheduling forms an area of vital importance for competition in manufacturing companies. However, only a fraction of scheduling research has been translated into practice, due[...]

### Features

The book is devoted to the problem of manufacturing scheduling, which is the efficient allocation of jobs (orders) over machines (resources) in a manufacturing facility. It offers a comprehensive and integrated perspective on the different aspects required to design and implement systems to efficiently and effectively support manufacturing scheduling decisions. Obtaining economic and reliable schedules [...]

### Contents

Part I: Introduction and Context.- Introduction to Manufacturing Scheduling.- Manufacturing Scheduling in Context.- Part II: Scheduling Models.- Introduction to Scheduling Models.- Scheduling Constraints.- Objectives.- Part III: Scheduling Methods.- Overview of Scheduling Methods.- Exact Procedures.- Approximate Methods.- Multiobjective Scheduling.- Part IV: Scheduling Tools.- Introduction to Scheduling Tools.- Advanced Design of Scheduling Tools.- Part V: Scheduling Systems.- Overview of Scheduling Systems.- A Roadmap for Developing Scheduling Systems.

### Fields of interest

Industrial and Production Engineering; Operation Research / Decision Theory; Manufacturing, Machines, Tools

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6271-1](http://www.springer.com/978-1-4471-6271-1)

### Hardcover

2014. XII, 456 p. 106 illus., 51 illus. in color.  
ISBN 978-1-4471-6271-1

**Due: February 28, 2014**

P. Frisco, Heriot-Watt University, Eindhoven, United Kingdom; M. Gheorghie, M.J. Pérez-Jiménez, Universidad de Sevilla, Sevilla, Spain (Eds.)

## Applications of Membrane Computing in Systems and Synthetic Biology

Membrane Computing was introduced as a computational paradigm in Natural Computing. The models introduced, called Membrane (or P) Systems, provide a coherent platform to describe and study living cells as computational systems. Membrane Systems have been investigated for their computational aspects and employed to model problems in other fields, like: Computer Science, Linguistics, Biology, Economy, Computer Graphics, Robotics, etc. Their inherent parallelism, heterogeneity and intrinsic versatility allow them to model a broad range of processes and phenomena, being also an efficient means to solve and analyze problems in a novel way. Membrane Computing has been used to model[...]

### Features

Membrane Computing was introduced as a computational paradigm in Natural Computing. The models introduced, called Membrane (or P) Systems, provide a coherent platform to describe and study living cells as computational systems. Membrane Systems have been investigated for their computational aspects and employed to model problems in other fields, like: Computer Science, Linguistics, Biology, Economy, [...]

### Contents

From the Contents: A P Systems based Tool for Systems and Synthetic Biology.- Statistical Model Checking of Membrane Systems with Peripheral Proteins: Quantifying the Role of Estrogen in Cellular Mitosis and DNA Damage.- Molecular Diffusion and Compartmentalization in Signal Transduction Pathways: An Application of Membrane Systems to the Study of Bacterial Chemotaxis.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Complexity

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03190-3](http://www.springer.com/978-3-319-03190-3)

### Hardcover

2014. XVII, 266 p. 100 illus., 61 illus. in color. (Emergence, Complexity and Computation, Vol. 7)  
ISBN 978-3-319-03190-3

**Due: February 2014**

M.W. Fu, The Hong Kong Polytechnic University, Hong Kong, China (P.R.); W.L. Chan, The Hong Kong Polytechnic University, Hong Kong, China (P.R.)

## Micro-scaled Products Development via Microforming

Deformation Behaviours, Processes, Tooling and its Realization

'Micro-scaled Products Development via Microforming' presents state-of-the-art research on microforming processes, and focuses on the development of micro-scaled metallic parts via microforming processes. Microforming refers to the fabrication of microparts via micro-scaled plastic deformation and presents a promising micromanufacturing process. When compared to other micromanufacturing processes, microforming offers advantages such as high productivity and good mechanical properties of the deformed microparts. This book provides extensive and informative illustrations, tables and photos in order to convey this information clearly and directly to readers. Although the knowledge of [...]

### Features

'Micro-scaled Products Development via Microforming' presents state-of-the-art research on microforming processes, and focuses on the development of micro-scaled metallic parts via microforming processes. Microforming refers to the fabrication of microparts via micro-scaled plastic deformation and presents a promising micromanufacturing process. When compared to other micromanufacturing processes, [...]

### Contents

Size Effect in Micro-scaled Plastic Deformation.- Size Effect in Interfacial Friction Behavior.- Microforming Processes.- Microformed Product Quality.- BMG Microparts Fabrication.- Micropart Handling.

### Fields of interest

Nanotechnology and Microengineering; Quality Control, Reliability, Safety and Risk; Characterization and Evaluation of Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6325-1](http://www.springer.com/978-1-4471-6325-1)

### Hardcover

2014. VIII, 168 p. 191 illus., 131 illus. in color. (Springer Series in Advanced Manufacturing)  
ISBN 978-1-4471-6325-1

**Due: January 10, 2014**

S.L. Futerer

## Lean Six Sigma Case Studies in the Healthcare Enterprise

This book provides a detailed description of how to apply Lean Six Sigma in the health care industry, with a special emphasis on process improvement and operations management in hospitals. The book begins with a description of the Enterprise Performance Excellence (EPE) improvement methodology developed by the author that links several methodologies including systems thinking, theory of constraints, Lean and Six Sigma to provide an enterprise-wide prioritization and value-chain view of health care. The EPE methodology helps to improve flow at the macro or value-chain level, and then identifies Lean Six Sigma detailed improvements that can further improve processes within the [...]

### Features

This book provides a detailed description of how to apply Lean Six Sigma in the health care industry, with a special emphasis on process improvement and operations management in hospitals. The book begins with a description of the Enterprise Performance Excellence (EPE) improvement methodology developed by the author that links several methodologies including systems thinking, theory of constraints, Lean [...]

### Contents

Introduction.- Underlying Concepts Evolving to Business Architecture.- Phase I: Enterprise Planning.- Phase II: Strategic Business Process Architecture Modeling.- Lean Six Sigma.- Conclusions.

### Fields of interest

Engineering Economics, Organization, Logistics, Marketing; Organization / Planning; Health Administration

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-1-4471-5582-9](http://www.springer.com/978-1-4471-5582-9)

### Hardcover

2014. XVIII, 390 p. 315 illus., 159 illus. in color.  
ISBN 978-1-4471-5582-9

**usually dispatched within 3 to 5 business days**

G. Genta, Politecnico di Torino, Torino, Italy; L. Morello, Politecnico di Torino, Torino, Italy; F. Cavallino, Politecnico di Torino, Torino, Italy; L. Filtri, Politecnico di Torino, Torino, Italy

## The Motor Car

Past, Present and Future

This book is an introduction to automotive engineering, to give freshmen ideas about this technology. The text is subdivided in parts that cover all facets of the automobile, including legal and economic aspects related to industry and products, product configuration and fabrication processes, historic evolution and future developments. The first part describes how motor vehicles were invented and evolved into the present product in more than 100 years of development. The purpose is not only to supply an historical perspective, but also to introduce and discuss the many solutions that were applied (and could be applied again) to solve the same basic problems of vehicle engineering. [...]

### Features

This book is an introduction to automotive engineering, to give freshmen ideas about this technology. The text is subdivided in parts that cover all facets of the automobile, including legal and economic aspects related to industry and products, product configuration and fabrication processes, historic evolution and future developments. The first part describes how motor vehicles were invented and [...]

### Contents

Economic figures.- Vehicle and parts manufacturers.- Impact on economy.- Product development and marketing.- Vehicle diffusion.- Regulations.- Type approval and production conformity.- Environmental protection.- Occupants and pedestrians safety.- Body.- Body in white.- Interiors.- Body systems.- Chassis.- Tire.- Suspension.- Steering system.- Braking system.- Powertrain mounts.- Transmission.- Powertrain.- ICE working cycles.- ICE design.- ICE ancillaries.- Manual gearboxes.- Automatic gearboxes.- Full electric powertrains.- Hybrid powertrains.- Production systems and materials and [...]

### Fields of interest

Automotive Engineering; Industrial and Production Engineering; Characterization and Evaluation of Materials; Machinery and Machine Elements

### Target groups

Research

### Type of publication

Professional book

More on [www.springer.com/978-94-007-8551-9](http://www.springer.com/978-94-007-8551-9)

### Hardcover

2014. XXIV, 662 p. 418 illus. (Mechanical Engineering Series)

ISBN 978-94-007-8551-9

**Due: January 31, 2014**

C.C. Gillispie, R. Pisano, Université de Nantes, Nantes, France

## Lazare and Sadi Carnot

### A Scientific and Filial Relationship

Lazare Carnot was the unique example in the history of science of someone who inadvertently owed the scientific recognition he eventually achieved to earlier political prominence. He and his son Sadi produced work that derived from their training as engineering and went largely unnoticed by physicists for a generation or more, even though their respective work introduced concepts that proved fundamental when taken up later by other hands. There was, moreover, a filial as well as substantive relation between the work of father and son. Sadi applied to the functioning of heat engines the analysis that his father had developed in his study of the operation of ordinary machines.[...]

### Features

Lazare Carnot was the unique example in the history of science of someone who inadvertently owed the scientific recognition he eventually achieved to earlier political prominence. He and his son Sadi produced work that derived from their training as engineers and went largely unnoticed by physicists for a generation or more, even though their respective work introduced concepts that proved fundamental when [...]

### Contents

From the Contents: Biographical Sketch of Lazare Carnot.- The Science Of Machines: Summary of Essai sur les machines en général.- Geometric motions.- Moment-of-Momentum.- Moment-of-Activity-The concept of work.- Practical conclusions.- The Development Of Carnot's Mechanics: Argument of the 1778 Memoir on theory of machines.- Argument of the 1780 Memoir.

### Fields of interest

Engineering (general); History of Science; History of Mathematics; Epistemology

### Target groups

Graduate

### Type of publication

Monograph

More on [www.springer.com/978-94-017-8010-0](http://www.springer.com/978-94-017-8010-0)

### Hardcover

2014. XVI, 490 p. 111 illus., 34 illus. in color. (History of Mechanism and Machine Science, Vol. 19)  
ISBN 978-94-017-8010-0

**Due: December 31, 2013**

R. Giorgi, University of Siena, Siena, Italy (Ed.)

## Multi-core and Many-core Computers

### Dataflow Parallelism in Teradevice Computing

This book provides the most up-to-date overview of EU-funded research on Multi- and Many-core Computing Systems. Several relevant projects are considered, each of them providing a unique integrated or focused team involving leading European Universities, Institutions and Industries that attack the challenges and provide different solutions to realize future computers.

### Features

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### Contents

PRO3D.- APPLE-CORE.- SoOS.- ENCORE.- COM-CAS.- IOLANES.- ADVANCE.- HIPEAC.- EURO-CLOUD.- PEPPER.- 2PARMA.- EURETILE.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-1483-4](http://www.springer.com/978-1-4614-1483-4)

### Hardcover

2014. 300p. 125 illus.  
ISBN 978-1-4614-1483-4

**Due: December 31, 2013**

V. González-Prida Díaz, Universidad de Sevilla, Sevilla, Spain; A. Crespo Márquez, Universidad de Sevilla, Sevilla, Spain

## After-sales Service of Engineering Industrial Assets

### A Reference Framework for Warranty Management

This book explores the practical implementation of an advanced after-sales management framework devoted to warranty management. The framework is intended for companies producing either standardized or customized products and such a management tool will facilitate organizational improvement and support innovative decision making processes for technical assistance in after-sales services. "After-sales Service of Engineering Industrial Assets" comprises a proposal for a warranty management framework, with an account of the different methods that can be used to improve decision making in the different stages of the after-sales service management process, and strategies for strengthening[...]

### Features

This book explores the practical implementation of an advanced after-sales management framework devoted to warranty management. The framework is intended for companies producing either standardized or customized products, and such a management tool will facilitate organizational improvement and support innovative decision making processes for technical assistance in after-sales services. "After-sales [...]"

### Contents

1. Introduction.- 2. Current Issues in Warranty Management.- 3. A Reference Framework for Warranty Management.- 4. Development of the Framework Stages.- 5. Extensions to the Framework.- 6. Results and Conclusions.

### Fields of interest

Quality Control, Reliability, Safety and Risk; Engineering Economics, Organization, Logistics, Marketing; Technology Management

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03709-7](http://www.springer.com/978-3-319-03709-7)

### Hardcover

2014. XVIII, 429 p. 106 illus., 4 illus. in color.  
ISBN 978-3-319-03709-7

**Due: December 24, 2013**

E.S. Gopi, National Institute of Technology Trichy, Trichy, India

## Digital Speech Processing Using Matlab

Digital Speech Processing Using Matlab deals with digital speech pattern recognition, speech production model, speech feature extraction, and speech compression. The book is written in a manner that is suitable for beginners pursuing basic research in digital speech processing. Matlab illustrations are provided for most topics to enable better understanding of concepts. This book also deals with the basic pattern recognition techniques (illustrated with speech signals using Matlab) such as PCA, LDA, ICA, SVM, HMM, GMM, BPN, and KSOM.

### Features

Digital Speech Processing Using Matlab deals with digital speech pattern recognition, speech production model, speech feature extraction, and speech compression. The book is written in a manner that is suitable for beginners pursuing basic research in digital speech processing. Matlab illustrations are provided for most topics to enable better understanding of concepts. This book also deals with the [..]

### Contents

Pattern Recognition for Speech Detection.- Speech Production Model.- Feature Extraction of the Speech Signal.- Speech Compression.- Appendix A: Constrained Optimization using Lagrangian Techniques.- Appendix B: Expectation-Maximization Algorithm.- Appendix C: Diagonalization of the Matrix.- Appendix D: Condition Number.- Appendix E: Spectral Flatness.- Appendix F: Functional Blocks of the Vocal Tract and the Ear.

### Fields of interest

Signal, Image and Speech Processing; Pattern Recognition; Biomedical Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-81-322-1676-6](http://www.springer.com/978-81-322-1676-6)

### Hardcover

2014. XVI, 182 p. 103 illus. (Signals and Communication Technology)  
ISBN 978-81-322-1676-6

usually dispatched within 3 to 5 business days  
December 31, 2013

A. Groysman, ORT Braude College of Engineering, Karmiel, Israel

## Corrosion in Systems for Storage and Transportation of Petroleum Products and Biofuels

### Identification, Monitoring and Solutions

This book treats corrosion as it occurs and affects processes in real-world situations, and thus points the way to practical solutions. Topics described include the conditions in which petroleum products are corrosive to metals; corrosion mechanisms of petroleum products; which parts of storage tanks containing crude oils and petroleum products undergo corrosion; dependence of corrosion in tanks on type of petroleum products; aggressiveness of petroleum products to polymeric material; how microorganisms take part in corrosion of tanks and pipes containing petroleum products; which corrosion monitoring methods are used in systems for storage and transportation of petroleum[...]

### Features

This book treats corrosion as it occurs and affects processes in real-world situations, and thus points the way to practical solutions. Topics described include the conditions in which petroleum products are corrosive to metals; corrosion mechanisms of petroleum products; which parts of storage tanks containing crude oils and petroleum products undergo corrosion; dependence of corrosion in tanks on type of [..]

### Contents

Preface.- 1 Physico-Chemical Properties and Corrosiveness of Crude Oils and Petroleum Products.- 2 Fuel Additives.- 3 Fuel Oxygenates.- 4 Biofuels.- 5 Corrosion of Metallic Constructions and Equipment in Petroleum Products.- 6 Polymeric Materials in Systems for Transportation and Storage of Fuels.- 7 Corrosion Prevention and Control in Systems Containing Fuels.- 8 Monitoring and Nondestructive Testing in Systems Containing Fuels.- 9 Cases of Typical and Unusual Corrosion of Tanks.- 10 History of Crude Oil and Petroleum Products.- Appendices.- Index.

### Fields of interest

Engineering Design; Tribology, Corrosion and Coatings; Industrial Chemistry / Chemical Engineering; Fossil Fuels (incl. Carbon Capture)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7883-2](http://www.springer.com/978-94-007-7883-2)

### Hardcover

2014. X, 243 p. 75 illus., 25 illus. in color.  
ISBN 978-94-007-7883-2

Due: January 31, 2014

M. Guiggiani, Università di Pisa, Pisa, Italy

## The Science of Vehicle Dynamics

### Handling, Braking, and Ride of Road and Race Cars

Vehicle dynamics is often perceived as a quite intuitive subject. As a matter of fact, lots of people are able to drive a car. Nevertheless, without a rigorous mathematical formulation it is very difficult to truly understand the physical phenomena involved in the motion of a road vehicle. In this book, mathematical models of vehicles are developed, always paying attention to state the relevant assumptions and to provide explanations for each step. This approach allows for a deep, yet simple, analysis of the dynamics of vehicles, without having to resort to foggy concepts. The reader will soon achieve a clear understanding of the subject, which will be of great help both in dealing[...]

### Features

Vehicle dynamics is often perceived as a quite intuitive subject. As a matter of fact, lots of people are able to drive a car. Nevertheless, without a rigorous mathematical formulation it is very difficult to truly understand the physical phenomena involved in the motion of a road vehicle. In this book, mathematical models of vehicles are developed, always paying attention to state the relevant [..]

### Contents

Preface.- 1 Introduction.- 1.1 Vehicle Definition.- 1.2 Vehicle Basic Scheme.- References.- 2 Mechanics of the Wheel with Tire.- 2.1 The Tire as a Vehicle Component.- 2.2 Rim Position and Motion.- 2.3 Carcass Features.- 2.4 Contact Patch.- 2.5 Footprint Force.- 2.5.1 Perfectly Flat Road Surface.- 2.6 Tire Global Mechanical Behavior.- 2.6.1 Tire Transient Behavior.- 2.6.2 Tire Steady-State Behavior.- 2.6.3 Rolling Resistance.- 2.6.4 Speed Independence (Almost).- 2.6.5 Pure Rolling (not Free Rolling).- 2.7 Tire Slips.- 2.7.1 Rolling Velocity.- 2.7.2 Definition of Tire Slips.- 2.7.3 Slip[...]

### Fields of interest

Automotive Engineering; Vibration, Dynamical Systems, Control; Mechanical Engineering

### Target groups

Graduate

### Type of publication

Monograph

More on [www.springer.com/978-94-017-8532-7](http://www.springer.com/978-94-017-8532-7)

### Hardcover

2014. XII, 378 p. 255 illus.  
ISBN 978-94-017-8532-7

Due: January 31, 2014

H.R. Hamidzadeh, L. Dai, R.N. Jazar

## Wave Propagation in Solid and Porous Half-Space Media

This book covers advanced topics in dynamic modeling of soil-foundation interaction, as well as the response of elastic semi-infinite media from an applications viewpoint. Advanced concepts such as solutions for analysis of elastic semi-infinite mediums, fluid motion in porous media, and nonlinearities in dynamic behavior are explained in great detail. Related theories and numerical analysis for vertical vibration, and rocking vibration of a rigid rectangular mass-less plate, and horizontal vibration of a rigid mass-less plate are presented. Throughout the book, a strong emphasis is placed on applications, and a laboratory model for elastic half-space medium is provided.

### Features

This book covers advanced topics in dynamic modeling of soil-foundation interaction, as well as the response of elastic semi-infinite media from an applications viewpoint. Advanced concepts such as solutions for analysis of elastic semi-infinite mediums, fluid motion in porous media, and nonlinearities in dynamic behavior are explained in great detail. Related theories and numerical analysis for vertical [...]

### Contents

Part I: Wave Propagation in Solid Media.- Introduction.- Dynamic Response of the Surface of an Elastic Half-Space due to an External Harmonic Disturbance.- Response of the Surface of an Elastic Half-Space due to a Vertical Harmonic Point Force.- Response of the Surface of an Elastic Half-Space due to a Horizontal Harmonic Point Force.- Dynamic Response of a Rigid Massive Base on an Elastic Half-Space.- Coupled Horizontal and Rocking Vibration of Rectangular Footing.- Response of Two Massive Bases on an Elastic Half-Space Medium.- Laboratory Model for Elastic Half-Space Medium.

### Fields of interest

Vibration, Dynamical Systems, Control; Microwaves, RF and Optical Engineering; Geotechnical Engineering & Applied Earth Sciences; Soft and Granular Matter, Complex Fluids and Microfluidics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9268-9](http://www.springer.com/978-1-4614-9268-9)

### Hardcover

2014. 400 p. 50 illus.  
ISBN 978-1-4614-9268-9

**Due: July 31, 2014**

W. Hauschild, E. Lemke

## High-Voltage Test and Measuring Techniques

It is the intent of this book to combine high-voltage (HV) engineering with HV testing technique and HV measuring technique. Based on long-term experience gained by the authors as lecturer and researcher as well as member in international organizations, such as IEC and CIGRE, the book will reflect the state of the art as well as the future trends in testing and diagnostics of HV equipment to ensure a reliable generation, transmission and distribution of electrical energy. The book is intended not only for experts but also for students in electrical engineering and high-voltage engineering.

### Features

It is the intent of this book to combine high-voltage (HV) engineering with HV testing technique and HV measuring technique. Based on long-term experience gained by the authors as lecturer and researcher as well as member in international organizations, such as IEC and CIGRE, the book will reflect the state of the art as well as the future trends in testing and diagnostics of HV equipment to ensure a reliable [...]

### Contents

Basics of HV Test Techniques.- Tests with High Alternating Voltages (HVAC).- Tests with High Direct Voltages (HVDC).- Tests with High Lightning and Switching Voltages (LI/SI).- Tests with Combined and Composite Test Voltages.- HV Test Laboratories and Testing Site.

### Fields of interest

Power Electronics, Electrical Machines and Networks; Energy Technology; Measurement Science, Instrumentation

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-642-45351-9](http://www.springer.com/978-3-642-45351-9)

### Hardcover

2014. XIV, 239 p. 360 illus.  
ISBN 978-3-642-45351-9

**Due: January 31, 2014**

A.-V.A. Ho, S. Hirai, Ritsumeikan University, Shiga, Japan

## Mechanics of Localized Slippage in Tactile Sensing and Application to Soft Sensing Systems

Localized slippage occurs during any relative sliding of soft contacts, ranging from human fingertips to robotic fingertips. Although this phenomenon is dominant for a very short time prior to gross slippage, localized slippage is a crucial factor for any to-be-developed soft sensing system to respond to slippage before it occurs. The content of this book addresses all aspects of localized slippage, including modeling and simulating it, as well as applying it to the construction of novel sensors with slip tactile perception.

### Features

Localized slippage occurs during any relative sliding of soft contacts, ranging from human fingertips to robotic fingertips. Although this phenomenon is dominant for a very short time prior to gross slippage, localized slippage is a crucial factor for any to-be-developed soft sensing system to respond to slippage before it occurs. The content of this book addresses all aspects of localized slippage. [...]

### Contents

- Chapter 1: Introduction.- Chapter 2: Two Dimensional Beam Bundle Model of a Frictional Sliding Soft Fingertip.- Chapter 3: Three-Dimensional Beam Bundle Model of a Sliding Soft Fingertip.- Chapter 4: Modeling of a Sliding Human Fingertip.- Chapter 5: Tactile Sensing via Micro Force/Moment Sensor.- Chapter 6: Slip Perception via Soft Robotic Skin Made of Electroconductive Yarn.- Chapter 7: Slip Perception using a Tactile Array Sensor.- Chapter 8: Concluding Remarks.- Appendix A: Continuous Modeling 2D Elastic[...]

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04122-3](http://www.springer.com/978-3-319-04122-3)

### Hardcover

2014. XII, 184 p. (Springer Tracts in Advanced Robotics, Vol. 99)

ISBN 978-3-319-04122-3

**Due: January 31, 2014**

Y. Ito, Tokyo Institute of Technology, Tokyo, Japan (Ed.)

## Thought-Evoking Approaches in Engineering Problems

In creating the value-added product in not distant future, it is necessary and inevitable to establish a holistic and thought-evoking approach to the engineering problem, which should be at least associated with the inter-disciplinary knowledge and thought processes across the whole engineering spheres. It is furthermore desirable to integrate it with trans-disciplinary aspects ranging from manufacturing culture, through liberal-arts engineering and industrial sociology. The thought-evoking approach can be exemplified and typified by representative engineering problems: unveiling essential features in 'Tangential Force Ratio and Interface Pressure', prototype development for[...]

### Features

In creating the value-added product in not distant future, it is necessary and inevitable to establish a holistic and thought-evoking approach to the engineering problem, which should be at least associated with the inter-disciplinary knowledge and thought processes across the whole engineering spheres. It is furthermore desirable to integrate it with trans-disciplinary aspects ranging from manufacturing [...]

### Contents

1. Tangential Force Ratio and Its Applications to Industrial Technologies – Anti-vibration steel plate for refrigerator and derailment of rolling stock.- 2. In-process Measurement for Machining States – Sensing technology in noisy space.- 3. Ultrasonic Waves Method for Interface Pressure Measurement – What is Acceptable Definition of Interface Pressure.- 4. The Painless Injection Tube – From biomimetic technology to medical engineering.- 5. Water-jet Machining and Its Applications - Relaxation of stress concentration in cylindrical roller bearing and preferable finish of artificial[...]

### Fields of interest

Engineering Design; Technology Management; Interdisciplinary Studies

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04119-3](http://www.springer.com/978-3-319-04119-3)

### Hardcover

2014. V, 245 p. 265 illus., 144 illus. in color. With online files/update.  
ISBN 978-3-319-04119-3

**Due: April 28, 2014**

M. Ivanović, University of Novi Sad, Novi Sad, Serbia (Yugoslavia);  
L.C. Jain, University of Canberra, Canberra, Australia (Eds.)

## E-Learning Paradigms and Applications

### Agent-based Approach

Teaching and learning paradigms have attracted increased attention especially in the last decade. Immense developments of different ICT technologies and services have paved the way for alternative but effective approaches in educational processes. Many concepts of the agent technology, such as intelligence, autonomy and cooperation, have had a direct positive impact on many of the requests imposed on modern e-learning systems and educational processes. This book presents the state-of-the-art of e-learning and tutoring systems and discusses their capabilities and benefits that stem from integrating software agents. We hope that the presented work will be of a great use to our colleagues[...]

### Features

Teaching and learning paradigms have attracted increased attention especially in the last decade. Immense developments of different ICT technologies and services have paved the way for alternative but effective approaches in educational processes. Many concepts of the agent technology, such as intelligence, autonomy, and cooperation, have had a direct positive impact on many of the requests imposed on [...]

### Contents

Robo Newbie: A Framework for Experiments with Simulated Humanoid Robots.- Designing Intelligent Agent in Multilevel Game-based Modules for E-Learning Computer Science courses.- E-Learning and the Process of Studying in Virtual Contexts.- Inter-university Virtual Learning Environment.- An Agent based E-learning Framework for Grid Environment.- Determining the Usability Effect of Pedagogical Interface Agents on Adult Computer Literacy Training.- MASECO a Multi-Agent System for Evaluation and Classification of OERs and OCW Based on Quality Criteria.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41964-5](http://www.springer.com/978-3-642-41964-5)

### Hardcover

2014. XVII, 273 p. 97 illus. (Studies in Computational Intelligence, Vol. 528)  
ISBN 978-3-642-41964-5

**usually dispatched within 3 to 5 business days January 6, 2014**

M. Janić, Delft University of Technology, Delft, Netherlands

## Advanced Transport Systems

### Analysis, Modeling, and Evaluation of Performances

This book provides a systematic analysis, modeling and evaluation of the performance of advanced transport systems. It offers an innovative approach by presenting a multidimensional examination of the performance of advanced transport systems and transport modes, useful for both theoretical and practical purposes. Advanced transport systems for the twenty-first century are characterized by the superiority of one or several of their infrastructural, technical/technological, operational, economic, environmental, social and policy performances as compared to their conventional counterparts. The advanced transport systems considered include: Bus Rapid Transit (BRT) and Personal Rapid[...]

### Features

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### Contents

1. Advanced Transport Systems – GENERAL.- 2. Advanced Transport Systems - OPERATIONS AND TECHNOLOGIES.- 3. Advanced Transport Systems - OPERATIONS AND ECONOMICS.- 4. Advanced Transport Systems - TECHNOLOGIES AND THE ENVIRONMENT.- 5. Advanced Transport Systems - INFRASTRUCTURE, TECHNOLOGIES, OPERATIONS, ECONOMICS, ENVIRONMENT, AND SOCIETY/POLICY.- 6. Advanced Transport Systems – FUTURE CONCEPTS.- 7. Advanced Transport Systems – CONTRIBUTION TO SUSTAINABILITY.

### Fields of interest

Automotive Engineering; Transportation; Civil Engineering; Landscape, Regional and Urban Planning

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6286-5](http://www.springer.com/978-1-4471-6286-5)

### Hardcover

2014. XIII, 288 p. 101 illus., 16 illus. in color.  
ISBN 978-1-4471-6286-5

**Due: February 28, 2014**

J. Jia, Aker Solutions, Bergen, Norway

## Essentials of Applied Dynamic Analysis

This book presents up-to-date knowledge of dynamic analysis in engineering world. To facilitate the understanding of the topics by readers with various backgrounds, general principles are linked to their applications from different angles. Special interesting topics such as statistics of motions and loading, damping modeling and measurement, nonlinear dynamics, fatigue assessment, vibration and buckling under axial loading, structural health monitoring, human body vibrations, and vehicle-structure interactions etc., are also presented. The target readers include industry professionals in civil, marine and mechanical engineering, as well as researchers and students in this area.

### Features

This book presents up-to-date knowledge of dynamic analysis in engineering world. To facilitate the understanding of the topics by readers with various backgrounds, general principles are linked to their applications from different angles. Special interesting topics such as statistics of motions and loading, damping modeling and measurement, nonlinear dynamics, fatigue assessment, vibration and buckling [...]

### Contents

Introduction.- Governing Equation of Motions.- Free Vibrations for a Single-Degree-of-Freedom (SDOF) System-Translational Oscillations.- Practical Eigenanalysis and Structural Health Monitoring.- Solving Eigenproblem for Continuous Systems: Rayleigh Energy Method.- Vibration and Buckling Under Axial Loading.- Eigenfrequencies of Non-uniform Beams, Shallow and Deep Foundations.- Deterministic and Stochastic Motions.- Time Domain to Frequency Domain: Spectrum Analysis.- Statistics of Motions and Loads.- Forced Vibrations.- Calculation of Environmental Loading Based on Power Spectra.- [...]

### Fields of interest

Vibration, Dynamical Systems, Control; Quality Control, Reliability, Safety and Risk; Computational Mathematics and Numerical Analysis; Civil Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-37002-1](http://www.springer.com/978-3-642-37002-1)

### Hardcover

2014. XVIII, 423 p. 283 illus., 9 illus. in color. (Risk Engineering)

ISBN 978-3-642-37002-1

Due: **January 31, 2014**

S.H.H. Kachapi, D.D. Ganji

## Nonlinear Equations

### Analytical Methods and Applications

The present text reflects developments in the literature on nonlinear systems, while retaining a reader-friendly presentation. It has been developed from problems on nonlinear differential equations given over several years in the nonlinear dynamics team at the Mechanical Department of Babol Noshirvani University of Technology. A large variety of applied processes in both linear and nonlinear forms for important nonlinear differential equations are covered, enabling readers to solve problems without needing to refer to other sources. An introduction to systems in the context of nonlinear differential equations is provided and is suitable for courses of varying emphasis. The[...]

### Features

The present text reflects developments in the literature on nonlinear systems, while retaining a reader-friendly presentation. It has been developed from problems on nonlinear differential equations given over several years in the nonlinear dynamics team at the Mechanical Department of Babol Noshirvani University of Technology. A large variety of applied processes in both linear and nonlinear forms for [...]

### Contents

From the Contents: Exp -Function Method.- F-Expansion Method.- (G' G) -Expansion Method.- Sine-Cosine Function Method.- Tanh-Coth Method.- Homotopy Perturbation Method.- Variational Iteration Method.- Coupled Method of Homotopy Perturbation and Variational Method.- Homotopy Analysis Method.- Adomian's Decomposition Method.- Differential Transformation Method.- Energy Balance Method.- Applied Problems in Engineering and Applied sciences.

### Fields of interest

Complexity; Nonlinear Dynamics; Computational Mathematics and Numerical Analysis; Appl. Mathematics / Computational Methods of Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-907343-80-3](http://www.springer.com/978-1-907343-80-3)

### Hardcover

2014. Approx. 275 p.

ISBN 978-1-907343-80-3

Due: **March 28, 2014**

N.K. Kasabov, Auckland University of Technology, Auckland, New Zealand (Ed.)

## Springer Handbook of Bio-/Neuro-Informatics

The Springer Handbook of Bio-/Neuro-Informatics is the first published book in one volume that explains together the basics and the state-of-the-art of two major science disciplines in their interaction and mutual relationship, namely: information sciences, bioinformatics and neuroinformatics. Bioinformatics is the area of science which is concerned with the information processes in biology and the development and applications of methods, tools and systems for storing and processing of biological information thus facilitating new knowledge discovery. Neuroinformatics is the area of science which is concerned with the information processes in biology and the development and [...]

### Features

The Springer Handbook of Bio-/Neuro-Informatics is the first published book in one volume that explains together the basics and the state-of-the-art of two major science disciplines in their interaction and mutual relationship, namely: information sciences, bioinformatics and neuroinformatics. Bioinformatics is the area of science which is concerned with the information processes in biology and [...]

### Contents

Part A (Ed. Heike Sichtig) Understanding Information Processes in Biological Systems.- Part B (Ed.: Chris Brown) Molecular Biology, Genome and Proteome Informatics.- Part C (Eds: Irwin King, Kaizhu Huang, Heike Sichtig) Machine Learning Methods.- Part D (Eds: Chris Brown, Heike Sichtig, Irwin King, Kaizhu Huang, Francesco Masulli) Modeling Regulatory Networks: The Systems Biology Approach.- Part E (Ed.: Francesco Masulli) Bioinformatics Databases and Ontologies.- Part F (Eds: Francesco Masulli, Danilo Mandic) Bioinformatics in Medicine, Health and Ecology.- Part G (Ed.: Heike [...])

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Bioinformatics; Computational Biology / Bioinformatics; Neurosciences; Biomedical Engineering

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-30573-3](http://www.springer.com/978-3-642-30573-3)

### Hardcover

2014. Approx. 1200 p. 500 illus. in color.

ISBN 978-3-642-30573-3

Due: **January 29, 2014**

A. Kaveh, Iran University of Science, Teheran, Iran

## Computational Structural Analysis and Finite Element Methods

Graph theory gained initial prominence in science and engineering through its strong links with matrix algebra and computer science. Moreover, the structure of the mathematics is well suited to that of engineering problems in analysis and design. The methods of analysis in this book employ matrix algebra, graph theory and meta-heuristic algorithms, which are ideally suited for modern computational mechanics. Efficient methods are presented that lead to highly sparse and banded structural matrices. The main features of the book include: application of graph theory for efficient analysis; extension of the force method to finite element analysis; application of meta-heuristic algorithms[...]

### Features

Graph theory gained initial prominence in science and engineering through its strong links with matrix algebra and computer science. Moreover, the structure of the mathematics is well suited to that of engineering problems in analysis and design. The methods of analysis in this book employ matrix algebra, graph theory and meta-heuristic algorithms, which are ideally suited for modern computational [...]

### Contents

From the Contents: Basic concepts of structural analysis and graph theory.- Optimal force method of structural analysis.- Optimal displacement method of structural analysis.- Ordering for optimal patterns of structural matrices: graph theory methods.

### Fields of interest

Structural Mechanics; Graph Theory; Computational Science and Engineering; Computational Intelligence

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02963-4](http://www.springer.com/978-3-319-02963-4)

### Hardcover

2014. XVI, 418 p. 305 illus., 90 illus. in color. ISBN 978-3-319-02963-4

**Due: December 31, 2013**

M.A. Khan, Sharda University, Greater Noida, India; S. Saeed, Bahria University, Islamabad, Pakistan; A. Darwish, A. Abraham, Machine Intelligence Research Labs, Auburn, USA (Eds.)

## Embedded and Real Time System Development: A Software Engineering Perspective

### Concepts, Methods and Principles

Nowadays embedded and real-time systems contain complex software. The complexity of embedded systems is increasing, and the amount and variety of software in the embedded products are growing. This creates a big challenge for embedded and real-time software development processes and there is a need to develop separate metrics and benchmarks. "Embedded and Real Time System Development: A Software Engineering Perspective: Concepts, Methods and Principles" presents practical as well as conceptual knowledge of the latest tools, techniques and methodologies of embedded software engineering and real-time systems. Each chapter includes an in-depth investigation regarding the actual or[...]

### Features

Nowadays embedded and real-time systems contain complex software. The complexity of embedded systems is increasing, and the amount and variety of software in the embedded products are growing. This creates a big challenge for embedded and real-time software development processes and there is a need to develop separate metrics and benchmarks. "Embedded and Real Time System Development: A Software [...]

### Contents

PART I Embedded Software Development Process.- PART II Design Patterns and Development Methodology.- PART III Modeling framework.- PART IV Performance analysis, Power Management and Deployment.

### Fields of interest

Computational Intelligence; Software Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40887-8](http://www.springer.com/978-3-642-40887-8)

### Hardcover

2014. X, 330 p. 192 illus., 13 illus. in color. (Studies in Computational Intelligence, Vol. 520) ISBN 978-3-642-40887-8

**usually dispatched within 3 to 5 business days**

K. Khayat, Missouri University of Science and, Rolla, USA; G. De Schutter, Ghent University, Ghent, Belgium (Eds.)

## Mechanical Properties of Self-Compacting Concrete

### State-of-the-Art Report of the RILEM Technical Committee 228-MPS on Mechanical Properties of Self-Compacting Concrete

The State-of-the-Art Report of RILEM Technical Committee 228-MPS on Mechanical properties of Self-Compacting Concrete (SCC) summarizes an extensive body of information related to mechanical properties and mechanical behaviour of SCC. Due attention is given to the fact that the composition of SCC varies significantly. A wide range of mechanical properties are considered, including compressive strength, stress-strain relationship, tensile and flexural strengths, modulus of elasticity, shear strength, effect of elevated temperature, such as fire spalling and residual properties after fire, in-situ properties, creep, shrinkage, bond properties and structural behaviour. A chapter on[...]

### Features

The State-of-the-Art Report of RILEM Technical Committee 228-MPS on Mechanical properties of Self-Compacting Concrete (SCC) summarizes an extensive body of information related to mechanical properties and mechanical behaviour of SCC. Due attention is given to the fact that the composition of SCC varies significantly. A wide range of mechanical properties are considered, including compressive strength, [...]

### Contents

Preface.- List of Authors.- 1. Introduction and Glossary, by G. De Schutter and K.H. Khayat.- 2. Mechanical Properties, by P. Desnerck, V. Boel, B. Craeye and P. Van Itterbeeck.- 3. Creep and Shrinkage, by A. Leemann and P. Lura.- 4. Bond Strength, by K.H. Khayat and P. Desnerck.- 5. Structural Behaviour, by M. Lachemi, A.A.A. Hassan, C. Mazzotti and M. Sonebi.- 6. Fiber Reinforced Self-Compacting Concrete (FR-SCC), by L. Ferrara.- 7. Specialty Self-Compacting Concrete, by M. Vieira, L. Ferrara, M. Sonebi and C. Shi.- 8. Summary and Conclusions, G. De Schutter and K.H. Khayat.

### Fields of interest

Building Materials; Structural Materials; Theoretical and Applied Mechanics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03244-3](http://www.springer.com/978-3-319-03244-3)

### Hardcover

2014. 240 p. (RILEM State-of-the-Art Reports, Vol. 14) ISBN 978-3-319-03244-3

**Due: December 17, 2013**

K.-H. Kim, Office of Naval Research, Arlington, USA; G. Chahine, J.-P. Franc, A. Karimi, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland (Eds.)

## Advanced Experimental and Numerical Techniques for Cavitation Erosion Prediction

This book provides a comprehensive treatment of the cavitation erosion phenomenon and state-of-the-art research in the field. It is divided into two parts. Part I consists of seven chapters, offering a wide range of computational and experimental approaches to cavitation erosion. It includes a general introduction to cavitation and cavitation erosion a detailed description of facilities and measurement techniques commonly used in cavitation erosion studies, an extensive presentation of various stages of cavitation damage (including incubation and mass loss) and insights into the contribution of computational methods to the analysis of both fluid and material behavior. The proposed[...]

### Features

This book provides a comprehensive treatment of the cavitation erosion phenomenon and state-of-the-art research in the field. It is divided into two parts. Part I consists of seven chapters, offering a wide range of computational and experimental approaches to cavitation erosion. It includes a general introduction to cavitation and cavitation erosion, a detailed description of facilities and measurement [...]

### Contents

Foreword.- Preface.- Part I: Cavitation and Cavitation Erosion - Computational and Experimental Approaches.- 1 Cavitation and Cavitation Erosion.- 2 Laboratory Testing Methods of Cavitation Erosion.- 3 Pitting and Incubation Period.- 4 Cavitation Impulsive Pressures.- 5 Mass Loss and Advanced Periods of Erosion.- 6 Modeling of Cavitation Dynamics and Interaction with Material.- 7 Modeling of Material Response.- Part II: Selected Papers from the International Workshop on Advanced Experimental and Numerical Techniques for Cavitation Erosion Prediction (Grenoble, March 1-2, 2011).- 1[...]

### Fields of interest

Engineering Fluid Dynamics; Fluid- and Aerodynamics; Tribology, Corrosion and Coatings

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-017-8538-9](http://www.springer.com/978-94-017-8538-9)

### Hardcover

2014. XVIII, 418 p. 290 illus., 220 illus. in color. (Fluid Mechanics and Its Applications, Vol. 106)  
ISBN 978-94-017-8538-9

**Due: January 31, 2014**

M.R. Knecht, T.R. Walsh, Deakin University, Geelong, Australia (Eds.)

## Bio-inspired Nanotechnology

From Surface Analysis to Applications

This book focuses on the use of bio-inspired and biomimetic methods for the fabrication and activation of nanomaterials. This includes studies concerning the binding of the biomolecules to the surface of inorganic structures, structure/function relationships of the final materials, and extensive discussions on the final applications of such biomimetic materials in unique applications including energy harvesting/storage, biomedical diagnostics, and materials assembly.

### Features

Bio-inspired Nanotechnology: From Surface Analysis to Applications focuses on the use of bio-inspired and biomimetic methods for the fabrication and activation of nanomaterials. This includes studies concerning the binding of the biomolecules to the surface of inorganic structures, structure/function relationships of the final materials, and extensive discussions on the final applications of such biomimetic [...]

### Contents

Biomimicry Big Picture/Vision Statement; Possibilities, Grand Challenges, Societal Benefits.- Basic Concepts of the bio/materials interface.- Qualitative Binding Characterization.- Quantitative Binding Characterization.- Structure-Function Relationships at the Bio-interface.- Interfacial Structure Determination.- Nucleation, Growth and Assembly.- Informatics approaches.- Molecular and Mesoscale Simulation.- Application 1 – catalysis.- Application 2 – energy.- Application 3 – biomedical.- Application 4 – optical/plasmonic.- Application 5 – green/recyclable/sustainable.- Outlook, Future[...]

### Fields of interest

Nanotechnology and Microengineering; Biomaterials; Catalysis; Nanoscale Science and Technology; Renewable and Green Energy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9445-4](http://www.springer.com/978-1-4614-9445-4)

### Hardcover

2015. Approx. 250 p. 150 illus.  
ISBN 978-1-4614-9445-4

**Due: March 31, 2015**

J. Kober, Universität Bielefeld and Honda, Bielefeld, Germany; J. Peters

## Learning Motor Skills

From Algorithms to Robot Experiments

This book presents the state of the art in reinforcement learning applied to robotics both in terms of novel algorithms and applications. It discusses recent approaches that allow robots to learn motor skills and presents tasks that need to take into account the dynamic behavior of the robot and its environment, where a kinematic movement plan is not sufficient. The book illustrates a method that learns to generalize parameterized motor plans which is obtained by imitation or reinforcement learning, by adapting a small set of global parameters and appropriate kernel-based reinforcement learning algorithms. The presented applications explore highly dynamic tasks and exhibit a very[...]

### Features

This book presents the state of the art in reinforcement learning applied to robotics both in terms of novel algorithms and applications. It discusses recent approaches that allow robots to learn motor skills and presents tasks that need to take into account the dynamic behavior of the robot and its environment, where a kinematic movement plan is not sufficient. The book illustrates a method that [...]

### Contents

Reinforcement Learning in Robotics: A Survey.- Movement Templates for Learning of Hitting and Batting.- Policy Search for Motor Primitives in Robotics.- Reinforcement Learning to Adjust Parameterized Motor Primitives to New Situations.- Learning Prioritized Control of Motor Primitives.

### Fields of interest

Robotics and Automation; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03193-4](http://www.springer.com/978-3-319-03193-4)

### Hardcover

2014. XVI, 191 p. 56 illus., 54 illus. in color. (Springer Tracts in Advanced Robotics, Vol. 97)  
ISBN 978-3-319-03193-4

**usually dispatched within 3 to 5 business days**

O. Kramer, Carl von Ossietzky, Oldenburg, Germany

## A Brief Introduction to Continuous Evolutionary Optimization

Practical optimization problems are often hard to solve, in particular when they are black boxes and no further information about the problem is available except via function evaluations. This work introduces a collection of heuristics and algorithms for black box optimization with evolutionary algorithms in continuous solution spaces. The book gives an introduction to evolution strategies and parameter control. Heuristic extensions are presented that allow optimization in constrained, multimodal and multi-objective solution spaces. An adaptive penalty function is introduced for constrained optimization. Meta-models reduce the number of fitness and constraint function calls in[...]

### Features

Practical optimization problems are often hard to solve, in particular when they are black boxes and no further information about the problem is available except via function evaluations. This work introduces a collection of heuristics and algorithms for black box optimization with evolutionary algorithms in continuous solution spaces. The book gives an introduction to evolution strategies and parameter [...]

### Contents

Part I Foundations.- Part II Advanced Optimization.- Part III Learning.- Part IV Appendix.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03421-8](http://www.springer.com/978-3-319-03421-8)

### Softcover

2014. XI, 94 p. 29 illus., 24 illus. in color. (SpringerBriefs in Computational Intelligence)  
ISBN 978-3-319-03421-8

**usually dispatched within 3 to 5 business days  
December 31, 2013**

L.T. Kóczy, Széchenyi István University, Győr, Hungary; C.R. Pozna, Széchenyi István University, Győr, Hungary; J. Kacprzyk, Polish Academy of Sciences, Warsaw, Poland (Eds.)

## Issues and Challenges of Intelligent Systems and Computational Intelligence

This carefully edited book contains contributions of prominent and active researchers and scholars in the broadly perceived area of intelligent systems. The book is unique both with respect to the width of coverage of tools and techniques, and to the variety of problems that could be solved by the tools and techniques presented. The editors have been able to gather a very good collection of relevant and original papers by prominent representatives of many areas, relevant both to the theory and practice of intelligent systems, artificial intelligence, computational intelligence, soft computing, and the like. The contributions have been divided into 7 parts presenting first more[...]

### Features

This carefully edited book contains contributions of prominent and active researchers and scholars in the broadly perceived area of intelligent systems. The book is unique both with respect to the width of coverage of tools and techniques, and to the variety of problems that could be solved by the tools and techniques presented. The editors have been able to gather a very good collection of relevant and [..]

### Contents

Part I Fuzzy Systems: Theory.- Part II Fuzzy Systems: Application.- Part III Neural Network.- Part IV Clustering and Image Processing.- Part V Robotic Systems.- Part VI Data Manipulation.- Part VII Control.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03205-4](http://www.springer.com/978-3-319-03205-4)

### Hardcover

2014. XIII, 283 p. 131 illus., 55 illus. in color. (Studies in Computational Intelligence, Vol. 530)  
ISBN 978-3-319-03205-4

**Due: January 9, 2014**

A. Küchler, FH Würzburg - Schweinfurt, Schweinfurt, Germany

## High Voltage Engineering

Fundamentals - Technology - Applications

High voltage engineering is not only a key technology for a safe, economic and sustainable electric power supply. Furthermore, a broad spectrum of applications includes most of the innovative fields in engineering and science, such as medical engineering, laser technology, industrial production, automotive engineering, food technology, bioengineering, nanotechnology, environmental protection, recycling, electromagnetic compatibility, scientific research or superconductivity. "High Voltage Engineering: Fundamentals – Technologies – Applications" is based on the 3rd edition of the leading German standard work "Hochspannungstechnik", which is both a textbook for students and a[...]

### Features

High voltage engineering is not only a key technology for a safe, economic and sustainable electric power supply. Furthermore, a broad spectrum of applications includes most of the innovative fields in engineering and science, such as medical engineering, laser technology, industrial production, automotive engineering, food technology, bioengineering, nanotechnology, environmental protection, recycling, [..]

### Contents

Electric Fields in Dielectrics.- Dielectric Strength.- System Properties of Dielectrics.- Insulating Materials.- Testing, Measuring, Diagnosis.- Applications, Insulating Systems.

### Fields of interest

Power Electronics, Electrical Machines and Networks

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-3-642-11992-7](http://www.springer.com/978-3-642-11992-7)

### Hardcover

Original german edition published with title: Hochspannungstechnik  
2014. 600p. 400 illus..  
ISBN 978-3-642-11992-7

**Due: March 28, 2014**

A. Lavers, Georgia Institute of Technology, Atlanta, USA; M. Egerstedt (Eds.)

## Controls and Art

**Inquiries at the Intersection of the Subjective and the Objective**

Dancing humanoids, robotic art installations, and music generated by mathematically precise methods are no longer science fiction; in fact they are the subject of this book. This first-of-its-kind anthology assembles technical research that makes such creations possible. In order to mechanize something as enigmatic and personal as dance, researchers must delve deeply into two distinct academic disciplines: control theory and art. Broadly, this research uses techniques from the world of art to inspire methods in control, enables artistic endeavours using advanced control theory and aids in the analysis of art using metrics devised by a systems theoretic approach. To ensure that artistic[...]

### Features

Dancing humanoids, robotic art installations, and music generated by mathematically precise methods are no longer science fiction; in fact they are the subject of this book. This first-of-its-kind anthology assembles technical research that makes such creations possible. In order to mechanize something as enigmatic and personal as dance, researchers must delve deeply into two distinct academic [...]

### Contents

Metric Preference Learning with Applications to Motion Imitation.- In the Dance Studio: An Art and Engineering Exploration of Human Flocking.- Dancing Robots: The Control Theory of Communication Through Movement.- So You Think You Can Dance?: Rhythmic Flight Performances with Quadrocopters.- Robotic Puppets and the Engineering of Autonomous Theatre.- The Artistic Geometry of Consensus Protocols.- Generating Music from Flocking Dynamics.- "Are We There Yet?": Visual Tracking of Visitors Under Variable Lighting.- Style-based Robotic Motion in Contemporary Dance Performance.

### Fields of interest

Control; Arts; Popular Science in Mathematics / Natural Science / Technology; Robotics and Automation

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03903-9](http://www.springer.com/978-3-319-03903-9)

### Hardcover

2014. VI, 231 p. 107 illus., 71 illus. in color.  
ISBN 978-3-319-03903-9

**Due: February 28, 2014**

M. Lech, RMIT University, Melbourne, Australia; I. Song, James Cook University Australia, Singapore, Singapore; P. Yellowlees, University of California, Davis, Sacramento, USA; J. Diederich (Eds.)

## Mental Health Informatics

This book introduces approaches that have the potential to transform the daily practice of psychiatrists and psychologists. This includes the asynchronous communication between mental health care providers and clients as well as the automation of assessment and therapy. Speech and language are particularly interesting from the viewpoint of psychological assessment. For instance, depression may change the characteristics of voice in individuals and these changes can be detected by a special form of speech analysis. Computational screening methods that utilize speech and language can detect subtle changes and alert clinicians as well as individuals and caregivers. The use of online[...]

### Features

This book introduces approaches that have the potential to transform the daily practice of psychiatrists and psychologists. This includes the asynchronous communication between mental health care providers and clients as well as the automation of assessment and therapy. Speech and language are particularly interesting from the viewpoint of psychological assessment. For instance, depression may [...]

### Contents

Mental Health Informatics: Current approaches.- The Rise of Person-Centered Healthcare and the Influence of Health Informatics and Social Network Applications on Mental Health Care.- The Changing Doctor-Patient Relationship - a Move to Anytime, Anywhere.- Novel Approaches to Clinical Care in Mental Health - from Asynchronous Telepsychiatry to Virtual Reality.- Speech Analysis for Mental Health Assessment using Support Vector Machines.- Social Networks and Automated Mental Health Screening.- Generating Explanations from Support Vector Machines for Psychological Classifications.- An[...]

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Biomedical Engineering; Health Informatics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-38549-0](http://www.springer.com/978-3-642-38549-0)

### Hardcover

2014. X, 253 p. 85 illus. (Studies in Computational Intelligence, Vol. 491)  
ISBN 978-3-642-38549-0

**usually dispatched within 3 to 5 business days**

C.M. Leech

## The Modelling and Analysis of the Mechanics of Ropes

This book considers the modelling and analysis of the many types of ropes, linear fibre assemblies. The construction of these structures is very diverse and in the work these are considered from the modelling point of view. As well as the conventional twisted structures, braid and plaited structures and parallel assemblies are modelled and analysed, first for their assembly and secondly for their mechanical behaviour. Also since the components are assemblies of components, fibres into yarns, into strands, and into ropes the hierarchical nature of the construction is considered. The focus of the modelling is essentially toward load extension behaviour but there is reference to bending[...]

### Features

This book considers the modelling and analysis of the many types of ropes, linear fibre assemblies. The construction of these structures is very diverse and in the work these are considered from the modelling point of view. As well as the conventional twisted structures, braid and plaited structures and parallel assemblies are modelled and analysed, first for their assembly and secondly for their mechanical [...]

### Contents

1 Introduction.- 2 Fibre Geometry and Fibre Mechanics.- 3 Component Path Geometries.- 4 Transversely Continuous Structures.- 5 Hierarchical Structures.- 6 Transversely Discrete Structures.- 7 Contact Force and Friction.- 8 Component Wear, Life and Heating.- Appendix - Tentative Scaling Relations.

### Fields of interest

Engineering (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7840-5](http://www.springer.com/978-94-007-7840-5)

### Hardcover

2014. XI, 123 p. 79 illus., 38 illus. in color. (Solid Mechanics and Its Applications, Vol. 209)  
ISBN 978-94-007-7840-5

**usually dispatched within 3 to 5 business days**

F.L. Lewis, H. Zhang, K. Hengster-Movric, A. Das, Danfoss Power Solutions (US) Compan, Ames, USA

## Cooperative Control of Multi-Agent Systems

### Optimal and Adaptive Design Approaches

Cooperative Control of Multi-Agent Systems extends optimal control and adaptive control design methods to multi-agent systems on communication graphs. It develops Riccati design techniques for general linear dynamics for cooperative state feedback design, cooperative observer design, and cooperative dynamic output feedback design. Both continuous-time and discrete-time dynamical multi-agent systems are treated. Optimal cooperative control is introduced and neural adaptive design techniques for multi-agent nonlinear systems with unknown dynamics, which are rarely treated in literature are developed. Results spanning systems with first-, second- and on up to general high-order nonlinear[...]

### Features

Task complexity, communication constraints, flexibility and energy-saving concerns are all factors that may require a group of autonomous agents to work together in a cooperative manner. Applications involving such complications include mobile robots, wireless sensor networks, unmanned aerial vehicles (UAVs), spacecraft, and so on. In such networked multi-agent scenarios, the restrictions imposed by the [...]

### Contents

Introduction to Synchronization in Nature and Physics and Cooperative Control for Multi-agent Systems on Graphs.- Algebraic Graph Theory and Cooperative Control Consensus.- Part I Distributed Optimal Design for Cooperative Control in Multi-agent Systems on Graphs.- Local Optimal Design for Cooperative Control in Multi-agent Systems on Graphs.- Riccati Design for Synchronization of Discrete-Time Systems.- Cooperative Globally Optimal Control for Multi-agent Systems on Directed Graph Topologies.- Graphical Games: Distributed Multi-player Games on Graphs.- Part II Distributed Adaptive[...]

### Fields of interest

Control; Artificial Intelligence (incl. Robotics); Computational Intelligence; Aerospace Technology and Astronautics; Communications Engineering, Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5573-7](http://www.springer.com/978-1-4471-5573-7)

### Hardcover

2014. XX, 307 p. 80 illus., 59 illus. in color. (Communications and Control Engineering)  
ISBN 978-1-4471-5573-7

**Due: December 31, 2013**

S. Li, J.M.R.S. Tavares, Universidade do Porto, Porto, Portugal (Eds.)

## Shape Analysis in Medical Image Analysis

This book contains thirteen contributions from invited experts of international recognition addressing important issues in shape analysis in medical image analysis, including techniques for image segmentation, registration, modelling and classification and applications in biology, as well as in cardiac, brain, spine, chest, lung and clinical practice. This volume treats topics such as for example, anatomic and functional shape representation and matching; shape-based medical image segmentation; shape registration; statistical shape analysis; shape deformation; shape-based abnormality detection; shape tracking and longitudinal shape analysis; machine learning for shape modeling and[...]

### Features

This book contains thirteen contributions from invited experts of international recognition addressing important issues in shape analysis in medical image analysis, including techniques for image segmentation, registration, modelling and classification, and applications in biology, as well as in cardiac, brain, spine, chest, lung and clinical practice. This volume treats topics such as, anatomic [...]

### Contents

Preface.- Part I: Methods and Models.- 1. Shape Analysis for Brain Structures: A Review, by Bernard Ng, Matthew Toews, Stanley Durrleman, Yonggang Shi.- 2. Shape Analysis in Molecular Imaging, by Fei Gao, Pengcheng Shi.- 3. Variational Shape Representation for Modeling, Elastic Registration and Segmentation, by Amal A. Farag, Ahmed Shalaby, Aly A. Farag.- 4. Image Computing Based on Bayesian Models, by Zhong Xue, Stephen Wong.- 5. Shape-Constrained Deformable Models and Applications in Medical Imaging, by Jürgen Weese, Irina Waechter-Stehle, Lyubomir Zagorchev, Jochen Peters.- Part II: [...]

### Fields of interest

Biomedical Engineering; Image Processing and Computer Vision; Imaging / Radiology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03812-4](http://www.springer.com/978-3-319-03812-4)

### Hardcover

2014. VII, 438 p. 220 illus. (Lecture Notes in Computational Vision and Biomechanics, Vol. 14)  
ISBN 978-3-319-03812-4

**Due: January 31, 2014**

Y. Lim, Samsung Techwin RD Center, Seongnam-si, Korea, Republic of (South Korea); R. Venugopal, Intellicass Inc., Montreal, Canada; A.G. Ulsoy, University of Michigan, Ann Arbor, USA

## Process Control for Sheet-Metal Stamping

### Process Modeling, Controller Design and Shop-Floor Implementation

Process Control for Sheet-Metal Stamping presents a comprehensive and structured approach to the design and implementation of controllers for the sheet metal stamping process. The use of process control for sheet-metal stamping greatly reduces defects in deep-drawn parts and can also yield large material savings from reduced scrap. Sheet-metal forming is a complex process and most often characterized by partial differential equations that are numerically solved using finite-element techniques. In this book, twenty years of academic research are reviewed and the resulting technology transitioned to the industrial environment. The sheet-metal stamping process is modeled in a manner[...]

### Features

Process Control for Sheet-Metal Stamping presents a comprehensive and structured approach to the design and implementation of controllers for the sheet metal stamping process. The use of process control for sheet-metal stamping greatly reduces defects in deep-drawn parts and can also yield large material savings from reduced scrap. Sheet-metal forming is a complex process and most often characterized [...]

### Contents

Equipment and Material Flow Control.- Recent Advances in Stamping Control.- Machine Control.- Laboratory Development of Process Control.- Process Control.- Auto-Tuning and Adaptive Control.- Direct and Indirect Adaptive Process Control.

### Fields of interest

Control; Operating Procedures, Materials Treatment; Automotive Engineering; Aerospace Technology and Astronautics

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6283-4](http://www.springer.com/978-1-4471-6283-4)

### Hardcover

2014. XI, 140 p. 79 illus., 67 illus. in color. (Advances in Industrial Control)  
ISBN 978-1-4471-6283-4

**Due: January 31, 2014**

Y. Liu, Michigan State University, East Lansing, USA; E.C. Alciija, Michigan State University, East Lansing, USA; S. Chakrabarty, Michigan State University, East Lansing, USA

## Forward Error-Correcting Biosensors

### Principles, Modeling and Fabrication

This book explores a new area in the interface of biomedical devices and information engineering, describing an error-free biosensor technology, which employs error-correcting techniques to improve the reliability and accuracy of biosensors and biochips.

It is the first comprehensive book to introduce the application of error-correcting methods into bionanotechnology, in order to achieve error-free performance.

### Features

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It is the first comprehensive book to introduce the application of error-correcting methods into bionanotechnology, in order to achieve error-free performance.

### Contents

Fundamentals of Biosensors; Reliability of Biosensors.- Design of Forward Error-Correction Biosensors: Biosensor Encoder.- Design of Forward Error-Correction Biosensors: Biosensor Decoder.- Biosensor Instrumentation.- System Integration and BioMEMs.- Summary and Conclusions.

### Fields of interest

Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-3156-5](http://www.springer.com/978-1-4614-3156-5)

### Hardcover

2014. Approx. 200 p.  
ISBN 978-1-4614-3156-5

**Due: February 28, 2014**

T. Lodygowski, Poznan University of Technology, Poznan, Poland; A. Rusinek, National Engineering School, Metz, France (Eds.)

## Constitutive Relations under Impact Loadings

### Experiments, Theoretical and Numerical Aspects

The book describes behavior of materials (ductile, brittle and composites) under impact loadings and high strain rates. The three aspects: experimental, theoretical and numerical are in the focus of interest. Hopkinson bars are mainly used as experimental devices to describe dynamic behavior of materials.

The precise description of experimental techniques and interpretation of wave interaction are carefully discussed. Theoretical background refers to rate dependent thermo viscoplastic formulation. This includes the discussion of well posedness of initial boundary value problems and the solution of the system of governing equations using numerical methods. Explicit time integration is[...]

### Features

The book describes behavior of materials (ductile, brittle and composites) under impact loadings and high strain rates. The three aspects: experimental, theoretical and numerical are in the focus of interest. Hopkinson bars are mainly used as experimental devices to describe dynamic behavior of materials. The precise description of experimental techniques and interpretation of wave interaction are carefully [...]

### Contents

Testing with bars from dynamic to quasi-static.- Dynamic testing of materials.- Material behavior under dynamics loading, modeling and experiments.- Analysis of some high-speed impact problems in the aircraft industry.- Computer estimation of plastic strain localization and failure for large strain rates using viscoplasticity.- Inelastic flow and failure of metallic solids accounting for asymmetry of elastic range and micro-shear banding.

### Fields of interest

Continuum Mechanics and Mechanics of Materials; Characterization and Evaluation of Materials; Structural Mechanics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-7091-1767-5](http://www.springer.com/978-3-7091-1767-5)

### Hardcover

2014. VIII, 286 p. 172 illus. (CISM International Centre for Mechanical Sciences, Vol. 552)  
ISBN 978-3-7091-1767-5

**Due: January 28, 2014**

Y. Ma, Honeywell, Golden Valley, USA; G. Guo, West Virginia University, Morgantown, USA (Eds.)

## Support Vector Machines Applications

Support vector machines (SVM) have both a solid mathematical background and practical applications. This book focuses on the recent advances and applications of the SVM, such as image processing, medical practice, computer vision, and pattern recognition, machine learning, applied statistics, and artificial intelligence. The aim of this book is to create a comprehensive source on support vector machine applications.

### Features

Support vector machines (SVM) have both a solid mathematical background and good performance in practical applications. This book focuses on the recent advances and applications of the SVM in different areas, such as image processing, medical practice, computer vision, pattern recognition, machine learning, applied statistics, business intelligence, and artificial intelligence. The aim of this book is to [...]

### Contents

Augmented-SVM for gradient observations with application to learning multiple-attractor dynamics.- Multi-class Support Vector Machine.- Novel Inductive and Transductive Transfer Learning Approaches Based on Support Vector Learning.- Security Evaluation of Support Vector Machines in Adversarial Environments.- Application of SVMs to the Bag-of-features Model— A Kernel Perspective.- Support Vector Machines for Neuroimage Analysis: Interpretation from Discrimination.- Kernel Machines for Imbalanced Data Problem and the Use in Biomedical Applications.- Soft Biometrics from Face Images using[...]

### Fields of interest

Signal, Image and Speech Processing; Computer Communication Networks; Complexity; Computational Intelligence; Computer Systems Organization and Communication Networks; Communications Engineering, Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02299-4](http://www.springer.com/978-3-319-02299-4)

### Hardcover

2014. VI, 297 p. 85 illus., 61 illus. in color.  
ISBN 978-3-319-02299-4

**Due: February 28, 2014**

M. Macdonald (Ed.)

## Advances in Solar Sailing

This book presents the best contributions of the the Third International Symposium on Solar Sailing Glasgow, 11 – 13 June 2013. It is a rapid snap-shot of the state-of-the art of solar sail technology in 2013 across the globe, capturing flight programs, technology development programs and new technology and application concepts. The book contains contributions from all of the leading figures in the field, including NASA, JAXA, ESA & DLR as well as university and industry experts. It therefore provides a unique reference point for the solar sail technology. The book also includes key contributions from the prospective users of solar sail technology, which will allow the technology to[...]

### Features

This book presents the best contributions of the the Third International Symposium on Solar Sailing Glasgow, 11 – 13 June 2013. It is a rapid snap-shot of the state-of-the art of solar sail technology in 2013 across the globe, capturing flight programs, technology development programs and new technology and application concepts. The book contains contributions from all of the leading figures in the field, [...]

### Fields of interest

Aerospace Technology and Astronautics; Extraterrestrial Physics, Space Sciences; Optical and Electronic Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-34906-5](http://www.springer.com/978-3-642-34906-5)

### Hardcover

2014. VI, 963 p. 607 illus., 477 illus. in color. (Astronautical Engineering)  
ISBN 978-3-642-34906-5

**Due: January 31, 2014**

C. Machado, University of Minho, Braga, Portugal; J.P. Davim, University of Aveiro, Aveiro, Portugal (Eds.)

## Human Resource Management and Technological Challenges

This book focuses on the challenges and changes that new technologies bring to human resources (HR) of modern organizations. It examines the technological implications of the last changes taking place and how they affect the management and motivation of human resources belonging to these organizations. It looks for ways to understand and perceive how organizational HR, individually and as a team, conceptualize, invent, adapt, define and use organizational technology, as well as how they are constrained by features of it. The book provides discussion and the exchange of information on principles, strategies, models, techniques, methodologies and applications of human resources[...]

### Features

This book focuses on the challenges and changes that new technologies bring to human resources (HR) of modern organizations. It examines the technological implications of the last changes taking place and how they affect the management and motivation of human resources belonging to these organizations. It looks for ways to understand and perceive how organizational HR, individually and as a team, [...]

### Contents

HRM politics and practices.- Technological impact and consequences in HRM.- Communication, participation and involvement.- Equal opportunities.- Health and safety.- How work is changing.- Matching human and technological needs.- Motivating people in a technological environment.- Knowledge management in the new technologies era.- Developing leadership skills.- Global management.- Matching human and technological needs.- Strategic management.- Innovation and change.- Entrepreneurship.- Employee motivation.- Learning skills and styles in technology innovation.- Training effectiveness.

### Fields of interest

Engineering Economics, Organization, Logistics, Marketing; Technology Management; Personnel Management

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02617-6](http://www.springer.com/978-3-319-02617-6)

### Hardcover

2014. VII, 170 p. 16 illus. (Management and Industrial Engineering)  
ISBN 978-3-319-02617-6

**usually dispatched within 3 to 5 business days**

**December 31, 2013**

S. Mao, Auburn University, Auburn, USA

## Video over Cognitive Radio Networks

When Quality of Service Meets Spectrum

This book focuses on the problem of video streaming over emerging cognitive radio (CR) networks. The book discusses the problems and techniques for scalable video streaming over cellular cognitive radio networks, ad hoc CR networks, cooperative CR networks, and femtocell CR networks. The authors formulate these problems and propose optimal algorithms to solve these problems. Also the book analyzes the proposed algorithms and validates the algorithms with simulations.

### Features

This book focuses on the problem of video streaming over emerging cognitive radio (CR) networks. The book discusses the problems and techniques for scalable video streaming over cellular cognitive radio networks, ad hoc CR networks, cooperative CR networks, and femtocell CR networks. The author formulates these problems and proposes optimal algorithms to solve these problems. Also, the book analyzes the [...]

### Contents

Introduction.- Video over Cellular CR networks.- Video over Cooperative CR Networks.- Video over Femto CR Networks.- Video over Multi-hop CR Networks.- Conclusion and Open Problems.

### Fields of interest

Communications Engineering, Networks; Computer Systems Organization and Communication Networks; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-4956-0](http://www.springer.com/978-1-4614-4956-0)

### Hardcover

2014. XIII, 129 p. 37 illus., 36 illus. in color.  
ISBN 978-1-4614-4956-0

**Due: January 31, 2014**

R. Martinez-Guerra, CINVESTAV-IPN, Mexico, D.F., Mexico; J.L. Mata-Machuca, Instituto Politecnico Nacional, Mexico, D.F., Mexico

## Fault Detection and Diagnosis in Nonlinear Systems

### A Differential and Algebraic Viewpoint

The high reliability required in industrial processes has created the necessity of detecting abnormal conditions, called faults, while processes are operating. The term fault generically refers to any type of process degradation, or degradation in equipment performance because of changes in the process's physical characteristics, process inputs or environmental conditions. This book is about the fundamentals of fault detection and diagnosis in a variety of nonlinear systems which are represented by ordinary differential equations. The fault detection problem is approached from a differential algebraic viewpoint, using residual generators based upon high-gain nonlinear auxiliary[...]

### Features

The high reliability required in industrial processes has created the necessity of detecting abnormal conditions, called faults, while processes are operating. The term fault generically refers to any type of process degradation, or degradation in equipment performance because of changes in the process's physical characteristics, process inputs or environmental conditions. This book is about the [...]

### Contents

From the Contents: The Fault Detection Problem in Nonlinear Systems using Residual Generators.- Fault Detection in CSTR Using Nonlinear Observers.- Diagnosis of Nonlinear Systems Using the Concept of Differential Transcendence Degree.- On Nonlinear System Diagnosis Via High-Gain Observers: a Case Study.

### Fields of interest

Vibration, Dynamical Systems, Control; Nonlinear Dynamics; Industrial and Production Engineering; Mathematical Applications in the Physical Sciences

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03046-3](http://www.springer.com/978-3-319-03046-3)

### Hardcover

2014. XVII, 128 p. 31 illus., 11 illus. in color. (Understanding Complex Systems)  
ISBN 978-3-319-03046-3

usually dispatched within 3 to 5 business days

A. Medeisis, Vilnius Gediminas Technical University, Vilnius, Lithuania; O. Holland, King's College London, London, United Kingdom (Eds.)

## Cognitive Radio Policy and Regulation

### Techno-Economic Studies to Facilitate Dynamic Spectrum Access

This book offers a timely reflection on how the proliferation of advanced wireless communications technologies, particularly cognitive radio (CR) can be enabled by thoroughly-considered policy and appropriate regulation. It looks at the prospects of CR from the divergent standpoints of technological development and economic market reality. The book provides a broad survey of various techno-economic and policy aspects of CR development and provides the reader with an understanding of the complexities involved as well as a toolbox of possible solutions to enable the evolutionary leap towards successful implementation of disruptive CR technology or indeed any other novel wireless[...]

### Features

This book offers a timely reflection on how the proliferation of advanced wireless communications technologies, particularly cognitive radio (CR) can be enabled by thoroughly-considered policy and appropriate regulation. It looks at the prospects of CR from the divergent standpoints of technological development and economic market reality. The book provides a broad survey of various techno-economic and [...]

### Contents

From the Contents: Part I State-of-the-Art in Policy and Regulation of the Radio Spectrum: Introduction.- Part II Deployment Scenarios for Cognitive Radio: Introduction.- Part III Technical Approaches for Improved Spectrum Sharing.- Part IV Economic Aspects of CR Policy and Regulation.- Part V Impact Assessment of CR/SDR Regulation.- Part VI Novel Approaches to Spectrum Policy and Regulation for the Age of CR.- Part VII Summary and Recommendations.

### Fields of interest

Communications Engineering, Networks; Technology Management; Information Systems and Communication Service

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04021-9](http://www.springer.com/978-3-319-04021-9)

### Hardcover

2014. XII, 425 p. 161 illus., 61 illus. in color. With online files/update. (Signals and Communication Technology)  
ISBN 978-3-319-04021-9

Due: April 8, 2014

U. Meyer-Baese, Florida State University, Tallahassee, USA

## Digital Signal Processing with Field Programmable Gate Arrays

Field-Programmable Gate Arrays (FPGAs) are revolutionizing digital signal processing. The efficient implementation of front-end digital signal processing algorithms is the main goal of this book. It starts with an overview of today's FPGA technology, devices and tools for designing state-of-the-art DSP systems. A case study in the first chapter is the basis for more than 40 design examples throughout. The following chapters deal with computer arithmetic concepts, theory and the implementation of FIR and IIR filters, multirate digital signal processing systems, DFT and FFT algorithms, advanced algorithms with high future potential, and adaptive filters. Each chapter contains exercises.[...]

### Features

Field-Programmable Gate Arrays (FPGAs) are revolutionizing digital signal processing. The efficient implementation of front-end digital signal processing algorithms is the main goal of this book. It starts with an overview of today's FPGA technology, devices, and tools for designing state-of-the-art DSP systems. A case study in the first chapter is the basis for more than 40 design examples throughout. The [...]

### Contents

Computer Arithmetic.- Finite Impulse Response (FIR) Digital Filters.- Infinite Impulse Response (IIR) Digital Filters.- Multirate Signal Processing.- Fourier Transforms.- Advanced Topics.- Adaptive Filters.- Microprocessor Design.

### Fields of interest

Signal, Image and Speech Processing; Control Structures and Microprogramming; Circuits and Systems

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-642-45308-3](http://www.springer.com/978-3-642-45308-3)

### Hardcover

2014. 750 p. With DVD. (Signals and Communication Technology)  
ISBN 978-3-642-45308-3

Due: April 27, 2014

G.H. Miley, University of Illinois, Urbana, USA; S.K. Murali

## Inertial Electrostatic Confinement (IEC) Fusion

### Fundamentals and Applications

This book provides readers with an introductory understanding of Inertial Electrostatic Confinement (IEC), a type of fusion meant to retain plasma using an electrostatic field. IEC provides a unique approach for plasma confinement, as it offers a number of spin-off applications, such as a small neutron source for Neutron Activity Analysis (NAA), that all work towards creating fusion power. The IEC has been identified in recent times as an ideal fusion power unit because of its ability to burn aneutronic fuels like p-B11 as a result of its non-Maxwellian plasma dominated by beam-like ions. This type of fusion also takes place in a simple mechanical structure small in size, which also[...]

### Features

This book provides readers with an introductory understanding of Inertial Electrostatic Confinement (IEC), a type of fusion meant to retain plasma using an electrostatic field. IEC provides a unique approach for plasma confinement, as it offers a number of spin-off applications, such as a small neutron source for Neutron Activity Analysis (NAA), that all work towards creating fusion power. The IEC [...]

### Contents

Background, Basics, and Experimental IECs.- Theory of Potential Well Traps in the IEC.- Gas Discharges in Gridded IECs.- High-Voltage Stalk Design for IECs.- IEC Grid Materials and Construction.- Effect of Grid Geometry on IEC Device Performance.- Space Charge Limited Flow.- Ion and Electron Current Scaling Issues.- Cylindrical and Other IEC Geometries.- Various Other IEC Concepts and Experiments.- IEC Diagnostics.- Potential Applications.- Reactor Confinement Theory and IEC Reactor Visions.

### Fields of interest

Nuclear Engineering; Nuclear Fusion; Engineering Thermodynamics, Heat and Mass Transfer; Atoms and Molecules in Strong Fields, Laser Matter Interaction

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9337-2](http://www.springer.com/978-1-4614-9337-2)

### Hardcover

2014. XVIII, 400 p. 292 illus., 200 illus. in color. ISBN 978-1-4614-9337-2

**Due: December 31, 2013**

K. Moiseev, Intel, Haifa, Israel; A. Kolodny, Technion, Haifa, Israel; S. Wimer, Technion, Haifa, Israel

## Multi-Net Optimization of VLSI Interconnect

This book covers layout design and layout migration methodologies for optimizing multi-net wire structures in advanced VLSI interconnects. Scaling-dependent models for interconnect power, interconnect delay and crosstalk noise are covered in depth, and several design optimization problems are addressed, such as minimization of interconnect power under delay constraints, or design for minimal delay in wire bundles within a given routing area. A handy reference or a guide for design methodologies and layout automation techniques, this book provides a foundation for physical design challenges of interconnect in advanced integrated circuits.

### Features

This book covers layout design and layout migration methodologies for optimizing multi-net wire structures in advanced VLSI interconnects. Scaling-dependent models for interconnect power, interconnect delay and crosstalk noise are covered in depth, and several design optimization problems are addressed, such as minimization of interconnect power under delay constraints, or design for minimal delay in wire [...]

### Contents

The driving forces behind the interconnect scaling problem: economy and technology.- Interconnect aspects in design methodology and CAD tools.- Scaling dependent electrical modeling of interconnects.- Scaling dependent design metrics and performance goals.- Classification of interconnect sizing problems.- Single-net optimizations.- Multi-net sizing in wire bundles.- Multi-net sizing in general layouts.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-0820-8](http://www.springer.com/978-1-4614-0820-8)

### Hardcover

2014. 300p. 100 illus.. ISBN 978-1-4614-0820-8

**Due: December 2013**

O. Moreira, H. Corporaal, Eindhoven University of Technology, Eindhoven, Netherlands

## Scheduling Real-Time Streaming Applications onto an Embedded Multiprocessor

This book provides a comprehensive overview of the state-of-the-art, data flow-based techniques for the analysis, modeling and mapping technologies of concurrent applications on multi-processors. The authors present a flow for designing embedded hard/firm real-time multiprocessor streaming applications, based on data flow formalisms, with a particular focus on wireless modem applications. Architectures are described for the design tools and run-time scheduling and resource management of such a platform.

### Features

This book provides a comprehensive overview of the state-of-the-art, data flow-based techniques for the analysis, modeling and mapping technologies of concurrent applications on multi-processors. The authors present a flow for designing embedded hard/firm real-time multiprocessor streaming applications, based on data flow formalisms, with a particular focus on wireless modem applications. Architectures are [...]

### Contents

Setting the Stage.- Software Framework.- Data Flow Computation Models.- Temporal Analysis.- Resource Modeling and Compile Time Scheduling.- Mode-Controlled Data Flow.- Resource Manager.- Demonstrator.- Conclusions and Further Work.

### Fields of interest

Circuits and Systems; Processor Architectures; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01245-2](http://www.springer.com/978-3-319-01245-2)

### Hardcover

2014. X, 193 p. (Embedded Systems, Vol. 24) ISBN 978-3-319-01245-2

**usually dispatched within 3 to 5 business days**

H.A. Moser, LuxSpace Sàrl, Betzdorf, Luxembourg

## Systems Engineering, Systems Thinking, and Learning

A Case Study in Space Industry

This book focuses on systems engineering, systems thinking, and how that thinking can be learned in practice. It describes a novel analytical framework based on activity theory for understanding how systems thinking evolves and how it can be improved to support multidisciplinary teamwork in the context of system development and systems engineering. This method, developed using data collected over four years from three different small space systems engineering organizations, can be applied in a wide variety of work activities in the context of engineering design and beyond in order to monitor and analyze multidisciplinary interactions in working teams over time. In addition, the book[...]

### Features

This book focuses on systems engineering, systems thinking, and how that thinking can be learned in practice. It describes a novel analytical framework based on activity theory for understanding how systems thinking evolves and how it can be improved to support multidisciplinary teamwork in the context of system development and systems engineering. This method, developed using data collected over four years [...]

### Contents

Part I Introduction of the research project.- Part II Analysis and findings of the empirical studies.- Part III Results, intervention, and contributions.

### Fields of interest

Complexity; Industrial and organisational psychology; Aerospace Technology and Astronautics; Organization / Planning; Engineering Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03894-0](http://www.springer.com/978-3-319-03894-0)

### Hardcover

2014. XX, 328 p. 94 illus., 8 illus. in color. (Understanding Complex Systems)  
ISBN 978-3-319-03894-0

**usually dispatched within 3 to 5 business days  
December 31, 2013**

G. Mzyk, Wrocław University of Technology, Wrocław, Poland

## Combined Parametric-Nonparametric Identification of Block-Oriented Systems

This book considers a problem of block-oriented nonlinear dynamic system identification in the presence of random disturbances. This class of systems includes various interconnections of linear dynamic blocks and static nonlinear elements, e.g., Hammerstein system, Wiener system, Wiener-Hammerstein ("sandwich") system and additive NARMAX systems with feedback. Interconnecting signals are not accessible for measurement. The combined parametric-nonparametric algorithms, proposed in the book, can be selected dependently on the prior knowledge of the system and signals. Most of them are based on the decomposition of the complex system identification task into simpler local sub-problems by[...]

### Features

This book considers a problem of block-oriented nonlinear dynamic system identification in the presence of random disturbances. This class of systems includes various interconnections of linear dynamic blocks and static nonlinear elements, e.g., Hammerstein system, Wiener system, Wiener-Hammerstein ("sandwich") system and additive NARMAX systems with feedback. Interconnecting signals are not accessible for [...]

### Contents

Hammerstein system.- Wiener system.- Wiener-Hammerstein (sandwich) system.- Large-scale interconnected systems.- Structure detection and model order selection.- Time-varying systems.- Simulation studies.- Summary.

### Fields of interest

Control; Systems Theory, Control; Nonlinear Dynamics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03595-6](http://www.springer.com/978-3-319-03595-6)

### Softcover

2014. XVI, 238 p. 68 illus. (Lecture Notes in Control and Information Sciences, Vol. 454)  
ISBN 978-3-319-03595-6

**usually dispatched within 3 to 5 business days**

W.H. Müller, TU Berlin, Berlin, Germany

## An Expedition to Continuum Theory

This book introduces field theory as required in solid and fluid mechanics as well as in electromagnetism. It includes the necessary applied mathematical framework of tensor algebra and tensor calculus, using an inductive approach particularly suited to beginners. It is geared toward undergraduate classes in continuum theory for engineers in general, and more specifically to courses in continuum mechanics. Students will gain a sound basic understanding of the subject as well as the ability to solve engineering problems by applying the general laws of nature in terms of the balances for mass, momentum, and energy in combination with material-specific relations in terms of constitutive[...]

### Features

This book introduces field theory as required in solid and fluid mechanics as well as in electromagnetism. It also presents the necessary mathematical framework, namely tensor algebra and tensor calculus, by using an inductive approach, which makes it particularly suitable for beginners. In general, the book can be used in undergraduate classes on continuum theory and, more specifically, in courses on [...]

### Contents

1 Prologue.- 2 Coordinate transformations.- 3 Balances (in particular in Cartesian systems).- 4 Spatial derivatives of fields.- 5 Balance equations in skew curvilinear coordinate systems.- 6 Constitutive equations in arbitrary coordinate systems.- 7 A first glance on field equations.- 8 Observers and frames of reference in classical continuum theory.- 9 Problems of linear elasticity.- 10 Selected problems for Newtonian and Maxwellian fluids.- 11 Introduction to time-independent plasticity theory.- 12 Entropy.- 13 Fundamentals of electromagnetic field theory.- Picture sources.- Subject index.

### Fields of interest

Theoretical and Applied Mechanics; Classical Continuum Physics; Materials Science (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7798-9](http://www.springer.com/978-94-007-7798-9)

### Hardcover

2014. XIII, 399 p. 161 illus., 32 illus. in color. (Solid Mechanics and Its Applications, Vol. 210)  
ISBN 978-94-007-7798-9

**Due: January 31, 2014**

N. Nedjah, University of Rio de Janeiro, Rio de Janeiro, Brazil; L. de M. Mourelle, State University of Rio de Janeiro, Rio de Janeiro, Brazil

## Hardware for Soft Computing and Soft Computing for Hardware

Single and Multi-Objective Evolutionary Computation (MOEA), Genetic Algorithms (GAs), Artificial Neural Networks (ANNs), Fuzzy Controllers (FCs), Particle Swarm Optimization (PSO) and Ant colony Optimization (ACO) are becoming omnipresent in almost every intelligent system design. Unfortunately, the application of the majority of these techniques is complex and so requires a huge computational effort to yield useful and practical results. Therefore, dedicated hardware for evolutionary, neural and fuzzy computation is a key issue for designers. With the spread of reconfigurable hardware such as FPGAs, digital as well as analog hardware implementations of such computation become[...]

### Features

Single and Multi-Objective Evolutionary Computation (MOEA), Genetic Algorithms (GAs), Artificial Neural Networks (ANNs), Fuzzy Controllers (FCs), Particle Swarm Optimization (PSO) and Ant colony Optimization (ACO) are becoming omnipresent in almost every intelligent system design. Unfortunately, the application of the majority of these techniques is complex and so requires a huge computational effort to [...]

### Contents

Part I Hardware for Soft Computing.- Part II Soft Computing for Hardware.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Computer Graphics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03109-5](http://www.springer.com/978-3-319-03109-5)

### Hardcover

2014. XII, 198 p. 124 illus. (Studies in Computational Intelligence, Vol. 529)  
ISBN 978-3-319-03109-5

**usually dispatched within 3 to 5 business days**

H.-N. Nguyen, Ecole Centrale Paris, Paris, France

## Constrained Control of Uncertain, Time-Varying, Discrete-Time Systems

### An Interpolation-Based Approach

A comprehensive development of interpolating control, this monograph demonstrates the reduced computational complexity of a ground-breaking technique compared with the established model predictive control. The text deals with the regulation problem for linear, time-invariant, discrete-time uncertain dynamical systems having polyhedral state and control constraints, with and without disturbances, and under state or output feedback. For output feedback a non-minimal state-space representation is used with old inputs and outputs as state variables. Constrained Control of Uncertain, Time-Varying, Discrete-time Systems details interpolating control in both its implicit and explicit forms.[...]

### Features

A comprehensive development of interpolating control, this monograph demonstrates the reduced computational complexity of a ground-breaking technique compared with the established model predictive control. The text deals with the regulation problem for linear, time-invariant, discrete-time uncertain dynamical systems having polyhedral state and control constraints, with and without disturbances, and under [...]

### Contents

Introduction.- Part I Background.- Set-Theoretic Methods in Control.- Optimal and Constrained Control: An Overview.- Part II Interpolating Control.- Interpolating Control: Nominal State Feedback Case.- Interpolating Control: Robust State Feedback Case.- Interpolating Control: Output Feedback Case.- Part III Applications.- High-order Examples.- A Benchmark Problem: The Non-Isothermal Continuous Stirred Tank Reactor.

### Fields of interest

Control; Systems Theory, Control; Calculus of Variations and Optimal Control; Optimization

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02826-2](http://www.springer.com/978-3-319-02826-2)

### Softcover

2014. XIV, 196 p. 97 illus. (Lecture Notes in Control and Information Sciences, Vol. 451)  
ISBN 978-3-319-02826-2

**Due: January 31, 2014**

A. Nijholt, University of Twente, Enschede, Netherlands (Ed.)

## Playful User Interfaces

### Interfaces that Invite Social and Physical Interaction

The book is about user interfaces to applications that have been designed for social and physical interaction. The interfaces are 'playful', that is, users feel challenged to engage in social and physical interaction because that will be fun. The topics that will be present in this book are interactive playgrounds, urban games using mobiles, sensor-equipped environments for playing, child-computer interaction, tangible game interfaces, interactive tabletop technology and applications, full-body interaction, exertion games, persuasion, engagement, evaluation and user experience. Readers of the book will not only get a survey of state-of-the-art research in these areas, but the chapters[...]

### Features

The book is about user interfaces to applications that have been designed for social and physical interaction. The interfaces are 'playful', that is, users feel challenged to engage in social and physical interaction because that will be fun. The topics that will be present in this book are interactive playgrounds, urban games using mobiles, sensor-equipped environments for playing, child-computer interaction, [...]

### Contents

Introduction.- Public Interfaces Requiring Full-Body Interaction.- Multiplayer Mobile Games.- Smart Ball Applications.- New Exertion Games.- Tabletop Interfaces for Children with Autism.- Tabletop Interfaces for Children's Museum Visits.- Tangible Game Interfaces.- Child-Computer Interaction.- Interactive Playgrounds for Children.- Engagement in Playful Collective Interaction.- Head Up Games.

### Fields of interest

Computational Intelligence; User Interfaces and Human Computer Interaction; Mathematical Applications in Computer Science

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-981-4560-95-5](http://www.springer.com/978-981-4560-95-5)

### Hardcover

2014. Approx. 350 p. 100 illus. (Gaming Media and Social Effects)  
ISBN 978-981-4560-95-5

**Due: April 18, 2014**

B. Noia, K. Chakrabarty, Duke University, Durham, USA

## Design-for-Test and Test Optimization Techniques for TSV-based 3D Stacked ICs

This book describes innovative techniques to address the testing needs of 3D stacked integrated circuits (ICs) that utilize through-silicon-vias (TSVs) as vertical interconnects. The authors identify the key challenges facing 3D IC testing and present results that have emerged from cutting-edge research in this domain. Coverage includes topics ranging from die-level wrappers, self-test circuits, and TSV probing to test-architecture design, test scheduling, and optimization. Readers will benefit from an in-depth look at test-technology solutions that are needed to make 3D ICs a reality and commercially viable.

### Features

This book describes innovative techniques to address the testing needs of 3D stacked integrated circuits (ICs) that utilize through-silicon-vias (TSVs) as vertical interconnects. The authors identify the key challenges facing 3D IC testing and present results that have emerged from cutting-edge research in this domain. Coverage includes topics ranging from die-level wrappers, self-test circuits, and TSV [...]

### Contents

Introduction.- Wafer Stacking and 3D Memory Test.- Built-in Self-Test for TSVs.- Pre-Bond TSV Test Through TSV Probing.- Pre-Bond TSV Test Through TSV Probing.- Overcoming the Timing Overhead of Test Architectures on Inter-Die Critical Paths.- Post-Bond Test Wrappers and Emerging Test Standards.- Test-Architecture Optimization and Test Scheduling.- Conclusions.

### Fields of interest

Circuits and Systems; Processor Architectures; Semiconductors

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-02377-9](http://www.springer.com/978-3-319-02377-9)

### Hardcover

2014. XVIII, 245 p. 133 illus., 115 illus. in color. ISBN 978-3-319-02377-9

**usually dispatched within 3 to 5 business days**

P.A.J. Nuyts, Tri ICT, Kessel-Lo, Belgium; P. Reynaert, KU Leuven, ESAT-MICAS, Heverlee, Belgium; W. Dehaene, K.U. Leuven, Heverlee, Belgium

## Continuous-Time Digital Front-Ends for Multistandard Wireless Transmission

This book describes the design of fully digital multistandard transmitter front-ends which can directly drive one or more switching power amplifiers, thus eliminating all other analog components. After reviewing different architectures, the authors focus on polar architectures using pulse width modulation (PWM), which are entirely based on unlocked delay lines and other continuous-time digital hardware. As a result, readers are enabled to shift accuracy concerns from the voltage domain to the time domain, to coincide with submicron CMOS technology scaling. The authors present different architectural options and compare them, based on their effect on the signal and spectrum quality.[...]

### Features

This book describes the design of fully digital multistandard transmitter front-ends which can directly drive one or more switching power amplifiers, thus eliminating all other analog components. After reviewing different architectures, the authors focus on polar architectures using pulse width modulation (PWM), which are entirely based on unlocked delay lines and other continuous-time digital hardware. [...]

### Contents

Introduction.- Digital Transmitter Architectures: Overview.- High-Level Analysis of Fully Digital PWM Transmitters.- Continuous-time Digital Design Techniques.- A 65-nm CMOS Fully Digital Reconfigurable Transmitter Front-End for Class-E PA based on Baseband PWM.- A 40-nm CMOS Fully Digital Reconfigurable Transmitter with Class-D Pas using Baseband and RF PWM.- Conclusions and Future Work.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03924-4](http://www.springer.com/978-3-319-03924-4)

### Hardcover

2014. XXIII, 328 p. 164 illus., 3 illus. in color. (Analog Circuits and Signal Processing) ISBN 978-3-319-03924-4

**Due: January 31, 2014**

Y. Okuyama

## Discrete Control Systems

Discrete Control Systems establishes a basis for the analysis and design of discretized/quantized control systems for continuous physical systems. Beginning with the necessary mathematical foundations and system-model descriptions, the text moves on to derive a robust stability condition. To keep a practical perspective on the uncertain physical systems considered, most of the methods treated are carried out in the frequency domain. As part of the design procedure, modified Nyquist-Hall and Nichols diagrams are presented and discretized proportional-integral-derivative control schemes are reconsidered. Schemes for model-reference feedback and discrete-type observers are proposed.[...]

### Features

Discrete Control Systems establishes a basis for the analysis and design of discretized/quantized control systems for continuous physical systems. Beginning with the necessary mathematical foundations and system-model descriptions, the text moves on to derive a robust stability condition. To keep a practical perspective on the uncertain physical systems considered, most of the methods treated are carried [...]

### Contents

Mathematical Descriptions and Models.- Discretized Feedback Systems.- Robust Stability Analysis.- Model-Reference Feedback and PID Control.- Multiloop Feedback Systems.- Interval Polynomials and Robust Performance.- Relation to Discrete-Event Systems.

### Fields of interest

Control; Systems Theory, Control

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5666-6](http://www.springer.com/978-1-4471-5666-6)

### Hardcover

2014. XII, 243 p. 164 illus., 99 illus. in color. ISBN 978-1-4471-5666-6

**Due: January 31, 2014**

T. Orłowska-Kowalska, F. Blaabjerg, J. Rodríguez, University of Federico Santa María, Valpariso, Chile (Eds.)

## Advanced and Intelligent Control in Power Electronics and Drives

Power electronics and variable frequency drives are continuously developing multidisciplinary fields in electrical engineering and it is practically not possible to write a book covering the entire area by one individual specialist. Especially by taking account the recent fast development in the neighboring fields like control theory, computational intelligence and signal processing, which all strongly influence new solutions in control of power electronics and drives. Therefore, this book is written by individual key specialist working on the area of modern advanced control methods which penetrates current implementation of power converters and drives. Although some of the presented [...]

### Features

Power electronics and variable frequency drives are continuously developing multidisciplinary fields in electrical engineering, and it is practically not possible to write a book covering the entire area by one individual specialist. Especially by taking account the recent fast development in the neighboring fields like control theory, computational intelligence and signal processing, which all strongly [...]

### Contents

Part I: Advanced Power Electronic Control in Renewable Energy Sources.-Part II: Predictive Control of Power Converters and Drives.-Part III: Neuro and Nonlinear Control of Power Converters and Drives.

### Fields of interest

Computational Intelligence; Control; Artificial Intelligence (incl. Robotics); Power Electronics, Electrical Machines and Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03400-3](http://www.springer.com/978-3-319-03400-3)

### Hardcover

2014. XII, 434 p. 284 illus., 161 illus. in color. (Studies in Computational Intelligence, Vol. 531)  
ISBN 978-3-319-03400-3

**Due: January 31, 2014**

J.L. Otegui

## Failure Analysis

Fundamentals and Applications in Mechanical Components

This book addresses the failures of structural elements, i.e. those components whose primary mission is to withstand mechanical loads. The book is intended as a self-contained source for those with different technical grades, engineers and scientists but also technicians in the field can benefit from its reading.

### Features

This book addresses the failures of structural elements, i.e. those components whose primary mission is to withstand mechanical loads. The book is intended as a self-contained source for those with different technical grades, engineers and scientists but also technicians in the field can benefit from its reading.

### Contents

Introduction.- Tools for Preliminary Analysis of a Mechanical Failure.- Tools for the Microscopic Analysis of a Mechanical Failure.- Damage and Failure Mechanisms.- Characterization and Testing of Materials.- Mechanical Modelling Tools applied to Failure Analysis.- Root Cause Analysis.- Damage and Failure Mechanisms in Machinery.- Mitigation and Life Prediction.- Consequences of a Failure Analysis.

### Fields of interest

Mechanical Engineering; Continuum Mechanics and Mechanics of Materials; Characterization and Evaluation of Materials; Building Repair and Maintenance

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-03909-1](http://www.springer.com/978-3-319-03909-1)

### Hardcover

2014. XXI, 313 p. 236 illus.  
ISBN 978-3-319-03909-1

**Due: January 31, 2014**

V. Panasyuk, V. Marukha, V. Sylovanyuk

## Injection Technologies for the Repair of Damaged Concrete Structures

This book analyzes the most important achievements in science and engineering practice concerning operational factors that cause damage to concrete and reinforced concrete structures. It includes methods for assessing their strength and service life, especially those that are based on modern concepts of the fracture mechanics of materials. It also includes basic approaches to the prediction of the remaining service life for long-term operational structures. Much attention is paid to injection technologies for restoring the serviceability of damaged concrete and reinforced concrete structures. In particular, technologies for remedying holes, cracks, corrosion damages etc. The books [...]

### Features

This book analyzes the most important achievements in science and engineering practice concerning operational factors that cause damage to concrete and reinforced concrete structures. It includes methods for assessing their strength and service life, especially those that are based on modern concepts of the fracture mechanics of materials. It also includes basic approaches to the prediction of the remaining [...]

### Contents

1 Introduction.- 2 General characteristics of concretes and reinforced concretes.- 3 Predominant damages and injuries in reinforced concrete structures arising during use.- 4 Implementation of injection technologies for the renewal and restoration of serviceability of concrete or reinforced concrete structures.- 5 Injection materials: Technological, mechanical, and service characteristics.- 6 Serviceability estimations for elements of building structures.- 7 Methods and devices for technical diagnostic of long-term concrete structures.- 8 Implementation of injection technologies in the [...]

### Fields of interest

Continuum Mechanics and Mechanics of Materials; Structural Materials; Civil Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7907-5](http://www.springer.com/978-94-007-7907-5)

### Hardcover

2014. XI, 230 p. 50 illus.  
ISBN 978-94-007-7907-5

**Due: December 31, 2013**

E.I. Papageorgiou, Technological Educational, Lamia, Greece (Ed.)

## Fuzzy Cognitive Maps for Applied Sciences and Engineering

From Fundamentals to Extensions and Learning Algorithms

Fuzzy Cognitive Maps (FCM) constitute cognitive models in the form of fuzzy directed graphs consisting of two basic elements: the nodes, which basically correspond to “concepts” bearing different states of activation depending on the knowledge they represent, and the “edges” denoting the causal effects that each source node exercises on the receiving concept expressed through weights. Weights take values in the interval  $[-1,1]$ , which denotes the positive, negative or neutral causal relationship between two concepts. An FCM can be typically obtained through linguistic terms, inherent to fuzzy systems, but with a structure similar to the neural networks, which facilitates data[...]

### Features

Fuzzy Cognitive Maps (FCM) constitute cognitive models in the form of fuzzy directed graphs consisting of two basic elements: the nodes, which basically correspond to “concepts” bearing different states of activation depending on the knowledge they represent, and the “edges” denoting the causal effects that each source node exercises on the receiving concept expressed through weights. Weights [...]

### Contents

Methods and Algorithms for Fuzzy Cognitive Map-based Modeling.- Fuzzy Cognitive Maps as representations of mental models and group beliefs.- FCM Relationship Modeling for Engineering Systems.- Using RuleML for Representing and Prolog for Simulating Fuzzy Cognitive Maps.- Fuzzy Web Knowledge Aggregation, Representation, and Reasoning for Online Privacy and Reputation Management.- Decision Making by Rule-Based Fuzzy Cognitive Maps: An Approach to Implement Student-Centered Education.- Extended Evolutionary Learning of Fuzzy Cognitive Maps for the Prediction of Multivariate Time-Series.- [...]

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-39738-7](http://www.springer.com/978-3-642-39738-7)

### Hardcover

2014. XXVII, 395 p. 147 illus., 2 illus. in color. With online files/update. (Intelligent Systems Reference Library, Vol. 54)

ISBN 978-3-642-39738-7

**usually dispatched within 3 to 5 business days January 3, 2014**

K.P. Parker

## The Boundary-Scan Handbook

Aimed at electronics industry professionals, this 4th edition of the Boundary Scan Handbook describes recent changes to the IEEE1149.1 Standard Test Access Port and Boundary-Scan Architecture. This updated edition features new chapters on the possible effects of the changes on the work of the practicing test engineers and the new 1149.8.1 standard. Anyone needing to understand the basics of boundary scan and its practical industrial implementation will need this book.

### Features

Aimed at electronics industry professionals, this 4th edition of the Boundary Scan Handbook describes recent changes to the IEEE1149.1 Standard Test Access Port and Boundary-Scan Architecture. This updated edition features new chapters on the possible effects of the changes on the work of the practicing test engineers and the new 1149.8.1 standard. Anyone needing to understand the basics of boundary scan and [...]

### Contents

Boundary-Scan Basics and Vocabulary.- Boundary-Scan Description Language (BSDL).- Boundary-Scan Testing.- Advanced Boundary-Scan Topics.- Design for Boundary-Scan Test.- Analog Measurement Basics.- IEEE 1149.4: Analog Boundary-Scan.- IEEE 1149.6: Testing Advanced I/O.- IEEE 1532: In-System Configuration.- IEEE 1149.8.- Affects of changes for 1149.1.

### Fields of interest

Circuits and Systems; Processor Architectures; Semiconductors

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-01173-8](http://www.springer.com/978-3-319-01173-8)

### Hardcover

2014. 500 p. 200 illus.  
ISBN 978-3-319-01173-8

**Due: March 28, 2014**

C. Pautasso, University of Lugano, Lugano, Switzerland; E. Wilde, UC Berkeley, Berkeley, USA; R. Alarcon, Pontificia Universidad Catolica de Chile, Santiago, Chile (Eds.)

## REST: Advanced Research Topics and Practical Applications

This book serves as a starting point for people looking for a deeper principled understanding of REST, its applications, its limitations, and current research work in the area and as an architectural style. The authors focus on applying REST beyond Web applications (i.e., in enterprise environments), and in reusing established and well-understood design patterns. The book examines how RESTful systems can be designed and deployed, and what the results are in terms of benefits and challenges encountered in the process. This book is intended for information and service architects and designers who are interested in learning about REST, how it is applied, and how it is being advanced.

### Features

This book serves as a starting point for people looking for a deeper principled understanding of REST, its applications, its limitations, and current research work in the area and as an architectural style. The authors focus on applying REST beyond Web applications (i.e., in enterprise environments), and in reusing established and well-understood design patterns. The book examines how RESTful systems can be [...]

### Contents

Introduction.- Communication and Capability URLs in COAST-based Decentralized Services.- Interoperability of two RESTful protocols: HTTP and CoAP.- Enabling Real-Time Resource Oriented Architectures with REST Observers.- Survey of Semantic Description of REST APIs.- APIs to A ordances: A New Paradigm for Services on the Web.- Leveraging Linked Data to Build Hypermedia-Driven Web APIs.- RestML: Modeling RESTful Web Services.- A Lightweight Coordination Approach For Resource-Centric Collaborations.- Connecting the Dots: Using REST and Hypermedia to publish Digital Content.- In-Process[...]

### Fields of interest

Communications Engineering, Networks; Information Systems and Communication Service; Signal, Image and Speech Processing

### Target groups

Research

### Type of publication

Professional book

More on [www.springer.com/978-1-4614-9298-6](http://www.springer.com/978-1-4614-9298-6)

### Hardcover

2014. IX, 222 p. 58 illus., 25 illus. in color.  
ISBN 978-1-4614-9298-6

**Due: December 31, 2013**

W. Pedrycz, University of Alberta, Edmonton, Canada; S.-M. Chen (Eds.)

## Social Networks: A Framework of Computational Intelligence

This volume provides the audience with an updated, in-depth and highly coherent material on the conceptually appealing and practically sound information technology of Computational Intelligence applied to the analysis, synthesis and evaluation of social networks. The volume involves studies devoted to key issues of social networks including community structure detection in networks, online social networks, knowledge growth and evaluation, and diversity of collaboration mechanisms. The book engages a wealth of methods of Computational Intelligence along with well-known techniques of linear programming, Formal Concept Analysis, machine learning, and agent modeling. Human-centricity is [...]

### Features

This volume provides the audience with an updated, in-depth and highly coherent material on the conceptually appealing and practically sound information technology of Computational Intelligence applied to the analysis, synthesis and evaluation of social networks. The volume involves studies devoted to key issues of social networks including community structure detection in networks, online social networks, [...]

### Contents

From the Contents: Detecting Community Structures in Networks Using A Linear-Programming Based Approach.- Personalization of Social Networks: Adaptive Semantic Layer Approach.- Social Network and Formal Concept Analysis.- Explaining Variation in State Involvement in Cyber Attacks: A Social Network Approach.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02992-4](http://www.springer.com/978-3-319-02992-4)

### Hardcover

2014. XI, 440 p. 168 illus. (Studies in Computational Intelligence, Vol. 526)

ISBN 978-3-319-02992-4

**Due: December 20, 2013**

H. Ponce Espinosa, Instituto Tecnológico de Estudios, Col. Ejidos de Huipulco Tlalpan, Mexico; P. Ponce-Cruz, A. Molina, Instituto Tecnológico de Estudios Superiores, Tlalpan, Mexico

## Artificial Organic Networks

### Artificial Intelligence Based on Carbon Networks

This monograph describes the synthesis and use of biologically-inspired artificial hydrocarbon networks (AHNs) for approximation models associated with machine learning and a novel computational algorithm with which to exploit them. The reader is first introduced to various kinds of algorithms designed to deal with approximation problems and then, via some conventional ideas of organic chemistry, to the creation and characterization of artificial organic networks and AHNs in particular. The advantages of using organic networks are discussed with the rules to be followed to adapt the network to its objectives. Graph theory is used as the basis of the necessary formalism. Simulated and [...]

### Features

This monograph describes the synthesis and use of biologically-inspired artificial hydrocarbon networks (AHNs) for approximation models associated with machine learning and a novel computational algorithm with which to exploit them. The reader is first introduced to various kinds of algorithms designed to deal with approximation problems and then, via some conventional ideas of organic chemistry, to the [...]

### Contents

Introduction to Modeling Problems.- Chemical Organic Compounds.- Artificial Organic Networks.- Artificial Hydrocarbon Networks.- Enhancements of Artificial Hydrocarbon Networks.- Notes on Modeling Problems Using Artificial Hydrocarbon Networks.- Applications of Artificial Hydrocarbon Networks.- Appendices.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Biochemical Engineering; Simulation and Modeling

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02471-4](http://www.springer.com/978-3-319-02471-4)

### Hardcover

2014. XII, 228 p. 192 illus., 56 illus. in color. With online files/update. (Studies in Computational Intelligence, Vol. 521)

ISBN 978-3-319-02471-4

**usually dispatched within 3 to 5 business days**

C.A. Rabbath, N. Léchevin

## Discrete-Time Control System Design with Applications

This unique book provides a bridge between digital control theory and vehicle guidance and control practice. It presents practical techniques of digital redesign and direct discrete-time design suitable for a real-time implementation of controllers and guidance laws at multiple rates and with computational techniques. The theory of digital control is given as theorems, lemmas, and propositions. The design of the digital guidance and control systems is illustrated by means of step-by-step procedures, algorithms, and case studies. The systems proposed are applied to realistic models of unmanned systems and missiles, and digital implementation.

### Features

This book presents practical techniques of discrete-time control system design. In general, the design techniques lead to low-order dynamic compensators that ensure satisfactory closed-loop performance for a wide range of sampling rates. The theory is given in the form of theorems, lemmas, and propositions. The design of the control systems is presented as step-by-step procedures and algorithms. The [...]

### Contents

Control Systems.- Review of Signals and Systems.- Discretization.- Models.- Global Digital Redesign.- Flatness-Based Control.- Digital Redesign of Autopilots.

### Fields of interest

Aerospace Technology and Astronautics; Control; Robotics and Automation

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9289-4](http://www.springer.com/978-1-4614-9289-4)

### Hardcover

2014. XVII, 171 p. 105 illus., 20 illus. in color.

ISBN 978-1-4614-9289-4

**usually dispatched within 3 to 5 business days**

**December 31, 2013**

B. Ramkumar, IIT Mandi, Mandi, India; T. Bose, University of Arizona, Tucson, USA; A. Babaei, Virginia Tech, Blacksburg, USA; W.H. Tranter, Virginia Tech, Blacksburg, USA

## Blind Signal Classification Algorithms for Cognitive Radios

This book provides a comprehensive tutorial to signal classification, an important signal processing technique that enables cognitive radios to identify the kind of users present in a frequency band, helping a radio to characterize the environment in which it is operating. Engineers involved in the design and implementation of cognitive radio receivers will benefit from this book's coverage of a newly developed, multiuser signal classification algorithm, as well as techniques for design of other components to work in conjunction with the signal classifier, such as blind equalizers, blind channel estimators, and cognitive engines.

### Features

This book provides a comprehensive tutorial to signal classification, an important signal processing technique that enables cognitive radios to identify the kind of users present in a frequency band, helping a radio to characterize the environment in which it is operating. Engineers involved in the design and implementation of cognitive radio receivers will benefit from this book's coverage of a newly [..]

### Contents

Single User Signal Classifier.- Multiuser Signal Classifier.- Combined SISO Blind Equalizer and Signal Classifier.- Combined MIMO Blind Equalizer and Multiuser Classifier.- Distributed Signal Classification.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Signal, Image and Speech Processing

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-1-4614-3881-6](http://www.springer.com/978-1-4614-3881-6)

### Hardcover

2014. Approx. 250 p. 125 illus. (Analog Circuits and Signal Processing)

ISBN 978-1-4614-3881-6

**Due: January 31, 2014**

F. Rastello, École Normale Supérieure de Lyon, Lyon CX 07, France (Ed.)

## SSA-based Compiler Design

The manner in which programs are represented in compilers has a large influence on the efficiency and effectiveness of the compiler. The Static Single Assignment (SSA) form is widely used in modern compilers, even at the code generation level, as it allows for simple yet efficient optimizations and analyses. This book offers the first comprehensive reference on SSA-based compilers. Special emphasis is put on the comparison of SSA-based techniques to their non-SSA counterparts.

### Features

The manner in which programs are represented in compilers has a large influence on the efficiency and effectiveness of the compiler. The Static Single Assignment (SSA) form is widely used in modern compilers, even at the code generation level, as it allows for simple yet efficient optimizations and analyses. This book offers the first comprehensive reference on SSA-based compilers. Special emphasis is put [..]

### Contents

Properties and Flavors.- Classical construction/update/destruction algorithms.- Alternative SSA construction/destruction algorithms.- Repair SSA after optimization.- Semantics.- Array SSA.- Hashed SSA form: HSSA.- Extended SSA Numbering.- Memory SSA in GCC.- Concurrent SSA.- Static Single Information Form.- SSRO.- Psi-SSA Form.- Gated SSA.- Predicated SSA.- Value State Dependence Graph.- Propagating information using SSA.- Dead-code elimination in SSA.- Liveliness.- Additional Gain from PSI SSA.- Alias Analysis.- Bitwidth analysis value range analysis.- Loop tree.- PRE.- Types-tate[...]

### Fields of interest

Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4419-6201-0](http://www.springer.com/978-1-4419-6201-0)

### Hardcover

2014. Approx. 290 p.

ISBN 978-1-4419-6201-0

**Due: February 28, 2014**

S. Ray, University of Texas at Austin, Austin, USA; J. Bhadra, Freescale Semiconductor, Inc., Austin, USA

## Semiconductor Memories

### Design, Modeling, Abstraction, and Verification

This book provides a comprehensive overview of techniques for modeling, abstracting, and formalizing custom memories. It should benefit researchers and practitioners involved either in the design or in the validation of memory circuits. It explains different state-of-the-art transistor technologies used in memory design, and how the design technology affects verification.

### Features

This book provides a comprehensive overview of techniques for modeling, abstracting, and formalizing custom memories. It should benefit researchers and practitioners involved either in the design or in the validation of memory circuits. It explains different state-of-the-art transistor technologies used in memory design, and how the design technology affects verification.

### Contents

Transistor Networks.- CMOS Memory Design.- Non-volatile Memories.- Switch-level Models.- Regular Expressions.- Behavioral Abstraction.- Verification Overview.- Switch-level Verification.- Reductions.- Trace Containment.

### Fields of interest

Circuits and Systems; Processor Architectures

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-3060-5](http://www.springer.com/978-1-4614-3060-5)

### Hardcover

2014. 200p. 75 illus..

ISBN 978-1-4614-3060-5

**Due: December 2013**

R. Reis, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; Y. Cao, Arizona State University, Tempe, USA; G. Wirth (Eds.)

## Circuit Design for Reliability

This book presents physical understanding, modeling and simulation, on-chip characterization, layout solutions, and design techniques that are effective to enhance the reliability of various circuit units.

### Features

This book presents physical understanding, modeling and simulation, on-chip characterization, layout solutions, and design techniques that are effective to enhance the reliability of various circuit units.

### Fields of interest

Circuits and Systems; Quality Control, Reliability, Safety and Risk; Computer-Aided Engineering (CAD, CAE) and Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-4077-2](http://www.springer.com/978-1-4614-4077-2)

### Hardcover

2014. XI, 127 p. 72 illus., 54 illus. in color.  
ISBN 978-1-4614-4077-2

**Due: February 28, 2014**

H. Richter, HTWK Leipzig University of Applied, Leipzig, Germany; A. Engelbrecht, University of Pretoria, Pretoria, South Africa (Eds.)

## Recent Advances in the Theory and Application of Fitness Landscapes

This book is concerned with recent advances in fitness landscapes. The concept of fitness landscapes originates from theoretical biology and refers to a framework for analysing and visualizing the relationships between genotypes, phenotypes and fitness. These relationships lay at the centre of attempts to mathematically describe evolutionary processes and evolutionary dynamics. The book addresses recent advances in the understanding of fitness landscapes in evolutionary biology and evolutionary computation. In the volume, experts in the field of fitness landscapes present these findings in an integrated way to make it accessible to a number of audiences: senior undergraduate and [...]

### Features

This book is concerned with recent advances in fitness landscapes. The concept of fitness landscapes originates from theoretical biology and refers to a framework for analysing and visualizing the relationships between genotypes, phenotypes and fitness. These relationships lay at the centre of attempts to mathematically describe evolutionary processes and evolutionary dynamics. The [...]

### Contents

Part I Principles and Perspectives.- Part II Topology, Measures and Problem Hardness.- Part III Coevolution and Dynamics.- Part IV Visualization and Characterization.- Part V Outlook and Afterthoughts.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Mathematical and Computational Biology; Systems Biology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41887-7](http://www.springer.com/978-3-642-41887-7)

### Hardcover

2014. XXXVIII, 553 p. 201 illus., 75 illus. in color. (Emergence, Complexity and Computation, Vol. 6)  
ISBN 978-3-642-41887-7

**usually dispatched within 3 to 5 business days**

M. Robinson, University of Pennsylvania, Philadelphia, USA

## Topological Signal Processing

Signal processing is the discipline of extracting information from collections of measurements. To be effective, the measurements must be organized and then filtered, detected, or transformed to expose the desired information. Distortions caused by uncertainty, noise, and clutter degrade the performance of practical signal processing systems. In aggressively uncertain situations, the full truth about an underlying signal cannot be known. This book develops the theory and practice of signal processing systems for these situations that extract useful, qualitative information using the mathematics of topology -- the study of spaces under continuous transformations. Since the collection of [...]

### Features

Signal processing is the discipline of extracting information from collections of measurements. To be effective, the measurements must be organized and then filtered, detected, or transformed to expose the desired information. Distortions caused by uncertainty, noise, and clutter degrade the performance of practical signal processing systems. In aggressively uncertain situations, the full truth about [...]

### Contents

Introduction and informal discussion.- Parametrization.- Signals.- Detection.- Transforms.- Noise.

### Fields of interest

Signal, Image and Speech Processing; Topology; Communications Engineering, Networks; Computational Science and Engineering; Information and Communication, Circuits

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-36103-6](http://www.springer.com/978-3-642-36103-6)

### Hardcover

2014. XIII, 212 p. 134 illus. (Mathematical Engineering)  
ISBN 978-3-642-36103-6

**Due: January 31, 2014**

Y.K. Rybin, National Research Tomsk, Tomsk, Russian Federation

## Measuring Signal Generators

Theory & Design

The book brings together the following issues: Theory of deterministic, random and discrete signals reproducible in oscillatory systems of generators; Generation of periodic signals with a specified spectrum, harmonic distortion factor and random signals with specified probability density function and spectral density; Synthesis of oscillatory system structures; Analysis of oscillatory systems with non-linear elements and oscillation amplitude stabilization systems; It considers the conditions and criteria of steady-state modes in signal generators on active four-pole elements with unidirectional and bidirectional transmission of signals and on two-pole elements; analogues of Barkhausen [...]

### Features

The book brings together the following issues: Theory of deterministic, random and discrete signals reproducible in oscillatory systems of generators; Generation of periodic signals with a specified spectrum, harmonic distortion factor and random signals with specified probability density function and spectral density; Synthesis of oscillatory system structures; Analysis [...]

### Contents

Theory and Praxis of Measuring Signal Sources: Present and Future.- Synthesis of Mathematical Models for Measuring Signals.- Synthesis of Models for Self-Oscillating Systems of Generators.- Selected Issues of the Theory of Sinusoidal Generators.- Synthesis of Block Diagrams of Measuring Signal Generators.- Optimization of Oscillatory Systems of Generators.- Analog Signal Generators.- Digital Signal Generators.- Practical Design of Measuring Signal Generators.

### Fields of interest

Signal, Image and Speech Processing; Measurement Science, Instrumentation; Circuits and Systems

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02832-3](http://www.springer.com/978-3-319-02832-3)

### Hardcover

2014. XIX, 488 p. 332 illus., 30 illus. in color. (Signals and Communication Technology)  
ISBN 978-3-319-02832-3

usually dispatched within 3 to 5 business days  
December 31, 2013

B. Sadhu, R. Harjani, University of Minnesota, Minneapolis, USA

## Cognitive Radio Receiver Front-Ends

RF/Analog Circuit Techniques

This book focuses on the architecture and circuit design for cognitive radio receiver front-ends. The authors first provide a holistic explanation of RF circuits for cognitive radio systems. This is followed by an in-depth exploration of existing techniques that can be utilized by circuit designers. Coverage also includes novel circuit techniques and architectures that can be invaluable for designers for cognitive radio systems.

### Features

This book focuses on the architecture and circuit design for cognitive radio receiver front-ends. The authors first provide a holistic explanation of RF circuits for cognitive radio systems. This is followed by an in-depth exploration of existing techniques that can be utilized by circuit designers. Coverage also includes novel circuit techniques and architectures that can be invaluable for designers for [...]

### Contents

Introduction.- Cognitive Radio Architectures.- Wideband Voltage Controlled Oscillator.- RF Sampling and Signal Processing.- CRAFT: Charge Re-use Analog Fourier Transform.- Conclusions.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Communications Engineering, Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9295-5](http://www.springer.com/978-1-4614-9295-5)

### Hardcover

2014. VI, 79 p. 57 illus., 47 illus. in color. (Analog Circuits and Signal Processing, Vol. 115)  
ISBN 978-1-4614-9295-5

Due: December 31, 2013

B. Shafai, Northeastern University, Boston, USA

## System Identification and Adaptive Control

This book offers comprehensive coverage of identification and adaptive control while familiarizing graduate students and practicing engineers with computational software tools such as MATLAB and SIMULINK and describing the underlying theoretical concepts. Identification is the process of mathematically modeling a system based on measurement data that may be limited or uncertain. Adaptive control is the means whereby a system that is poorly modeled is controlled adequately. Therefore the topical coverage is divided into two parts: Part I describes fundamental topics of system identification independent of adaptive control and discusses non-parametric and parametric estimation methods [...]

### Features

This book offers comprehensive coverage of identification and adaptive control while familiarizing graduate students and practicing engineers with computational software tools such as MATLAB and SIMULINK and describing the underlying theoretical concepts. Identification is the process of mathematically modeling a system based on measurement data that may be limited or uncertain. Adaptive control is the [...]

### Contents

Part I: Systems Identification.- Introduction.- Signal and System Models.- Nonparametric Identification Methods.- Least Squares Theory.- Input Signals, Persistent Excitation, and Model Parametrizations.- System Identification by Least Squares and Generalized Least Squares.- Recursive Estimation.- Instrumental Variable Method.- Prediction Error Method.- Model Validation.- Part II: Adaptive Control.- System Identification and Adaptive Control.- Model Reference Adaptive Control.- Self Tuning Regulator.- Adaptive Pole Placement.- Adaptive Observer.- Robust Adaptive Control.

### Fields of interest

Vibration, Dynamical Systems, Control; Systems Theory, Control; Control, Robotics, Mechatronics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-3202-9](http://www.springer.com/978-1-4614-3202-9)

### Hardcover

2017. 500p. 80 illus..  
ISBN 978-1-4614-3202-9

Due: December 31, 2016

N. Siddique

## Intelligent Control

A Hybrid Approach Based on Fuzzy Logic, Neural Networks and Genetic Algorithms

Intelligent Control considers non-traditional modelling and control approaches to nonlinear systems. Fuzzy logic, neural networks and evolutionary computing techniques are the main tools used. The book presents a modular switching fuzzy logic controller where a PD-type fuzzy controller is executed first followed by a PI-type fuzzy controller thus improving the performance of the controller compared with a PID-type fuzzy controller. The advantage of the switching-type fuzzy controller is that it uses one rule-base thus minimises the rule-base during execution. A single rule-base is developed by merging the membership functions for change of error of the PD-type controller and sum of[...]

### Features

Intelligent Control considers non-traditional modelling and control approaches to nonlinear systems. Fuzzy logic, neural networks and evolutionary computing techniques are the main tools used. The book presents a modular switching fuzzy logic controller where a PD-type fuzzy controller is executed first followed by a PI-type fuzzy controller thus improving the performance of the controller compared [...]

### Contents

Introduction.- Dynamical Systems.- Control Systems.- Mathematics of Fuzzy Control.- Fuzzy Control.- GA-Fuzzy Control.- Neuro-Fuzzy Control.- GA-Neuro-Fuzzy Control.- Stability Analysis.- Epilogue and Future Work.

### Fields of interest

Control; Systems Theory, Control; Simulation and Modeling

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02134-8](http://www.springer.com/978-3-319-02134-8)

### Hardcover

2014. XVII, 282 p. 158 illus., 55 illus. in color. (Studies in Computational Intelligence, Vol. 517)

ISBN 978-3-319-02134-8

**usually dispatched within 3 to 5 business days  
December 31, 2013**

V. Snášel, VŠB-TUO, Ostrava-Poruba, Czech Republic; P. Krömer, VŠB-TUO, Ostrava-Poruba, Czech Republic; M. Köppen, Kyushu Institute of Technology, Fukuoka, Japan; G. Schaefer, Loughborough University, Loughborough, United Kingdom (Eds.)

## Soft Computing in Industrial Applications

Proceedings of the 17th Online World Conference on Soft Computing in Industrial Applications

This volume of Advances in Intelligent Systems and Computing contains accepted papers presented at WSC17, the 17th Online World Conference on Soft Computing in Industrial Applications, held from December 2012 to January 2013 on the Internet. WSC17 continues a successful series of scientific events started over a decade ago by the World Federation of Soft Computing. It brought together researchers from over the world interested in the ever advancing state of the art in the field. Continuous technological improvements make this online forum a viable gathering format for a world class conference. The aim of WSC17 was to disseminate excellent research results and contribute to building a[...]

### Features

This volume of Advances in Intelligent Systems and Computing contains accepted papers presented at WSC17, the 17th Online World Conference on Soft Computing in Industrial Applications, held from December 2012 to January 2013 on the Internet. WSC17 continues a successful series of scientific events started over a decade ago by the World Federation of Soft Computing. It brought together researchers from over [...]

### Contents

From the Contents: Advanced methods for 3D magnetic localization in industrial process distributed data logging with a sparse distance matrix.- Neural Network Ensemble based on Feature Selection for Non-Invasive Recognition of Liver Fibrosis Stage.- Cooperative and Non-Cooperative Equilibrium Problems with Equilibrium Constraints: Applications in Economics and Transportation.- Statistical Genetic Programming: The Role of Diversity.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-00929-2](http://www.springer.com/978-3-319-00929-2)

### Softcover

2014. XIV, 391 p. 130 illus. (Advances in Intelligent Systems and Computing, Vol. 223)

ISBN 978-3-319-00929-2

**usually dispatched within 3 to 5 business days**

R. Sobot

## Wireless Communication Electronics by Example

This book is intended for senior undergraduate and graduate students as well as practicing engineers who are involved in design and analysis of radio frequency (RF) circuits. Fully-solved, tutorial-like examples are used to put into practice all major topics required to understand the principles underlying the main sub-circuits required to design an RF transceiver and the whole communication system. Starting with review of principles in electromagnetic (EM) transmission and signal propagation, through detailed practical analysis of RF amplifier, mixer, modulator, demodulator, and oscillator circuit topologies, all the way to the system communication theory behind the RF transceiver[...]

### Features

This book is intended for senior undergraduate and graduate students as well as practicing engineers who are involved in design and analysis of radio frequency (RF) circuits. Fully-solved, tutorial-like examples are used to put into practice all major topics required to understand the principles underlying the main sub-circuits required to design an RF transceiver and the whole communication system. [...]

### Contents

Introduction.- Problems.- Basic Terminology.- Electrical Noise.- Electronic Devices.- Electrical Resonance.- Matching Networks.- RF and IF Amplifiers.- Sinusoidal Oscillators.- Frequency Shifting.- Modulation.- Signal Demodulation.- RF Receivers.

### Fields of interest

Circuits and Systems; Communications Engineering, Networks; Processor Architectures

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-02870-5](http://www.springer.com/978-3-319-02870-5)

### Hardcover

2014. XIV, 292 p. 158 illus., 89 illus. in color.  
ISBN 978-3-319-02870-5

**usually dispatched within 3 to 5 business days**

V.M. Srivastava, G. Singh

## MOSFET Technologies for Double-Pole Four-Throw Radio-Frequency Switch

This book provides analysis and discusses the design of various MOSFET technologies which are used for the design of Double-Pole Four-Throw (DP4T) RF switches for next generation communication systems. The authors discuss the design of the (DP4T) RF switch by using the Double-Gate (DG) MOSFET, as well as the Cylindrical Surrounding double-gate (CSDG) MOSFET. The effect of HFO2 (high dielectric material) in the design of DG MOSFET and CSDG MOSFET is also explored. Coverage includes comparison of Single-gate MOSFET and Double-gate MOSFET switching parameters, as well as testing of MOSFETs parameters using image acquisition.

### Features

This book provides analysis and discusses the design of various MOSFET technologies which are used for the design of Double-Pole Four-Throw (DP4T) RF switches for next generation communication systems. The authors discuss the design of the (DP4T) RF switch by using the Double-Gate (DG) MOSFET, as well as the Cylindrical Surrounding double-gate (CSDG) MOSFET. The effect of HFO2 (high dielectric [...])

### Contents

Introduction.- Design of Double-Pole Four-Throw RF Switch.- Design of Double-Gate MOSFET.- Double-Pole Four-Throw RF Switch Based on Double-Gate MOSFET.- Cylindrical Surrounding Double-Gate RF MOSFET.- Hafnium Dioxide Based Double-Pole Four-Throw Double-Gate RF CMOS Switch.- Testing of MOSFET Surfaces Using Image Acquisition.- Conclusions and Future Scope.

### Fields of interest

Circuits and Systems; Communications Engineering, Networks; Semiconductors

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-01164-6](http://www.springer.com/978-3-319-01164-6)

### Hardcover

2014. XV, 199 p. 55 illus., 45 illus. in color. (Analog Circuits and Signal Processing, Vol. 122)  
ISBN 978-3-319-01164-6

usually dispatched within 3 to 5 business days

A. Subic, RMIT University, Bundoora, Australia; W.-P. Schmidt, L. Koopmans, RMIT University, Victoria, Australia; M. Leary, RMIT University, Melbourne, Australia

## Management and Design of Sustainable Automotive Technologies

Management and Design of Sustainable Automotive Technologies aims to provide a comprehensive treatment of relevant management and design strategies and approaches required for the development of sustainable vehicle technologies. The book features current and emerging technologies and solutions supported by original case studies stemming from contemporary research and industry practice. These include vehicle life-cycle management and design methods and tools, sustainability assessment criteria and tools, development strategies and examples of new and emerging green car technologies such as alternative power-trains and fuels, lightweight structures and materials, end-of-life vehicle [...]

### Features

Management and Design of Sustainable Automotive Technologies aims to provide a comprehensive treatment of relevant management and design strategies and approaches required for the development of sustainable vehicle technologies. The book features current and emerging technologies and solutions supported by original case studies stemming from contemporary research and industry practice. These include vehicle [...]

### Contents

Sustainable Mobility.- Sustainable Vehicle Design.- Vehicle Life Cycle Management.- Alternative Power-train Technologies.- Lightweight Structures and Materials.- End-of-Life Vehicle Management.

### Fields of interest

Automotive Engineering; Engineering Design; Technology Management; Transportation

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-642-25196-2](http://www.springer.com/978-3-642-25196-2)

### Hardcover

2014. 350p. 140 illus., 20 illus. in color.  
ISBN 978-3-642-25196-2

Due: March 28, 2014

H. Sucuoglu, Middle East Technical University, Ankara, Turkey; S. Akkar, Middle East Technical University, Ankara, Turkey

## Basic Earthquake Engineering

From Seismology to Analysis and Design

This book provides senior undergraduate students and structural engineers lacking a background in the field with core knowledge of structural earthquake engineering that will be invaluable in their professional lives. The basics of seismotectonics, including the causes, magnitude, and intensity of earthquakes, are first explained. Subsequent chapters cover key aspects of the analysis of responses of simple systems and building structures to earthquake ground motions, the adoption of seismic analysis procedures in seismic design codes, and the seismic design of reinforced concrete structures. Helpful worked examples on earthquake-resistant design of frame and frame-shear wall systems [...]

### Features

This book provides senior undergraduate students and structural engineers lacking a background in the field with core knowledge of structural earthquake engineering that will be invaluable in their professional lives. The basics of seismotectonics, including the causes, magnitude, and intensity of earthquakes, are first explained. Subsequent chapters cover key aspects of the analysis of responses of simple [...]

### Contents

Nature of Earthquakes.- Response of Simple Structures to Earthquake Ground Motions.- Response of Building Structures to Earthquake Ground Motions.- Seismic Analysis Procedures in Earthquake Codes.- Seismic Design Principles for RC Structures.- Seismic Hazard Analysis.

### Fields of interest

Geoengineering, Foundations, Hydraulics; Structural Mechanics; Geotechnical Engineering & Applied Earth Sciences; Engineering Design; Vibration, Dynamical Systems, Control

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-01025-0](http://www.springer.com/978-3-319-01025-0)

### Softcover

2014. 300 p. 100 illus.  
ISBN 978-3-319-01025-0

Due: April 3, 2014

S. Supek, University of Zagreb, Zagreb, Croatia; C.J. Aine, University of New Mexico, Albuquerque, USA (Eds.)

## Magnetoencephalography

### From Signals to Dynamic Cortical Networks

Magnetoencephalography (MEG) is an invaluable functional brain imaging technique that provides direct, real-time monitoring of neuronal activity necessary for gaining insight into dynamic cortical networks. Our intentions with this book are to cover the richness and transdisciplinary nature of the MEG field, make it more accessible to newcomers and experienced researchers and to stimulate growth in the MEG area. The book presents a comprehensive overview of MEG basics and the latest developments in methodological, empirical and clinical research, directed toward master and doctoral students, as well as researchers. There are three levels of contributions: 1) tutorials on[...]

### Features

Magnetoencephalography (MEG) is an invaluable functional brain imaging technique that provides direct, real-time monitoring of neuronal activity necessary for gaining insight into dynamic cortical networks. Our intentions with this book are to cover the richness and transdisciplinary nature of the MEG field, make it more accessible to newcomers and experienced researchers and to stimulate growth in the MEG [...]

### Contents

Part 1: Measurements, experimental paradigms and analysis approaches.- Part 2: Neuromagnetic studies of brain and multi-modal SQUID-based functional brain imaging.- Part 3: Hot, open and challenging issues.

### Fields of interest

Biomedical Engineering; Neuroradiology; Medical and Radiation Physics; Neurosciences; Image Processing and Computer Vision

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-33044-5](http://www.springer.com/978-3-642-33044-5)

### Hardcover

2014. 250 p. 10 illus.  
ISBN 978-3-642-33044-5

**Due: March 28, 2014**

M.-C. Tsai, National Cheng Kung University, Tainan, Taiwan; D.-W. Gu, University of Leicester, Leicester, United Kingdom

## Robust and Optimal Control

### A Two-port Framework Approach

A Two-port Framework for Robust and Optimal Control introduces an alternative approach to robust and optimal controller synthesis procedures for linear, time-invariant systems, based on the two-port system widespread in electrical engineering. The novel use of the two-port system in this context allows straightforward engineering-oriented solution-finding procedures to be developed, requiring no mathematics beyond linear algebra. A chain-scattering description provides a unified framework for constructing the stabilizing controller set and for synthesizing  $H_2$  optimal and  $H_\infty$  sub-optimal controllers. Simple yet illustrative examples explain each step. A Two-port Framework for Robust and [...]

### Features

A Two-port Framework for Robust and Optimal Control introduces an alternative approach to robust and optimal controller synthesis procedures for linear, time-invariant systems, based on the two-port system widespread in electrical engineering. The novel use of the two-port system in this context allows straightforward engineering-oriented solution-finding procedures to be developed, requiring no [...]

### Contents

Two-port Networks.- Linear Fractional Transformations.- Chain Scattering Descriptions.- Co prime Factorizations.- Algebraic Riccati Equations and Spectral Factorizations.- CSD Approach to Stabilization Control and  $H_2$  Optimal Control.- A CSD Approach to H-infinity Controller Synthesis.- Design Examples.

### Fields of interest

Control; Circuits and Systems

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6256-8](http://www.springer.com/978-1-4471-6256-8)

### Hardcover

2014. XII, 280 p. 222 illus., 130 illus. in color. With online files/update. (Advances in Industrial Control)  
ISBN 978-1-4471-6256-8

**Due: January 31, 2014**

V. Vashchenko, Maxim Integrated Corp., Palo Alto, USA; M. Scholz, IMEC, Heverlee, Belgium

## System Level On-Chip ESD Protection

This book addresses key aspects of analog integrated circuits and systems design related to system level electrostatic discharge (ESD) protection. It is an invaluable reference for anyone developing systems-on-chip (SoC) and systems-on-package (SoP), integrated with system-level ESD protection. Coverage focuses on both the design of semiconductor integrated circuit (IC) components with embedded, on-chip system level protection and chip-system co-design. Readers will be enabled to bring the system level ESD protection solutions to the level of integrated circuits, thereby reducing or completely eliminating the need for additional, discrete components on the printed circuit board (PCB)[...]

### Features

This book addresses key aspects of analog integrated circuits and systems design related to system level electrostatic discharge (ESD) protection. It is an invaluable reference for anyone developing systems-on-chip (SoC) and systems-on-package (SoP), integrated with system-level ESD protection. Coverage focuses on both the design of semiconductor integrated circuit (IC) components with embedded, on-chip [...]

### Contents

Introduction.- System Level IC Design.- ESD Test Methods for IC level verification of System Pins.- ESD Devices and Clamps for System Level ESD protection.- Latchup in Case of System Level IC Design.- Analog IC Case Studies for System Level Conditions.- IC and System ESD Co-Design Methodologies.- Conclusion.

### Fields of interest

Circuits and Systems; Electronic Circuits and Devices; Electronics and Microelectronics, Instrumentation

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-3-319-03220-7](http://www.springer.com/978-3-319-03220-7)

### Hardcover

2014. 500 p. 200 illus.  
ISBN 978-3-319-03220-7

**Due: April 28, 2014**

J.-E. Vinnem

## Offshore Risk Assessment

Principles, Modelling and Applications of QRA Studies

Offshore Risk Assessment was the first book to deal with quantified risk assessment (QRA) as applied specifically to offshore installations and operations. Risk assessment techniques have been used for more than three decades in the offshore oil and gas industry, and their use is set to expand increasingly as the industry moves into new areas and faces new challenges in older regions. This updated and expanded third edition has been informed by a major R&D program on offshore risk assessment in Norway and summarizes research from 2006 to the present day. Rooted with a thorough discussion of risk metrics and risk analysis methodology, subsequent chapters are devoted to analytical[...]

### Features

Offshore Risk Assessment was the first book to deal with quantified risk assessment (QRA) as applied specifically to offshore installations and operations. Risk assessment techniques have been used for more than three decades in the offshore oil and gas industry, and their use is set to expand increasingly as the industry moves into new areas and faces new challenges in older regions. This updated and [...]

### Fields of interest

Quality Control, Reliability, Safety and Risk; Environmental Management; Offshore Engineering; Mathematical Modeling and Industrial Mathematics

### Target groups

Professional/practitioner

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4471-5265-1](http://www.springer.com/978-1-4471-5265-1)

### Hardcover

2014. XL, 896 p. 100 illus., 4 illus. in color. 2 volume-set. (Springer Series in Reliability Engineering)

ISBN 978-1-4471-5265-1

**Online orders shipping within 2-3 days.**

B. Vogel, Lab 6-11, Stuttgart, Germany

## How to Gain Gain

A Reference Book on Triodes in Audio Pre-Amplifiers

The 34 chapters of the 2nd edition of How to Gain Gain give a detailed insight into a collection (54) of the most common gain producing, constant current generating possibilities, and electronic noise creation of triodes for audio pre-amplifier purposes. These chapters also offer complete sets of formulae to calculate gain, frequency and phase responses, and signal-to-noise ratios of certain building blocks built-up with this type of vacuum valve (tube). In all cases detailed derivations of the gain formulae are also presented. All what is needed are the data sheet valve characteristic figures of the triode's mutual conductance, the gain factor and the internal plate (anode) [...]

### Features

The 34 chapters of the 2nd edition of How to Gain Gain give a detailed insight into a collection (54) of the most common gain producing, constant current generating possibilities, and electronic noise creation of triodes for audio pre-amplifier purposes. These chapters also offer complete sets of formulae to calculate gain, frequency and phase responses, and signal-to-noise ratios of certain building blocks [...]

### Contents

From the Contents: Basics - Noise in Triodes - Noise in Components and Other General Noise Effects - The Common Cathode Gain Stage (CCS) - CCS Mathcad Worksheets - The Common Anode gain Stage (Cathode Follower CF) - CF Mathcad Worksheets - The Common Grid gain Stage (CGS) - CGS Mathcad Worksheets - The Concertina (Cathodyne) Phase Splitter (CPS) - CPS Mathcad Worksheets - Constant Current Generators (CCG) - CCG Mathcad Worksheets - The Cascode Amplifier (CAS) - CAS Mathcad Worksheets - The Shunt Regulated Push-Pull Gain Stage (SRPP) - SRPP Mathcad Worksheets - The  $\mu$ -Follower ( $\mu F$ ) -  $\mu F$ [...]

### Fields of interest

Electronics and Microelectronics, Instrumentation; Acoustics; Engineering Acoustics

### Target groups

Popular/general

### Type of publication

Professional book

More on [www.springer.com/978-3-642-33032-2](http://www.springer.com/978-3-642-33032-2)

### Hardcover

2013. XIV, 862 p. 536 illus.

ISBN 978-3-642-33032-2

**usually dispatched within 3 to 5 business days**

C. Walloth, University of Duisburg Essen, Essen, Germany; J.M. Gurr, University of Duisburg-Essen, Essen, Germany; J.A. Schmidt, University of Duisburg-Essen, Essen, Germany (Eds.)

## Understanding Complex Urban Systems: Multidisciplinary Approaches to Modeling

Understanding Complex Urban Systems takes as its point of departure the insight that the challenges of global urbanization and the complexity of urban systems cannot be understood – let alone ‘managed’ – by sectoral and disciplinary approaches alone. But while there has recently been significant progress in broadening and refining the methodologies for the quantitative modeling of complex urban systems, in deepening the theoretical understanding of cities as complex systems, or in illuminating the implications for urban planning, there is still a lack of well-founded conceptual thinking on the methodological foundations and the strategies of modeling urban complexity across the[...]

### Features

Understanding Complex Urban Systems takes as its point of departure the insight that the challenges of global urbanization and the complexity of urban systems cannot be understood – let alone ‘managed’ – by sectoral and disciplinary approaches alone. But while there has recently been significant progress in broadening and refining the methodologies for the quantitative modeling of complex urban [...]

### Contents

From the Contents: Introduction: Towards a Transdisciplinary Understanding of Complex Urban Systems.- Multi-method Modeling and Simulation Supporting Urban Planning.- Understanding Effects of Complexity in Cities During Disasters.- Towards Evolutionary Economic Analysis of Sustainable Urban Real Estate.- Organized and Disorganized Complexities and Socio-Economic Implications in the Northern Ruhr Area.

### Fields of interest

Complexity; Socio- and Econophysics, Population and Evolutionary Models; Nonlinear Dynamics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02995-5](http://www.springer.com/978-3-319-02995-5)

### Hardcover

2014. XI, 163 p. 36 illus. (Understanding Complex Systems)

ISBN 978-3-319-02995-5

**Due: December 31, 2013**

G.-C. Wang, T.-M. Lu, Rensselaer Polytechnic Institute, Troy, USA

## RHEED Transmission Mode and Pole Figures

Thin Film and Nanostructure Texture Analysis

This unique book covers the fundamental principle of electron diffraction, basic instrumentation of RHEED, definitions of textures in thin films and nanostructures, mechanisms and control of texture formation, and examples of RHEED transmission mode measurements of texture and texture evolution of thin films and nanostructures. Also presented is a new application of RHEED in the transmission mode called RHEED pole figure technique that can be used to monitor the texture evolution in thin film growth and nanostructures and is not limited to single crystal epitaxial film growth. Details of the construction of RHEED pole figures and the interpretation of observed pole figures are [...]

### Features

This unique book covers the fundamental principle of electron diffraction, basic instrumentation of RHEED, definitions of textures in thin films and nanostructures, mechanisms and control of texture formation, and examples of RHEED transmission mode measurements of texture and texture evolution of thin films and nanostructures. Also presented is a new application of RHEED in the transmission mode called [...]

### Contents

Introduction.- Crystal Lattices and Reciprocal Lattices.- Kinematic Scattering of Waves and Diffraction Conditions.- RHEED Reflection Mode.- X-Ray Diffraction.- RHEED Transmission Mode and RHEED Pole Figure.- Instrumentation for RHEED Pole Figure.- Origins of Texture Formation.- Techniques to Control Thin Film Textures.- Applications and Future Direction.- Appendix A: Operational Procedures for RHEED Pole Figure.- Appendix B: RHEED Pattern Simulations.

### Fields of interest

Nanotechnology and Microengineering; Surfaces and Interfaces, Thin Films; Characterization and Evaluation of Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9286-3](http://www.springer.com/978-1-4614-9286-3)

### Hardcover

2014. XIII, 233 p. 126 illus., 67 illus. in color. ISBN 978-1-4614-9286-3

**Due: December 31, 2013**

W. Wang, University of Albany, Albany, USA; M. Liu, Chinese Academy of Sciences, Beijing, China, People's Republic; G.S. Rose, Polytechnic Institute of New York, Brooklyn, USA

## Hybrid CMOS/Memristor Nanoelectronics

This book will focus on the new physics of memristors and the integration of CMOS and memristor devices to establish efficient memory, FPGA, DSP, analog, biomedical, and neuromorphic systems. It will be the first such introduction for the electronics community to the promise of CMOS-nano hybrid structures. By including a number of new experimental and theoretical results of memristor and CMOS-nano hybrid structures, this book will present a wide range of device, circuit, and system emerging technologies in a timely manner to promote the ever increasing interest in the memristor/CMOS hybrid technology and its many potential uses. This book provides a single-source reference to the [...]

### Features

This book will focus on the new physics of memristors and the integration of CMOS and memristor devices to establish efficient memory, FPGA, DSP, analog, biomedical, and neuromorphic systems. It will be the first such introduction for the electronics community to the promise of CMOS-nano hybrid structures. By including a number of new experimental and theoretical results of memristor and CMOS-nano [...]

### Contents

CMOS Transistor and Memristor Device; CMOS/memristor Integration.- Combinational Circuit Designs based on CMOS and Memristors.- Sequential Circuit Designs based on CMOS and Memristors.- Design and Simulation Techniques for Hybrid Nanoelectronics.- CMOS/memristor Memory, FPGA, and DSP.- CMOS/memristor Analog and Neuromorphic Circuits.- CMOS/memristor Hybrid 3D IC.- Natural Computing Paradigm Based on CMOS/Memristor.

### Fields of interest

Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-1161-1](http://www.springer.com/978-1-4614-1161-1)

### Hardcover

2014. 200p. 100 illus. ISBN 978-1-4614-1161-1

**Due: December 31, 2013**

Z. Wang, H. Jiang, Tsinghua University, Beijing, China (P.R.); H. Chen

## CMOS IC Design for Wireless Medical and Health Care

This book provides readers with detailed explanation of the design principles of CMOS integrated circuits for wireless medical and health care, from the perspective of two successfully-commercialized applications. Design techniques for both the circuit block level and the system level are discussed, based on real design examples. CMOS IC design techniques for the entire signal chain of wireless medical and health care systems are covered, including biomedical signal acquisition, wireless transceivers, power management and SoC integration, with emphasis on ultra-low-power IC design techniques.

### Features

This book provides readers with detailed explanation of the design principles of CMOS integrated circuits for wireless medical and health care, from the perspective of two successfully-commercialized applications. Design techniques for both the circuit block level and the system level are discussed, based on real design examples. CMOS IC design techniques for the entire signal chain of wireless medical and [...]

### Contents

Introduction.- System Architecture and Design Considerations.- Biomedical Signal Acquisition Circuits.- WBAN Transceiver Design.- Other Important Circuits.- SoC Design and Application Systems.- Summary.

### Fields of interest

Circuits and Systems; Biomedical Engineering; Electronics and Microelectronics, Instrumentation

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-1-4614-9502-4](http://www.springer.com/978-1-4614-9502-4)

### Hardcover

2014. X, 186 p. 171 illus., 95 illus. in color. ISBN 978-1-4614-9502-4

**usually dispatched within 3 to 5 business days**

I. Wechsung

## An Evaluation Framework for Multimodal Interaction

Determining Quality Aspects and Modality Choice

This book presents (1) an exhaustive and empirically validated taxonomy of quality aspects of multimodal interaction as well as respective measurement methods, (2) a validated questionnaire specifically tailored to the evaluation of multimodal systems and covering most of the taxonomy's quality aspects, (3) insights on how the quality perceptions of multimodal systems relate to the quality perceptions of its individual components, (4) a set of empirically tested factors which influence modality choice, and (5) models regarding the relationship of the perceived quality of a modality and the actual usage of a modality.

### Features

This book presents (1) an exhaustive and empirically validated taxonomy of quality aspects of multimodal interaction as well as respective measurement methods, (2) a validated questionnaire specifically tailored to the evaluation of multimodal systems and covering most of the taxonomy's quality aspects, (3) insights on how the quality perceptions of multimodal systems relate to the quality perceptions of its [...]

### Contents

From the Contents: What Are Multimodal Systems? Why Do They Need Evaluation? - Theoretical Background.- What to Evaluate? - A Taxonomy of Quality Aspects of Multimodal Interfaces.

### Fields of interest

Communications Engineering, Networks; User Interfaces and Human Computer Interaction; Psychometrics; Quality Control, Reliability, Safety and Risk

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03809-4](http://www.springer.com/978-3-319-03809-4)

### Hardcover

2014. XIII, 191 p. 33 illus., 19 illus. in color. (T-Labs Series in Telecommunication Services)  
ISBN 978-3-319-03809-4

Due: December 31, 2013

R. Wille, University of Bremen, Bremen, Germany; M. Soeken, University of Bremen, Bremen, Germany; R. Drechsler, University of Bremen, Bremen, Germany

## Introduction to Reversible and Quantum Circuits

From Basics to Hardware Design

This book provides a comprehensive and self-contained introduction to reversible and quantum circuits, with which power emissions can be reduced or eliminated and processing can be performed exponentially faster compared to conventional methods.

No previous knowledge of quantum mechanics is assumed, so the presentation will be accessible to students in electrical engineering, computer science, and mathematics as well as professionals new to this field. After a step-by-step introduction, the necessary background on both reversible and quantum computation is presented, core applications and physical realizations are discussed and automatic design methods for the respective circuits are [...]

### Features

This book provides a comprehensive and self-contained introduction to reversible and quantum circuits, with which power emissions can be reduced or eliminated and processing can be performed exponentially faster compared to conventional methods.

No previous knowledge of quantum mechanics is assumed, so the presentation will be accessible to students in electrical engineering, computer science, and mathematics [...]

### Contents

Boolean Logic.- Reversible Logic.- Quantum Logic.- Quantum Algorithms.- Low Power Computing.- Synthesis.- Optimization.- Verification and Test.

### Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Logic Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-0793-5](http://www.springer.com/978-1-4614-0793-5)

### Hardcover

2014. 200p. 75 illus..  
ISBN 978-1-4614-0793-5

Due: February 28, 2014

M. Winterholer, Cadence Design Systems Inc., Stuttgart, Germany; D. Lettvin, Federal University of Santa Catarina, Florianópolis, Brazil (Eds.)

## Embedded Software Verification and Debugging

This book provides comprehensive coverage of verification and debugging techniques for embedded software, which is frequently used in safety critical applications (e.g., automotive), where failures are unacceptable. Since the verification of complex systems needs to encompass the verification of both hardware and embedded software modules, this book focuses on verification and debugging approaches for embedded software with hardware dependencies. Coverage includes the entire flow of design, verification and debugging of embedded software and all key approaches to debugging, dynamic, static, and hybrid verification. This book discusses the current, industrial embedded software [...]

### Features

This book provides comprehensive coverage of verification and debugging techniques for embedded software, which is frequently used in safety critical applications (e.g., automotive), where failures are unacceptable. Since the verification of complex systems needs to encompass the verification of both hardware and embedded software modules, this book focuses on verification and debugging approaches for [...]

### Contents

Overview of Verification and Debugging Techniques.- Hardware and Software Design Process.- Verification and Debugging Flow.- Test Planning and Management.- Debugging Embedded Software.- Testing.- Model-based Testing.- Metric-driven Software Verification.- Hardware/Software Co-verification.- Static Analysis.- Model Checking.- Semiformal Verification.- Combining Symbolic Model Checking and Theorem Proving.

### Fields of interest

Circuits and Systems; Processor Architectures; Electronics and Microelectronics, Instrumentation

### Target groups

Professional/practitioner

### Type of publication

Professional book

More on [www.springer.com/978-1-4614-2265-5](http://www.springer.com/978-1-4614-2265-5)

### Hardcover

2014. 400p. 150 illus.. (Embedded Systems)  
ISBN 978-1-4614-2265-5

Due: February 2014

M. Witzczak

## Fault Diagnosis and Fault-Tolerant Control Strategies for Non-Linear Systems

### Analytical and Soft Computing Approaches

This book presents selected fault diagnosis and fault-tolerant control strategies for non-linear systems in a unified framework. In particular, starting from advanced state estimation strategies up to modern soft computing, the discrete-time description of the system is employed. Part I of the book presents original research results regarding state estimation and neural networks for robust fault diagnosis. Part II is devoted to the presentation of integrated fault diagnosis and fault-tolerant systems. It starts with a general fault-tolerant control framework, which is then extended by introducing robustness with respect to various uncertainties. Finally, it is shown how to implement[...]

### Features

This book presents selected fault diagnosis and fault-tolerant control strategies for non-linear systems in a unified framework. In particular, starting from advanced state estimation strategies up to modern soft computing, the discrete-time description of the system is employed. Part I of the book presents original research results regarding state estimation and neural networks for robust fault [..]

### Contents

Part I Robust fault diagnosis.- Part II Integrated fault diagnosis and control.

### Fields of interest

Control; Computational Intelligence; Artificial Intelligence (incl. Robotics); Complexity

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03013-5](http://www.springer.com/978-3-319-03013-5)

### Hardcover

2014. XVI, 229 p. 117 illus. (Lecture Notes in Electrical Engineering, Vol. 266)  
ISBN 978-3-319-03013-5

**Due: December 31, 2013**

X. Xin, Okayama Prefectural University, Okayama, Japan; Y. Liu, Okayama University, Okayama, Japan

## Control Design and Analysis for Underactuated Robotic Systems

The last two decades have witnessed considerable progress in the study of underactuated robotic systems (URSS). Control Design and Analysis for Underactuated Robotic Systems presents a unified treatment of control design and analysis for a class of URSS, which include systems with multiple-degree-of-freedom and/or with underactuation degree two. It presents novel notions, features, design techniques and strictly global motion analysis results for these systems. These new materials are shown to be vital in studying the control design and stability analysis of URSS. Control Design and Analysis for Underactuated Robotic Systems includes the modelling, control design and analysis presented[...]

### Features

The last two decades have witnessed considerable progress in the study of underactuated robotic systems (URSS). Control Design and Analysis for Underactuated Robotic Systems presents a unified treatment of control design and analysis for a class of URSS, which include systems with multiple-degree-of-freedom and/or with [..]

### Contents

Fundamental Background.- Directly Driven Acrobat.- Remotely Driven Acrobat.- Pendubot.- Rotational Pendulum.- Counter-Weighted Acrobat.- Variable Length Pendulum.- 2-Link Underactuated Robot with Flexible Elbow Joint.- 3-Link Planar Robot with Passive First Joint.- n-Link Planar Robot with Single Passive Joint.- Two Parallel Pendulums on a Cart.- Double Pendulum on a Cart.- 3-Link Planar Robot with Two Passive Joints.- 2-Link Flying Robot.

### Fields of interest

Control; Robotics and Automation; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-6250-6](http://www.springer.com/978-1-4471-6250-6)

### Hardcover

2014. XVII, 319 p. 111 illus., 94 illus. in color. With online files/update.

ISBN 978-1-4471-6250-6

**Due: January 31, 2014**

B. Xing, W.-J. Gao

## Innovative Computational Intelligence: A Rough Guide to 134 Clever Algorithms

The first notable feature of this book is its innovation: Computational intelligence (CI), a fast evolving area, is currently attracting lots of researchers' attention in dealing with many complex problems. At present, there are quite a lot competing books existing in the market. Nevertheless, the present book is markedly different from the existing books in that it presents new paradigms of CI that have rarely mentioned before, as opposed to the traditional CI techniques or methodologies employed in other books. During the past decade, a number of new CI algorithms are proposed. Unfortunately, they spread in a number of unrelated publishing directions which may hamper the use of such[...]

### Features

The present book Innovative Computational Intelligence: A Rough Guide to 134 Clever Algorithms is compilation of recent trends in computational intelligence (CI) research using inspiration from various sources such as biology, physics, chemistry, and mathematics. Innovative CI, unlike its counterparts, i.e., highly developed and refined traditional CI, is a new CI category introduced in the present book. [..]

### Contents

Part I.- Part II Biology-based CI Algorithms.- Part III Physics-based CI Algorithms.- Part V Mathematics-based CI Algorithms.

### Fields of interest

Computational Intelligence; Image Processing and Computer Vision

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03403-4](http://www.springer.com/978-3-319-03403-4)

### Hardcover

2014. XXXIX, 453 p. (Intelligent Systems Reference Library, Vol. 62)  
ISBN 978-3-319-03403-4

**Due: December 31, 2013**

J. Xu, Sichuan University, Chengdu, China (P.R.); Z. Zeng

## Fuzzy-Like Multiple Objective Multistage Decision Making

Decision has inspired reflection of many thinkers since the ancient times. With the rapid development of science and society, appropriate dynamic decision making has been playing an increasingly important role in many areas of human activity including engineering, management, economy and others. In most real-world problems, decision makers usually have to make decisions sequentially at different points in time and space, at different levels for a component or a system, while facing multiple and conflicting objectives and a hybrid uncertain environment where fuzziness and randomness co-exist in a decision making process. This leads to the development of fuzzy-like multiple objective[...]

### Features

Decision has inspired reflection of many thinkers since the ancient times. With the rapid development of science and society, appropriate dynamic decision making has been playing an increasingly important role in many areas of human activity including engineering, management, economy and others. In most real-world problems, decision makers usually have to make decisions sequentially at different points in time [...]

### Contents

Multiple Objective Multistage Decision Making.- Elements of Fuzzy-Like MOMSDM.- Fuzzy MOMSDM for Dynamic Machine Allocation.- Fuzzy MOMSDM for Closed Multiclass Queuing Networks.- Fuzzy Random MOMSDM for Inventory Management.- Fuzzy Random MOMSDM for Facilities Planning.- Fuzzy Random MOMSDM for Transportation Assignment.

### Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03397-6](http://www.springer.com/978-3-319-03397-6)

### Hardcover

2014. XII, 349 p. (Studies in Computational Intelligence, Vol. 533)  
ISBN 978-3-319-03397-6

**Due: December 15, 2013**

E. Yahya, TIMA, Grenoble Institute of Technology, GRENOBLE Cedex, France; M. Renaudin, Tiempo, Montbonnot Saint Martin, France; L. Fesquet, TIMA, Grenoble Institute of Technology, GRENOBLE Cedex, France

## Performance Modeling, Analysis and Optimization for Asynchronous Circuits: Static and Statistical Analysis Approaches

Asynchronous circuits provide efficient solutions for many of the recent nanometric technologies, although the lack of analysis and optimization tools has limited the commercial spread of this technology. This book helps readers to understand the difficulties of modeling and analyzing asynchronous circuits. A new modeling methodology is introduced; it is used to build Asynchronous Static Timing Analysis (ASTA) and Asynchronous Statistical Static Timing Analysis (ASSTA). These fast and accurate methods are used to optimize the circuit speed against its hardware size. In addition, the book investigates the handshaking protocol effect on different asynchronous circuit performance metrics[...]

### Features

Asynchronous circuits provide efficient solutions for many of the recent nanometric technologies, although the lack of analysis and optimization tools has limited the commercial spread of this technology. This book helps readers to understand the difficulties of modeling and analyzing asynchronous circuits. A new modeling methodology is introduced; it is used to build Asynchronous Static Timing Analysis (ASTA) [...]

### Contents

Asynchronous Circuits Performance Modeling and Analysis: Static Analysis Approach.- Asynchronous Circuits Performance Modeling and Analysis: Statistical Static Analysis Approach.- Asynchronous Circuit Optimization.- Handshaking Protocol Effect.- AHMOSE (Asynchronous High-speed Modeling and Optimization Tool-set).

### Fields of interest

Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-0544-3](http://www.springer.com/978-1-4614-0544-3)

### Hardcover

2014. 200p.  
ISBN 978-1-4614-0544-3

**Due: December 2013**

L. Yan, Northeastern University, Shenyang, China (P.R.); Z. Ma, Northeastern University, Shenyang, China (P.R.); F. Zhang, Northeastern University, Shenyang, China (P.R.)

## Fuzzy XML Data Management

This book presents an exhaustive and timely review of key research work on fuzzy XML data management, and provides readers with a comprehensive resource on the state-of-the-art tools and theories in this fast growing area. Topics covered in the book include: representation of fuzzy XML, query of fuzzy XML, fuzzy database models, extraction of fuzzy XML from fuzzy database models, reengineering of fuzzy XML into fuzzy database models, and reasoning of fuzzy XML. The book is intended as a reference guide for researchers, practitioners and graduate students working and/or studying in the field of Web Intelligence, as well as for data and knowledge engineering professionals seeking new[...]

### Features

This book presents an exhaustive and timely review of key research work on fuzzy XML data management, and provides readers with a comprehensive resource on the state-of-the-art tools and theories in this fast growing area. Topics covered in the book include: representation of fuzzy XML, query of fuzzy XML, fuzzy database models, reengineering of fuzzy XML [...]

### Contents

Databases and XML for Data Management.- Fuzzy Sets and Fuzzy Database Models.- Fuzzy XML Data Models.- Fuzzy XML Queries and Index.- Fuzzy XML Extraction from Fuzzy Database Models.- Reengineering Fuzzy XML into Fuzzy Database Models.

### Fields of interest

Computational Intelligence; Database Management; Data Mining and Knowledge Discovery

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-44898-0](http://www.springer.com/978-3-642-44898-0)

### Hardcover

2014. XI, 210 p. 55 illus. (Studies in Fuzziness and Soft Computing, Vol. 311)  
ISBN 978-3-642-44898-0

**usually dispatched within 3 to 5 business days**

K. Yoshida, Tohoku University, Sendai, Japan; S. Tadokoro, Tohoku University, Sendai, Japan (Eds.)

## Field and Service Robotics

Results of the 8th International Conference

FSR, the International Conference on Field and Service Robotics, is the leading single track conference of robotics for field and service applications. This book presents the results of FSR2012, the eighth conference of Field and Service Robotics, which was originally planned for 2011 with the venue of Matsushima in Tohoku region of Japan. However, on March 11, 2011, a magnitude M9.0 earthquake occurred off the Pacific coast of Tohoku, and a large-scale disaster was caused by the Tsunami which resulted, therefore the conference was postponed by one year to July, 2012. In fact, this earthquake raised issues concerning the contribution of field and service robotics technology to[...]

### Features

FSR, the International Conference on Field and Service Robotics, is the leading single track conference of robotics for field and service applications. This book presents the results of FSR2012, the eighth conference of Field and Service Robotics, which was originally planned for 2011 with the venue of Matsushima in Tohoku region of Japan. However, on March 11, 2011, a magnitude M9.0 earthquake occurred off [..]

### Contents

Disaster Response.- Service/Entertainment Robots.- Inspection/Maintenance Robots.- Mobile Robot Navigation.- Agricultural Robots.- Robots for Excavation, Planetary Exploration.- Large Area Mapping.- SLAM for Outdoor Robots.- and Elemental Technology for Mobile Robots.

### Fields of interest

Robotics and Automation; Artificial Intelligence (incl. Robotics)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40685-0](http://www.springer.com/978-3-642-40685-0)

### Hardcover

2014. XIII, 658 p. 426 illus., 367 illus. in color. (Springer Tracts in Advanced Robotics, Vol. 92)  
ISBN 978-3-642-40685-0

**Due: December 31, 2013**

M.Z. Zgurovsky, V.A. Sadovnichiy, Lomonosov Moscow State University, Moscow, Russian Federation (Eds.)

## Continuous and Distributed Systems

Theory and Applications

In this volume, the authors close the gap between abstract mathematical approaches, such as abstract algebra, number theory, nonlinear functional analysis, partial differential equations, methods of nonlinear and multi-valued analysis, on the one hand, and practical applications in nonlinear mechanics, decision making theory and control theory on the other. Readers will also benefit from the presentation of modern mathematical modeling methods for the numerical solution of complicated engineering problems in hydromechanics, geophysics and mechanics of continua. This compilation will be of interest to mathematicians and engineers working at the interface of these field. It presents[...]

### Features

In this volume, the authors close the gap between abstract mathematical approaches, such as abstract algebra, number theory, nonlinear functional analysis, partial differential equations, methods of nonlinear and multi-valued analysis, on the one hand, and practical applications in nonlinear mechanics, decision making theory and control theory on the other. Readers will also benefit from the [..]

### Contents

From the Contents: Part I Abstract Algebra and Applications.- Part II Mechanics and Numerical Methods.- Part III Long-time Forecasting in Multidisciplinary Investigations.- Part IV Control Theory and Decision Making.- Part V Short Communications.

### Fields of interest

Theoretical and Applied Mechanics; Systems Theory, Control; Physical Chemistry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03145-3](http://www.springer.com/978-3-319-03145-3)

### Hardcover

2014. XIX, 333 p. 33 illus., 14 illus. in color. (Solid Mechanics and Its Applications, Vol. 211)  
ISBN 978-3-319-03145-3

**usually dispatched within 3 to 5 business days**

Y.-T. Zhang, The Chinese University of Hong Kong, Hong Kong, China (P.R.) (Ed.)

## Wearable Medical Sensors and Systems

This contributed volume covers a broad spectrum of wearable sensing techniques and their applications in m-Health. The book includes design methodologies of wearable sensors and systems that are end-to-end integrated and connected into worn items such as intelligent textile cloth. Moreover, the book provides review materials on sensing technologies, signal processing, power harvest and signal transmission. Applications in m-health are discussed, as well as the connection to fields such as sports, entertainment and military applications. The target audience primarily comprises of researchers and practitioners, but the book may also be beneficial to graduate students.

### Features

This contributed volume covers a broad spectrum of wearable sensing techniques and their applications in m-Health. The book includes design methodologies of wearable sensors and systems that are end-to-end integrated and connected into worn items such as intelligent textile cloth. Moreover, the book provides review materials on sensing technologies, signal processing, power harvest and signal transmission. [..]

### Fields of interest

Biomedical Engineering; Computer Imaging, Vision, Pattern Recognition and Graphics; Biomedicine (general); Life Sciences (general); Electrical Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01004-5](http://www.springer.com/978-3-319-01004-5)

### Hardcover

2014. 350 p. 50 illus., 10 illus. in color. (Biomedical and Health Informatics)  
ISBN 978-3-319-01004-5

**Due: March 28, 2014**

A. Çela, Université Paris-Est, ESIEE Paris, Noisy-le-Grand, France;  
M. Ben Gaid, X.-G. Li, Northeastern University, Shenyang, China  
(P.R.); S.-I. Niculescu

## Optimal Design of Distributed Control and Embedded Systems

Optimal Design of Distributed Control and Embedded Systems focuses on the design of special control and scheduling algorithms based on system structural properties as well as on analysis of the influence of induced time-delay on systems performances. It treats the optimal design of distributed and embedded control systems (DCESS) with respect to communication and calculation-resource constraints, quantization aspects, and potential time-delays induced by the associated communication and calculation model. Particular emphasis is put on optimal control signal scheduling based on the system state. In order to render this complex optimization problem feasible in real time, a time[...]

### Features

Optimal Design of Distributed Control and Embedded Systems focuses on the design of special control and scheduling algorithms based on system structural properties as well as on analysis of the influence of induced time-delay on systems performances. It treats the optimal design of distributed and embedded control systems (DCESS) with respect to communication and calculation-resource constraints, [...]

### Contents

From the Contents: Part I Abstract Model of Distributed Control and Embedded Systems: Introduction to Distributed Control and Embedded Systems.- Part II Optimal Co-design of Distributed Control and Embedded Systems.- Optimal Integrated Control and Scheduling of Resource-constrained Systems.- Part III Insights in DECS and Delayed Systems.- Stability Analysis of Distributed Control and Embedded Systems Subject to State and Control Delays.

### Fields of interest

Control; Control Structures and Microprogramming; Circuits and Systems; Communications Engineering, Networks

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02728-9](http://www.springer.com/978-3-319-02728-9)

### Hardcover

2014. XXIV, 288 p. 94 illus., 60 illus. in color. (Communications and Control Engineering)  
ISBN 978-3-319-02728-9

**usually dispatched within 3 to 5 business days  
December 31, 2013**

## Materials Science

D. Brigante, Olympus FRP, Napoli, Italy

## New Composite Materials

### Selection, Design, and Application

This timely volume presents a range of critical topics on the use of composite materials in civil engineering; industrial, commercial, and residential structures; and historic buildings. Structural strengthening techniques based on composite materials, including, but not limited to, fiber-reinforced polymers, fiber-reinforced glasses, steel-reinforced polymers, and steel-reinforced glasses represent a practice employed internationally and have become an important component in the restoration of buildings impacted by natural hazards and other destructive forces. New Composite Materials: Selection, Design, and Application stands as a highly relevant and diverse effort, distinct from[...]

### Features

This timely volume presents a range of critical topics on the use of composite materials in civil engineering; industrial, commercial, and residential structures; and historic buildings. Structural strengthening techniques based on composite materials, including, but not limited to, fiber-reinforced polymers, fiber-reinforced glasses, steel-reinforced polymers, and steel-reinforced glasses represent a [...]

### Contents

Composite Materials.- Manufacturing Processes.- Choice of the Composite System.- Strengthening of Existing Structures.- Technical Standards.- Strengthening of Reinforced and Pre-Stressed Reinforced Concrete Structures.- Strengthening of Masonry Structures.- Strengthening of Steel Structures.- Characterization and Monitoring.- Application Techniques.- Examples of Application.

### Fields of interest

Ceramics, Glass, Composites, Natural Materials; Building Materials; Structural Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01636-8](http://www.springer.com/978-3-319-01636-8)

### Hardcover

2014. XVI, 179 p. 88 illus., 77 illus. in color.  
ISBN 978-3-319-01636-8

**usually dispatched within 3 to 5 business days**

N. Chawla, Arizona State University, Tempe, USA; K.K. Chawla, University of Alabama at Birmingham, Birmingham, USA

## Metal Matrix Composites

This work focuses on the fundamentals of MMCs for engineers and designers. The new edition addresses new issues and developments in the areas of automotive, aerospace, electronics and consumer applications. These include continuous fiber reinforced MMCs for cables in power transmission, high temperature superconducting wires, particulate MMCs in civilian aircraft and automotive applications, and high volume fraction, high thermal conductivity substrates for electronic packaging. The coverage is thorough and cohesive, and emphasizes the synergistic relationships among processing, structure and properties of metal matrix composites.

### Features

Metal Matrix Composites (MMCs) have progressed from "niche" materials to high performance applications in aerospace, electronic packaging, automotive, and recreational products. This book focuses on the synergistic relationships among processing, microstructure, and properties of metal matrix composites. The authors include chapters on reinforcements, common matrix materials, processing of MMCs, interface [...]

### Contents

Preface.- Introduction.- Reinforcements.- Matrix Materials.- Processing.- Interface.- Micromechanics.- Monotonic Behavior.- Cyclic Fatigue.- Creep.- Wear and Corrosion.- Applications.- Author Index.- Subject Index.

### Fields of interest

Metallic Materials; Ceramics, Glass, Composites, Natural Materials; Theoretical and Applied Mechanics; Engineering Design

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9547-5](http://www.springer.com/978-1-4614-9547-5)

### Hardcover

2013. XVI, 370 p. 277 illus., 55 illus. in color.  
ISBN 978-1-4614-9547-5

**usually dispatched within 3 to 5 business days  
December 31, 2013**

H. Cheng, Beijing Institute of Technology, Beijing, China (P.R.)

## Independent Variables for Optical Surfacing Systems

Synthesis, Characterization and Application

Independent Variables for Optical Surfacing Systems discusses the characterization and application of independent variables of optical surfacing systems and introduces the basic principles of surfacing technologies and common surfacing systems. All the pivotal variables influencing surface quality are analyzed; evaluation methods for surface quality, the removal capability of tool influence functions, and a series of novel optical surfacing systems are introduced. The book also particularly focuses on the multi-path mode and dwell time used for deterministic surfacing. Researchers and graduate students working in optical engineering will benefit from this book; optical engineers in[...]

### Features

Independent Variables for Optical Surfacing Systems discusses the characterization and application of independent variables of optical surfacing systems, and introduces the basic principles of surfacing technologies and common surfacing systems. All the pivotal variables influencing surface quality are analyzed; evaluation methods for surface quality, the removal capability of tool influence [..]

### Contents

Basic theory of optical surfacing systems.- Tool influence functions.- Finishing paths.- Dwell time map.

### Fields of interest

Optical and Electronic Materials; Microwaves, RF and Optical Engineering; Applied Optics, Optoelectronics, Optical Devices; Surface and Interface Science, Thin Films; Surfaces and Interfaces, Thin Films

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45354-0](http://www.springer.com/978-3-642-45354-0)

### Hardcover

2014. Approx. 175 p. 100 illus., 50 illus. in color. ISBN 978-3-642-45354-0

**Due: January 31, 2014**

T. Correia, Q. Zhang, Cranfield University, Cranfield, United Kingdom (Eds.)

## Electrocaloric Materials

New Generation of Coolers

Since the 1997 Kyoto protocol of reduction of greenhouse gas emissions, the development of novel refrigerators has been a priority within the scientific community. Although magnetocaloric materials are promising candidates, they still need a large magnetic field to induce a giant  $\Delta T$  as well as powerful and costly magnets. However, in electrocaloric materials (ECMs) a temperature change may be achieved by applying or removing an electric field. Since a giant electrocaloric effect on ferroelectric thin films was reported in Science in 2006, researchers have been inspired to explore such effect in different ferroelectric thin films. This book reviews electrocaloric effects observed in[...]

### Features

Since the 1997 Kyoto protocol of reduction of greenhouse gas emissions, the development of novel refrigerators has been a priority within the scientific community. Although magnetocaloric materials are promising candidates, they still need a large magnetic field to induce a giant  $\Delta T$  as well as powerful and costly magnets. However, in electrocaloric materials (ECMs) a temperature change may be achieved by [..]

### Contents

Electrocaloric effect: An Introduction.- Constitutive Modeling of Electrothermal Properties in Polar Dielectric Materials and Thin Films.- Electrocaloric Effect in Relaxor Ferroelectric-based Materials.- Electrocaloric Effect in Multilayer Structures.- Electrocaloric Polymers.- Lead-free and exotic Electrocaloric Materials.- Indirect and Direct Measurements of the Electrocaloric Effect.- New Approaches to Electrocaloric-Based Multilayer Cooling.- Energy Harvesting from Temperature: use of Pyroelectric and Electrocaloric Properties.

### Fields of interest

Surfaces and Interfaces, Thin Films; Characterization and Evaluation of Materials; Circuits and Systems

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40263-0](http://www.springer.com/978-3-642-40263-0)

### Hardcover

2014. VIII, 253 p. 141 illus., 36 illus. in color. (Engineering Materials, Vol. 34) ISBN 978-3-642-40263-0

**usually dispatched within 3 to 5 business days  
December 31, 2013**

P.L. Fauchais, Professor Emeritus, Limoges CX, France; J.V.R. Heberlein, Professor Emeritus, Minneapolis, USA; M.I. Boulos, President and CEO, Sherbrooke, Canada

## Thermal Spray Fundamentals

From Powder to Part

This book provides readers with the fundamentals necessary for understanding thermal spray technology. Coverage includes in-depth discussions of various thermal spray processes, feedstock materials, particle-jet interactions, and associated yet very critical topics: diagnostics, current and emerging applications, surface science, and pre and post-treatment. This book will serve as an invaluable resource as a textbook for graduate courses in the field and as an exhaustive reference for professionals involved in thermal spray technology.

### Features

This book provides readers with the fundamentals necessary for understanding thermal spray technology. Coverage includes in-depth discussions of various thermal spray processes, feedstock materials, particle-jet interactions, and associated yet very critical topics: diagnostics, current and emerging applications, surface science, and pre and post-treatment. This book will serve as an invaluable resource as [..]

### Contents

Overview of thermal spray.- Basic concepts of combustion and thermal plasma.- Flame or plasma - particle interactions.- Combustion spraying systems.- Cold spray.- D.C. plasma spraying.- R.F. induction plasma spraying.- Wire arc spraying.- Plasma transferred arc deposition (PTA).- Nano- or finely-structured coatings.- Conventional deposit formation.- Surface preparation.- Process diagnostics and on-line control.- Coating characterizations.- Powder, wire and rods production and characteristics.- Process integration.- Industrial applications of thermal spraying technology.

### Fields of interest

Tribology, Corrosion and Coatings; Engineering Fluid Dynamics; Operating Procedures, Materials Treatment

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-0-387-28319-7](http://www.springer.com/978-0-387-28319-7)

### Hardcover

2013. XXVIII, 1570 p. 953 illus., 235 illus. in color. ISBN 978-0-387-28319-7

**Due: December 31, 2013**

P. Ferraro, S. Grilli, CNR, Pozzuoli, Italy; P. De Natale (Eds.)

## Ferroelectric Crystals for Photonic Applications

Including Nanoscale Fabrication and Characterization Techniques

This book deals with the latest achievements in the field of ferroelectric domain engineering and characterization at micro- and nano-scale dimensions and periods. The book collects the results obtained in the last years by world scientific leaders in the field, thus providing a valid and unique overview of the state-of-the-art and also a view to future applications of those engineered and used materials in the field of photonics. The second edition covers the major aspects of ferroelectric domain engineering and combines basic research and latest updated applications such as challenging results by introducing either new as well as extended chapters on Photonics Crystals based on[...]

### Features

This book deals with the latest achievements in the field of ferroelectric domain engineering and characterization at micro- and nano-scale dimensions and periods. The book collects the results obtained in the last years by world scientific leaders in the field, thus providing a valid and unique overview of the state-of-the-art and also a view to future applications of those engineered and used materials in [...]

### Contents

From the Contents: Part I Fabrication.- Micro-structuring and ferroelectric domain engineering of single crystal lithium Niobate.- Fabrication and characterization of self-assembled ferroelectric linear and nonlinear photonic crystals: GaN and LiNbO<sub>3</sub>.- Part II Characterization.- Light aided domain patterning and rare earth emission based imaging of ferroelectric domains.- Part III Applications.- Nonlinear Interactions in Periodic and Quasi-Periodic Nonlinear Photonic Crystals.- Domain-engineered ferroelectric crystals for nonlinear and quantum optics.

### Fields of interest

Optical and Electronic Materials; Laser Technology and Physics, Photonics; Microwaves, RF and Optical Engineering; Nanoscale Science and Technology; Magnetism, Magnetic Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41085-7](http://www.springer.com/978-3-642-41085-7)

### Hardcover

2014. XXII, 493 p. 309 illus., 43 illus. in color. (Springer Series in Materials Science, Vol. 91)  
ISBN 978-3-642-41085-7

usually dispatched within 3 to 5 business days

H.W. Kim, Brown University, Barrington, USA; A.G. Greenburg, Brown University, Barrington, USA (Eds.)

## Hemoglobin-Based Oxygen Carriers as Red Cell Substitutes

Currently, hemoglobin (Hb)-based oxygen carriers (HBOCs) are leading candidates as red blood cell substitutes. In addition, HBOCs are also potential oxygen therapeutics for treatment of patients with critical ischemic conditions due to atherosclerosis, diabetes and other conditions. This book will provide readers a comprehensive review of topics involved in the HBOC development. It focusses on current products and clinical applications as well as on emerging technologies and future prospects.

### Features

Currently, hemoglobin (Hb)-based oxygen carriers (HBOCs) are leading candidates as red blood cell substitutes. In addition, HBOCs are also potential oxygen therapeutics for treatment of patients with critical ischemic conditions due to atherosclerosis, diabetes and other conditions. This book will provide readers a comprehensive review of topics involved in the HBOC development. It focusses on current products [...]

### Contents

Brief historical account of HBOC development.- Physiology of respiration.- Oxygen transport to tissues.- Pathophysiology of acute anemia.- Global blood safety and need for safe blood supply.- Blood transfusion and its limitations.- Scientific basis and design of HBOCs.- HBOCs: a regulatory perspective.- Current HBOC products in development.- Clinical indications and clinical trials of HBOCs.- HBOCs and adverse events observed in clinical trials.- HBOC-mediated vasoactivity and hypertension.- HBOC and oxygen and nitrogen radical mediated toxicity.- HBOCs and clinical laboratory[...]

### Fields of interest

Biomaterials; Molecular Medicine; Medicinal Chemistry; Hematology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40716-1](http://www.springer.com/978-3-642-40716-1)

### Hardcover

2013. XXIII, 746 p. 130 illus., 77 illus. in color.  
ISBN 978-3-642-40716-1

Due: December 31, 2013

D.J. Larson, T.J. Prosa, CAMECA Instruments, Inc., Madison, USA; R.M. Ulfig, CAMECA Instruments, Inc., Madison, USA; B.P. Geiser, CAMECA Instruments, Inc., Madison, USA; Th.F. Kelly, CAMECA Instruments, Inc., Madison, USA

## Local Electrode Atom Probe Tomography

A User's Guide

This book is the first, single-source guide to successful experiments using the local electrode atom probe (LEAP<sup>®</sup>) microscope. Coverage is both comprehensive and user friendly, including the fundamentals of preparing specimens for the microscope from a variety of materials, the details of the instrumentation used in data collection, the parameters under which optimal data are collected, the current methods of data reconstruction, and selected methods of data analysis. Tricks of the trade are described that are often learned only through trial and error, allowing users to succeed much more quickly in the challenging areas of specimen preparation and data collection. A closing chapter[...]

### Features

This book is the first, single-source guide to successful experiments using the local electrode atom probe (LEAP<sup>®</sup>) microscope. Coverage is both comprehensive and user friendly, including the fundamentals of preparing specimens for the microscope from a variety of materials, the details of the instrumentation used in data collection, the parameters under which optimal data are collected, the [...]

### Contents

Preface.- Acknowledgements.- Foreword.- Abbreviations.- Chapter 1. History of APT and LEAP.- Chapter 2. Specimen Preparation.- Chapter 3. Design & Instrumentation.- Chapter 4. Data Collection.- Chapter 5. Data Processing and Reconstruction.- Chapter 6. Selected Analysis Topics.- Chapter 7. Applications of the Local Electrode Atom Probe.- Appendix A. Data File Formats.- Appendix B. Field Evaporation.- Appendix C. Reconstruction Geometry.- Appendix D. Mass Spectral Performance.- Appendix E. Additional Considerations for LEAP Operation.- Glossary.- Index.

### Fields of interest

Characterization and Evaluation of Materials; Nanoscale Science and Technology; Nanochemistry; Spectroscopy and Microscopy; Nanotechnology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-8720-3](http://www.springer.com/978-1-4614-8720-3)

### Hardcover

2013. XVII, 318 p. 164 illus., 54 illus. in color.  
ISBN 978-1-4614-8720-3

Due: December 31, 2013

S. Li, University of Electronic Science and, Chengdu, China (P.R.); J. Wu, University of Electronic Science and, Chengdu, China (P.R.); Z.M. Wang, University of Electronic Science and, Chengdu, China (P.R.); Y. Jiang, University of Electronic Science and, Chengdu, China (P.R.) (Eds.)

## Nanoscale Sensors

This book is a comprehensive introduction to nanoscale materials for sensor applications, with a focus on connecting the fundamental laws of physics and the chemistry of materials with device design. Nanoscale sensors can be used for a wide variety of applications, including the detection of gases, optical signals, and mechanical strain, and can meet the need to detect and quantify the presence of gaseous pollutants or other dangerous substances in the environment. Gas sensors have found various applications in our daily lives and in industry. Semiconductive oxides, including SnO<sub>2</sub>, ZnO, Fe<sub>2</sub>O<sub>3</sub>, and In<sub>2</sub>O<sub>3</sub>, are promising candidates for gas sensor applications. Carbon nanomaterials are[...]

### Features

This book is a comprehensive introduction to nanoscale materials for sensor applications, with a focus on connecting the fundamental laws of physics and the chemistry of materials with device design. Nanoscale sensors can be used for a wide variety of applications, including the detection of gases, optical signals, and mechanical strain, and can meet the need to detect and quantify the presence of gaseous [...]

### Contents

Preface.- Chapter 1: Recent progress in the development of novel nanostructured biosensors for detection of water borne contaminants.- Chapter 2: Nanosensors for intracellular Raman studies.- Chapter 3: BioFET-SIM: a Tool for the Analysis and Prediction of Signal Changes in Nanowire Based Field Effect Transistor Biosensors.- Chapter 4: Semiconductor-Based Nanostructures for Photoelectrochemical Sensors and Biosensors.- Chapter 5: ZnO hydrogen nanoscale sensors.- Chapter 6: Recent advances in the design of photodetectors based on thin film and nanostructured ZnO.- Chapter 7: Thin Film[...]

### Fields of interest

Nanotechnology; Nanotechnology and Microengineering; Applied Optics, Optoelectronics, Optical Devices; Nanochemistry; Nanoscale Science and Technology; Optical and Electronic Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02771-5](http://www.springer.com/978-3-319-02771-5)

### Hardcover

2013. VIII, 312 p. 168 illus., 105 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 19) ISBN 978-3-319-02771-5

**Due: December 31, 2013**

T. Mang (Ed.)

## Encyclopedia of Lubricants and Lubrication

The importance of lubricants in virtually all fields of the engineering industry is reflected by an increasing scientific research of the basic principles. Energy efficiency and material saving are just two core objectives of the employment of high-tech lubricants. The encyclopedia presents a comprehensive overview of the current state of knowledge in the realm of lubrication. All the aspects of fundamental data, underlying concepts and use cases, as well as theoretical research and last but not least terminology are covered in hundreds of essays and definitions, authored by experts in their respective fields, from industry and academic institutes.

### Features

The importance of lubricants in virtually all fields of the engineering industry is reflected by an increasing scientific research of the basic principles. Energy efficiency and material saving are just two core objectives of the employment of high-tech lubricants. The encyclopedia presents a comprehensive overview of the current state of knowledge in the realm of lubrication. All the aspects of fundamental [...]

### Contents

From the Contents: Aluminium Hot and Cold Rolling.- Circulating Lubrication with progressive Feeders.- ACEA European Oil Sequences.- Acidity.- Actuating pressure.- Additives.- Barium-soap greases.- Bearing Inch.- Bearing rigidity.- Bentonite.- Bio-Based and Biodegradable Base Oils.- Calcium-soap greases.- Capillary Viscometers.- Cartridge pump.- CEC-L 54-96 Fuel Economy Effects of Engine Lubricants.- CEC-L-093 Oil Dispersion Test.- Delivery resistance.- Density.- Detergents.- Diesel Fuel Lubricity Agents.- DIN.- Elastic Interaction.- Elastomers and their Properties.- Electrochemical[...]

### Fields of interest

Materials Science (general); Industrial Chemistry / Chemical Engineering; Tribology, Corrosion and Coatings

### Target groups

Research

### Type of publication

Encyclop(a)edia

More on [www.springer.com/978-3-642-22646-5](http://www.springer.com/978-3-642-22646-5)

### Hardcover

2014. 2000 p. In 4 volumes, not available separately. ISBN 978-3-642-22646-5

**Due: February 3, 2014**

T. Mang (Ed.)

## Encyclopedia of Lubricants and Lubrication

Prof. Dr.-Ing. Theo Mang received his diploma in mining engineering in 1963 and his PhD in chemical engineering in 1967 (University of Clausthal, Germany). He has been Professor at the Faculty of Mechanical Engineering of the RWTH Aachen, Germany, since 1998. He started working in the field of lubricants at Fuchs in Mannheim in 1967 and became head of the technical department in 1980. He has been a member of the Executive Board of the global Fuchs Group from 1983 until 2001, responsible initially for technology and later for group purchasing and human resources. Professor Mang is a recipient of the Georg-Vogelpohl-Award of the German Society of Tribology and has published about 80[...]

### Features

Prof. Dr.-Ing. Theo Mang received his diploma in mining engineering in 1963 and his PhD in chemical engineering in 1967 (University of Clausthal, Germany). He has been Professor at the Faculty of Mechanical Engineering of the RWTH Aachen, Germany, since 1998. He started working in the field of lubricants at Fuchs in Mannheim in 1967 and became head of the technical department in 1980. He has been a [...]

### Fields of interest

Materials Science (general); Industrial Chemistry / Chemical Engineering; Tribology, Corrosion and Coatings

### Target groups

Research

### Type of publication

Encyclop(a)edia

More on [www.springer.com/978-3-642-37439-5](http://www.springer.com/978-3-642-37439-5)

### Hardcover

2014. 2000 p. Print + eReference ISBN 978-3-642-37439-5

**Due: February 15, 2014**

F.J. Manjon, I. Tiginyanu, V. Ursaki (Eds.)

## Pressure-Induced Phase Transitions in AB<sub>2</sub>X<sub>4</sub> Chalcogenide Compounds

This book on pressure-induced phase transitions in AB<sub>2</sub>X<sub>4</sub> chalcogenide compounds deals with one important AmBnXp material. The interest in these materials is caused by their properties. The results are discussed for three main groups of structural families: cubic-spinel structures, defective tetragonal structures, and other structures like layered and wurtzite-type modifications. A systematic analysis of the behavior of cubic (spinel), tetragonal (defect chalcopyrites and stannites) and other crystal modifications of AB<sub>2</sub>X<sub>4</sub> compounds under hydrostatic pressure is performed. The behavior of AIIAl<sub>2</sub>S<sub>4</sub>, AIIIGa<sub>2</sub>S<sub>4</sub>, AIIAl<sub>2</sub>Se<sub>4</sub> and AIIIGa<sub>2</sub>Se<sub>4</sub> compounds with defective tetragonal structures, [...]

### Features

This book on pressure-induced phase transitions in AB<sub>2</sub>X<sub>4</sub> chalcogenide compounds deals with one important AmBnXp material. The interest in these materials is caused by their properties. The results are discussed for three main groups of structural families: cubic-spinel structures, defective tetragonal structures, and other structures like layered and wurtzite-type modifications. A systematic analysis of the [...]

### Contents

Introduction.- Part I Spinel-Structured AB Chalcogenide Compounds.- Part II Ordered-Vacancy AB Chalcogenide Compounds.- Part III Chalcogenide Compounds with other Types of Structures.

### Fields of interest

Optical and Electronic Materials; Semiconductors; Microwaves, RF and Optical Engineering; Applied and Technical Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40366-8](http://www.springer.com/978-3-642-40366-8)

### Hardcover

2014. XI, 243 p. 121 illus., 32 illus. in color. (Springer Series in Materials Science, Vol. 189)  
ISBN 978-3-642-40366-8

**Due: December 31, 2013**

P.L. Menezes, S.P. Ingole, M. Nosonovsky, S.V. Kailas, M.R. Lovell (Eds.)

## Tribology for Scientists and Engineers

### From Basics to Advanced Concepts

This book describes available tribology technologies and introduces a comprehensive overview of tribology. General, up-to-date knowledge on how tribology is approached in various related areas of research, both experimental and computational is provided.

### Features

This book details a comprehensive overview of tribology. General information on how tribology is approached in various related areas of research, both experimental and computational is provided. The book contains up-to-date data and describes current technologies.

### Contents

Fundamentals of Engineering Surfaces.- Friction and Wear.- Contact Mechanics.- Experimental Methods in Tribology.- Interface Temperature of Sliding Surfaces.- Tribology of Metals and Alloys.- Tribology of Ceramics and Ceramic Matrix Composites.- Tribology of Metal Matrix Composites.- Coatings Tribology.- Fundamentals of Lubrication.- Self-Lubricating Behaviour of Graphite Reinforced Composites.- Particle Tribology.- Tribology of Solid Lubricants.- Tribology of Green Lubricants.- Nano Tribology.- Surface Probe Techniques.- Biotribology and Human Tribology.- Green and Biomimetic[...]

### Fields of interest

Tribology, Corrosion and Coatings; Machinery and Machine Elements; Surface and Interface Science, Thin Films; Surfaces and Interfaces, Thin Films

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-1944-0](http://www.springer.com/978-1-4614-1944-0)

### Hardcover

2013. XI, 948 p. 526 illus., 223 illus. in color.  
ISBN 978-1-4614-1944-0

**Due: December 31, 2013**

C. Ngo, M. van de Voorde, University of Technology Delft, Bergen, Netherlands

## Nanotechnology in a Nutshell

### From Simple to Complex Systems

This book shows where nanotechnology is now# a fascinating time when the science is transitioning into complex systems with impact on new products. Present and future developments are addressed, as well as a larger number of new industrial and research opportunities deriving from this domain. The authors provide an overview for professionals, researchers and policy-makers of this very rapidly expanding field-including many applications such as information and communication technologies, environmental sciences and engineering, societal life and medicine, with provision of customized treatments. Brief chapters and colour figures with a contained overall length make the book attractive— a [...]

### Features

This book shows where nanotechnology is now# a fascinating time when the science is transitioning into complex systems with impact on new products. Present and future developments are addressed, as well as a larger number of new industrial and research opportunities deriving from this domain. The authors provide an overview for professionals, researchers and policy-makers of this very [...]

### Contents

Exploring and Working in the Nano world.- Seeing and Moving Atoms.- Making Nano-Objects.- Quantum and Mesoscopic Physics.- Nanomaterials: Doing More with Less.- New Forms of Carbon and New Opportunities.- Nanoengineering for Material Technology.- From Microelectronics to Nano electronics.- Major Trends in Nano electronics.- Emerging Quantum Devices.- Molecular Electronics.- Diagnostics.- Therapeutics and Regenerative Medicine.- Nanotechnologies in Agriculture and Food.- Sensors for Measuring and Monitoring.- Nanotechnology Applications for Air, Water and Soil.- Water Demands for [...]

### Fields of interest

Nanotechnology; Science (general); Science Education; Engineering Design; Nanochemistry

### Target groups

Popular/general

### Type of publication

Professional book

More on [www.springer.com/978-94-6239-011-9](http://www.springer.com/978-94-6239-011-9)

### Hardcover

2014. XLV, 502 p. 402 illus., 204 illus. in color.  
ISBN 978-94-6239-011-9

**Due: December 31, 2013**

J. Njuguna, Robert Gordon University, Aberdeen, United Kingdom (Ed.)

## Structural Nanocomposites

### Perspectives for Future Applications

Advancements in the nanotechnology industry promise to offer improvements in capabilities across a spectrum of applications. This is of immense strategic importance to the high performance sector which has historically leveraged technological advances. The use of polymer nanocomposites in structures have several predictable impacts on structural design and applications, primarily by providing a safer, faster, and eventually cheaper transportation in the future. This book comprises reviews on the state-of-the-art, new research results, perspectives of future developments, and innovative applications relevant to structural materials, engineering structures, nanocomposites, modelling [...]

### Features

Advancements in the nanotechnology industry promise to offer improvements in capabilities across a spectrum of applications. This is of immense strategic importance to the high performance sector which has historically leveraged technological advances. The use of polymer nanocomposites in structures have several predictable impacts on structural design and applications, primarily by providing a safer, faster, [...]

### Contents

From the Contents: Dispersion methods of carbon nanotubes for the development of polymeric nanocomposites: characterization and application.- Thermoplastic nanocomposites with carbon nanotubes.- Graphite Based Nanocomposites to Enhance Mechanical Properties.

### Fields of interest

Structural Materials; Nanotechnology; Continuum Mechanics and Mechanics of Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40321-7](http://www.springer.com/978-3-642-40321-7)

### Hardcover

2013. VIII, 269 p. 143 illus., 11 illus. in color. (Engineering Materials)

ISBN 978-3-642-40321-7

**usually dispatched within 3 to 5 business days  
December 31, 2013**

W.J. Ooij, University of Cincinnati, Cincinnati, USA

## Silanes for Corrosion Control of Metals

Silanes for corrosion of metals covers the emerging applications of silanes for use in the corrosion protection of metals. The role of silane coupling agents is less than ten years old and is attracting attention from researchers in industry and academia alike. There is no comprehensive book on this topic on the market. Silanes for corrosion of metals covers the chemistry of silanes – in solution and at metal surfaces – as well as mechanisms of corrosion protection and paint adhesion by silanes. Modification of silane films for improved protection capabilities, e.g., by the addition of corrosion inhibitors, nanoparticles, or organic resins, is also covered. Special attention is paid [...]

### Features

Silanes for corrosion of metals covers the emerging applications of silanes for use in the corrosion protection of metals. The role of silane coupling agents is less than ten years old and is attracting attention from researchers in industry and academia alike. There is no comprehensive book on this topic on the market. Silanes for corrosion of metals covers the [...]

### Contents

Definitions – Scope of Book.- Synthesis of Silanes.- Classification of Silane Types.- Behavior of Silanes in Solution.- Rate of Hydrolysis and Condensation.- Interaction of Silanes with Metals (and Ceramics).- Which Corrosion Forms can be controlled by Silane Films? How?.- Paint Adhesion by Silanes.- Mechanisms (of Corrosion Protection; Paint Adhesion; Rubber Bonding).- Additions to Silane Solutions (for Performance Improvement).- Silane Additions to Primers (Superprimer Technology).- Electrodeposition of Silanes and Superprimers.

### Fields of interest

Tribology, Corrosion and Coatings; Metallic Materials; Industrial Chemistry / Chemical Engineering; Organic Chemistry; Materials Science (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4020-9770-6](http://www.springer.com/978-1-4020-9770-6)

### Hardcover

2014. Approx. 400 p. (Advances in Silicon Science, Vol. 5)

ISBN 978-1-4020-9770-6

**Due: April 28, 2014**

A.D. Pomogailo, Russian Academy of Sciences, Chernogolovka, Moscow region, Russian Federation; A.S. Rozenberg, Russian Academy of Sciences, Chernogolovka, Moscow region, Russian Federation; G.I. Dzhardimalieva, Russian Academy of Sciences, Chernogolovka, Moscow region, Russian Federation

## Nanostructured Materials Preparation via Condensation Methods

The book is devoted to novel nanostructured materials and nanotechnology. A comprehensive analysis of the condensing methods of preparation of novel nanostructured materials is given. The methodology of power-consuming preparation of nanostructured materials is discussed, including thermolysis, photo- and radiolytic, electrochemical and mechanochemical methods. The peculiarities of chemical transformations in organic and inorganic matrices are compared. Special attention is given to kinetics and mechanism of the formation of nanocomposites. The structure and properties of such nanostructured materials are analysed.

### Features

The book is devoted to novel nanostructured materials and nanotechnology. A comprehensive analysis of the condensing methods of preparation of novel nanostructured materials is given. The methodology of power-consuming preparation of nanostructured materials is discussed, including thermolysis, photo- and radiolytic, electrochemical and mechanochemical methods. The peculiarities of chemical transformations [...]

### Contents

Part 1 Methodology of power-consuming preparation of nanostructured materials.- Methodology of thermal transformations.- Photo- and radiolytic methods.- Electrochemical methods.- Mechanochemical methods of nanomaterials preparation.- Part 2 The chemical transformations in inorganic matrices.- The peculiarities of structure of inorganic matrices.- Chemical transformations of guest in inorganic matrix.- Systems with crystal matrices.- Reactions in inorganic carrier of high dispersity.- The peculiarities of chemical transformations in sol-gel synthesis.- Part 3 The chemical [...]

### Fields of interest

Nanotechnology; Nanochemistry; Organic Chemistry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-90-481-2564-7](http://www.springer.com/978-90-481-2564-7)

### Hardcover

2014. Approx. 400 p. 100 illus.  
ISBN 978-90-481-2564-7

**Due: July 28, 2014**

M.C. Roco, W. Bainbridge, B. Tonn, University of Tennessee, Knoxville, USA; G. Whitesides, Harvard University, Cambridge, USA (Eds.)

## Convergence of Knowledge, Technology and Society

**Beyond Convergence of Nano-Bio-Info-Cognitive Technologies**

This volume aims to document the most important worldwide accomplishments in converging knowledge and technology, including converging platforms, methods of convergence, societal implications, and governance in the last ten years. Convergence in knowledge, technology, and society is the accelerating, transformative interaction among seemingly distinct scientific disciplines, technologies, and communities to achieve mutual compatibility, synergism, and integration, and through this process to create added value for societal benefit. It is a movement that is recognized by scientists and thought leaders around the world as having the potential to provide far-reaching solutions to many of[...]

### Features

Convergence of knowledge and technology for the benefit of society (CKTS) is the core opportunity for progress in the 21st century, based on five principles: (1) the interdependence of all components of nature and society, (2) enhancement of creativity and innovation through evolutionary processes of convergence that combine existing principles, and divergence that generates new ones, (3) decision analysis [...]

### Contents

Acknowledgements.- Study Team and Report Authors.- External Reviewers.- Preface (Executive Summary).- Overview and Recommendations.- 1 Convergence Platforms: Foundational Science and Technology Tools.- 2 Convergence Platforms: Human-Scale Convergence and the Quality of Life.- 3 Convergence Platforms: Earth-Scale Systems.- 4 Methods to Improve and Expedite Convergence.- 5 Implications: Human Health and Physical Potential.- 6 Implications: Human Cognition and Communication and the Emergence of Cognitive Society.- 7 Implications: Societal Collective Outcomes, including Manufacturing.-[...]

### Fields of interest

Nanotechnology; R & D / Technology Policy; Information Systems and Communication Service; Neurosciences; Biotechnology; Philosophy of Technology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02203-1](http://www.springer.com/978-3-319-02203-1)

### Hardcover

2013. LVI, 542 p. 102 illus., 100 illus. in color. (Science Policy Reports)  
ISBN 978-3-319-02203-1

**Due: December 31, 2013**

A. Sabotkain, École de Technologie Supérieure, Montreal, Canada (Ed.)

## Problems and Solutions in the Mechanics of Composites

This book starts with a review of composite mechanics and basic behaviour of composite materials. The fundamentals of finite element analysis for composite modeling are presented in the following chapter. The applications of NDT techniques in composite inspection, in particular wave propagation, are scientifically discussed. Then, composites mechanics and NDT inspection are introduced in a question-answer format. In the last chapters, the editors introduce MATLAB codes and simulation results related to wave propagation in composite materials and vibrothermography technique, very useful for aerospace applications.

### Features

This book starts with a review of composite mechanics and basic behaviour of composite materials. The fundamentals of finite element analysis for composite modeling are presented in the following chapter. The applications of NDT techniques in composite inspection, in particular wave propagation, are scientifically discussed. Then, composites mechanics and NDT inspection are introduced in a question-answer [...]

### Contents

Mechanics of composite materials.- Finite element analysis of composite.- Non-destructive inspection of composite materials.- Problems and solutions.- Sample modeling (including wave propagation and composite testing).

### Fields of interest

Ceramics, Glass, Composites, Natural Materials; Structural Materials; Continuum Mechanics and Mechanics of Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41325-4](http://www.springer.com/978-3-642-41325-4)

### Hardcover

2014. 300 p. (Engineering Materials)  
ISBN 978-3-642-41325-4

**Due: January 29, 2014**

I.L. Shabalin, The University of Salford, Salford, Greater Manchester, United Kingdom

## Ultra-High Temperature Materials I

**Carbon (Graphene/Graphite) & Refractory Metals**

This exhaustive work in three volumes with featuring cross-reference system provides a thorough overview of ultra-high temperature materials – from elements and chemical compounds to alloys and composites. Topics included are physical (crystallographic, thermodynamic, thermo-physical, electrical, optical, physico-mechanical, nuclear) and chemical (solid-state diffusion, interaction with chemical elements and compounds, interaction with gases, vapours and aqueous solutions) properties of the individual physico-chemical phases and multi-phase materials with melting (or sublimation) points over or about 2500 °C. The first volume focuses on carbon (graphite/graphene) and refractory metals [...]

### Features

This exhaustive work in three volumes with featuring cross-reference system provides a thorough overview of ultra-high temperature materials – from elements and chemical compounds to alloys and composites. Topics included are physical (crystallographic, thermodynamic, thermo-physical, electrical, optical, physico-mechanical, nuclear) and chemical (solid-state diffusion, interaction with chemical elements [...]

### Contents

Preface.- Introduction.- 1. Carbon (Graphene/Graphite) .- Structures.- Thermal Properties.- Electro-Magnetic & Optical Properties.- Physico-Mechanical Properties.- Nuclear Physical Properties.- Chemical Properties.- References.- 2. Tungsten.- Structures.- Thermal Properties.- Electro-Magnetic & Optical Properties.- Physico-Mechanical Properties.- Nuclear Physical Properties.- Chemical Properties.- References.- 3 Rhenium.- Structures.- Thermal Properties.- Electro-Magnetic & Optical Properties.- Physico-Mechanical Properties.- Nuclear Physical Properties.- Chemical Properties.-[...]

### Fields of interest

Characterization and Evaluation of Materials; Organic Chemistry; Engineering Thermodynamics, Heat and Mass Transfer

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7586-2](http://www.springer.com/978-94-007-7586-2)

### Hardcover

2014. XVII, 808 p. 30 illus., 1 illus. in color.  
ISBN 978-94-007-7586-2

**Due: January 15, 2014**

W. Skorupa, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; H. Schmidt, Technische Universität Chemnitz, Chemnitz, Germany (Eds.)

## Subsecond Annealing of Advanced Materials

Annealing by Lasers, Flash Lamps and Swift Heavy Ions

The thermal processing of materials ranges from few fem to seconds by Swift Heavy Ion Implantation to about one second using advanced Rapid Thermal Annealing. This book offers after an historical excursus selected contributions on fundamental and applied aspects of thermal processing of classical elemental semiconductors and other advanced materials including nanostructures with novel optoelectronic, magnetic, and superconducting properties. Special emphasis is given on the diffusion and segregation of impurity atoms during thermal treatment. A broad range of examples describes the solid phase and/or liquid phase processing of elemental and compound semiconductors, dielectric[...]

### Features

The thermal processing of materials ranges from few femtoseconds by Swift Heavy Ion Implantation to about one second using advanced Rapid Thermal Annealing. This book offers after an historical excursus selected contributions on fundamental and applied aspects of thermal processing of classical elemental semiconductors and other advanced materials including nanostructures with novel optoelectronic, magnetic, [...]

### Contents

From the Contents: The very early time.- Nanonet formation by constitutional supercooling of pulsed laser annealed, Mn-implanted germanium.- Metastable activation of dopants by solid phase epitaxial recrystallization.- Superconducting Ga-implanted Germanium.- Structural changes in SiGe/Si layers induced by fast crystallization.

### Fields of interest

Optical and Electronic Materials; Laser Technology and Physics, Photonics; Semiconductors; Microwaves, RF and Optical Engineering; Surface and Interface Science, Thin Films

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03130-9](http://www.springer.com/978-3-319-03130-9)

### Hardcover

2014. XXII, 252 p. 217 illus., 61 illus. in color. (Springer Series in Materials Science, Vol. 192)  
ISBN 978-3-319-03130-9

Due: January 31, 2014

J. Thomas, Leibniz Institute for Solid State and Ma, Dresden, Germany; Th. Gemming, Leibniz Institute for Solid State and Ma, Dresden, Germany

## Analytical Transmission Electron Microscopy

An Introduction for Operators

This work is based on experiences acquired by the authors regarding often asked questions and problems during manifold education of beginners in analytical transmission electron microscopy. These experiences are summarised illustratively in this textbook. Explanations based on simple models and hints for the practical work are the focal points. This practically- oriented textbook represents a clear and comprehensible introduction for all persons who want to use a transmission electron microscope in practice but who are not specially qualified electron microscopists up to now.

### Features

This work is based on experiences acquired by the authors regarding often asked questions and problems during manifold education of beginners in analytical transmission electron microscopy. These experiences are summarised illustratively in this textbook. Explanations based on simple models and hints for the practical work are the focal points. This practically- oriented textbook represents a clear [...]

### Contents

From the Contents: Why this effort?.- What should we know about electron optics and the construction of an electron microscope.- We prepare electron-transparent samples.- Let us start with the work.- Let us switch to electron diffraction.- Why do we see any contrasts in the images?.- We increase the magnification.- Let us switch to scanning transmission electron microscopy.- Let us use the analytical possibilities.- Basics explained in more detail (a little bit more mathematics).

### Fields of interest

Characterization and Evaluation of Materials; Spectroscopy and Microscopy; Spectroscopy / Spectrometry; Nanotechnology and Microengineering

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-94-017-8600-3](http://www.springer.com/978-94-017-8600-3)

### Hardcover

2014. 382 p. 193 illus., 33 illus. in color.  
ISBN 978-94-017-8600-3

Due: April 27, 2014

R. Vajtai (Ed.)

## Springer Handbook of Nanomaterials

The Springer Handbook of Nanomaterials covers the description of materials which have dimension on the "nanoscale". The description of the nanomaterials in this Handbook follows the thorough but concise explanation of the synergy of structure, properties, processing and applications of the given material. The Handbook mainly describes materials in their solid phase; exceptions might be e.g. small sized liquid aerosols or gas bubbles in liquids. The materials are organized by their dimensionality. Zero dimensional structures collect clusters, nanoparticles and quantum dots, one dimensional are nanowires and nanotubes, while two dimensional are represented by thin films and surfaces.[...]

### Features

Forewords by Claes-Göran Granqvist, Uppsala University, Sweden, and Neal F. Lane, Rice University, Texas. Nanomaterials inevitably have bright prospects, but even now they play an important role in many areas of industry. Some of these new materials are commercially available and are used in off the shelf products, others are important model systems for [...]

### Contents

Forewords by Claes-Göran Granqvist, Uppsala University, Sweden, and Neal F. Lane, Rice University, Texas.- Part A NanoCarbons.- Part B NanoMetals.- Part C NanoCeramics.- Part D NanoSemiconductors.- Part E Nanocomposites and Solutions.- Part F Nanoporous Materials.- Part G Organic and Bio Nanomaterials.- Part H Applications and Impact Acknowledgements. Part A NanoCarbons.- Part B NanoMetals.- Part C NanoCeramics.- Part D NanoSemiconductors.- Part E Nanocomposites and Solutions.- Part F Nanoporous Materials.- Part G Organic and Bio Nanomaterials.- Part H Applications and Impact Acknowledgements.

### Fields of interest

Nanotechnology; Structural Materials; Optical and Electronic Materials; Ceramics, Glass, Composites, Natural Materials; Biomaterials

### Target groups

Professional/practitioner

### Type of publication

Handbook

More on [www.springer.com/978-3-642-20594-1](http://www.springer.com/978-3-642-20594-1)

### Hardcover

2013. XXXVI, 1221 p. 685 illus. in color.  
ISBN 978-3-642-20594-1

Online orders shipping within 2-3 days.

X. Wang, Chinese Academy of Sciences, Beijing, China (P.R.); Z.M. Wang, Chinese Academy of Sciences, Beijing, China (P.R.) (Eds.)

## Nanoscale Thermoelectrics

For the efficient utilization of energy resources and the minimization of environmental damage, thermoelectric materials can play an important role by converting waste heat into electricity directly. Nanostructured thermoelectric materials have received much attention recently due to the potential for enhanced properties associated with size effects and quantum confinement. *Nanoscale Thermoelectrics* describes the theory underlying these phenomena, as well as various thermoelectric materials and nanostructures such as carbon nanotubes, SiGe nanowires, and graphene nanoribbons. Chapters written by leading scientists throughout the world are intended to create a fundamental bridge[...]

### Features

For the efficient utilization of energy resources and the minimization of environmental damage, thermoelectric materials can play an important role by converting waste heat into electricity directly. Nanostructured thermoelectric materials have received much attention recently due to the potential for enhanced properties associated with size effects and quantum confinement. *Nanoscale* [...]

### Contents

Preface.- Chapter 1: Thermoelectric effects: semiclassical and quantum approaches from the Boltzmann transport equation.- Chapter 2: Electron transport engineering by nanostructures for efficient thermoelectrics.- Chapter 3: Thermal Conductivity of Particulate Nanocomposites.- Chapter 4: Nano Bulk Thermoelectrics: Concepts, Techniques, and Modeling.- Chapter 5: Control Thermal Conductivity of Semiconductor Nanowires: Phononics Engineering.- Chapter 6: Thermoelectric efficiency of nanowires with long range surface disorder.- Chapter 7: One-dimensional Bi-based Nanostructures for[...]

### Fields of interest

Nanotechnology; Energy Harvesting; Engineering Thermodynamics, Heat and Mass Transfer; Nanoscale Science and Technology; Optical and Electronic Materials; Nanotechnology and Microengineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02011-2](http://www.springer.com/978-3-319-02011-2)

### Hardcover

2014. XI, 519 p. 279 illus., 223 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 16) ISBN 978-3-319-02011-2

usually dispatched within 3 to 5 business days

Z.M. Wang, University of Electronic Science and, Chengdu, China (P.R.) (Ed.)

## Nanodroplets

Nanodroplets, the basis of complex and advanced nanostructures such as quantum rings, quantum dots and quantum dot clusters for future electronic and optoelectronic materials and devices, have attracted the interdisciplinary interest of chemists, physicists and engineers. This book combines experimental and theoretical analyses of nanosized droplets which reveal many attractive properties. Coverage includes nanodroplet synthesis, structure, unique behaviors and their nanofabrication, including chapters on focused ion beam, atomic force microscopy, molecular beam epitaxy and the "vapor-liquid-solid" route. Particular emphasis is given to the behavior of metallic nanodroplets, water[...]

### Features

Nanodroplets, the basis of complex and advanced nanostructures such as quantum rings, quantum dots, and quantum dot clusters for future electronic and optoelectronic materials and devices, have attracted the interdisciplinary interest of chemists, physicists, and engineers. This book combines experimental and theoretical analyses of nanosized droplets which reveal many attractive properties. Coverage [...]

### Contents

Preface.- Chapter 1: Generation of nanodroplets and Its applications.- Chapter 2: Nanodroplet formations in electrospun fibers of immiscible polymer blends and their effects on crystallization.- Chapter 3: Dynamic Study of Nanodroplet Nucleation and Growth using Transmitted Electrons in ESEM.- Chapter 4: Self-assembly of nanodroplets in nanocomposite materials in Nanodroplets Science and Technology.- Chapter 5: Ordering of Ga Nanodroplets by Low Energy Ion Sputtering.- Chapter 6: Atomistic mechanisms underlying the freezing behavior of metal nanodroplets.- Chapter 7: Dynamics of[...]

### Fields of interest

Nanotechnology; Nanoscale Science and Technology; Nanochemistry; Nanotechnology and Microengineering; Optical and Electronic Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9471-3](http://www.springer.com/978-1-4614-9471-3)

### Hardcover

2013. XII, 428 p. 197 illus., 124 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 18) ISBN 978-1-4614-9471-3

Due: December 31, 2013

Z.M. Wang, University of Electronic Science and, Chengdu, China (P.R.) (Ed.)

## FIB Nanostructures

FIB Nanostructures reviews a range of methods, including milling, etching, deposition, and implantation, applied to manipulate structures at the nanoscale. Focused Ion Beam (FIB) is an important tool for manipulating the structure of materials at the nanoscale, and substantially extends the range of possible applications of nanofabrication. FIB techniques are widely used in the semiconductor industry and in materials research for deposition and ablation, including the fabrication of nanostructures such as nanowires, nanotubes, nanoneedles, graphene sheets, quantum dots, etc. The main objective of this book is to create a platform for knowledge sharing and dissemination of the latest[...]

### Features

FIB Nanostructures reviews a range of methods, including milling, etching, deposition, and implantation, applied to manipulate structures at the nanoscale. Focused Ion Beam (FIB) is an important tool for manipulating the structure of materials at the nanoscale, and substantially extends the range of possible applications of nanofabrication. FIB techniques are widely used in the semiconductor [...]

### Contents

Preface.- Chapter 1: Focused Ion Beam (FIB) technology for micro and nanoscale fabrications.- Chapter 2: Epitaxial ferroelectric nanostructures fabricated by FIB milling.- Chapter 3: Low current focused-ion-beam milling for freestanding nanomaterial characterization.- Chapter 4: Focused ion beam milling of carbon nanotube yarns and Bucky-papers: Correlating their internal structure with their macro-properties.- Chapter 5: Nanoscale electrical contacts grown by Focused-Ion-Beam (FIB) Induced Deposition.- Chapter 6: Metal induced crystallization of focused ion beam induced deposition for[...]

### Fields of interest

Nanotechnology; Semiconductors; Nanotechnology and Microengineering; Nanochemistry; Nanoscale Science and Technology; Optical and Electronic Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02873-6](http://www.springer.com/978-3-319-02873-6)

### Hardcover

2013. X, 590 p. 372 illus., 204 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 20) ISBN 978-3-319-02873-6

Due: December 31, 2013

Z.M. Wang, University of Electronic Science, Chengdu, China  
(P.R.) (Ed.)

## MoS2

Materials, Physics, and Devices

This book reviews the structure and electronic, magnetic, and other properties of various MoS<sub>2</sub> (Molybdenum disulfide) nanostructures, with coverage of synthesis, Valley polarization, spin physics, and other topics. MoS<sub>2</sub> is an important, graphene-like layered nano-material that substantially extends the range of possible nanostructures and devices for nanofabrication. These materials have been widely researched in recent years, and have become an attractive topic for applications such as catalytic materials and devices based on field-effect transistors (FETs) and semiconductors. Chapters from leading scientists worldwide create a bridge between MoS<sub>2</sub> nanomaterials and fundamental physics[...]

### Features

This book reviews the structure and electronic, magnetic, and other properties of various MoS<sub>2</sub> (Molybdenum disulfide) nanostructures, with coverage of synthesis, Valley polarization, spin physics, and other topics. MoS<sub>2</sub> is an important, graphene-like layered nano-material that substantially extends the range of possible nanostructures and devices for nanofabrication. These materials have been widely [...]

### Contents

Preface.- Chapter 1: Progress on the Theoretical Study of Two-Dimensional MoS<sub>2</sub> Monolayer and Nanoribbon.- Chapter 2: Electronic Structure of Exfoliated MoS<sub>2</sub>.- Chapter 3: Tunable Electronic and Dielectric Properties of Molybdenum Disulfide.- Chapter 4: Ab initio study on MoS<sub>2</sub> and its family: Chemical trend, band alignment, alloying and gap modulation.- Chapter 5: MoS<sub>2</sub>: A first principles perspective.- Chapter 6: Mechanical properties and electric field screening of atomically thin MoS<sub>2</sub> crystals.- Chapter 7: Insights into vibrational and electronic properties of MoS<sub>2</sub> using Raman,[...]

### Fields of interest

Optical and Electronic Materials; Nanoscale Science and Technology; Nanotechnology and Microengineering; Nanochemistry; Nanotechnology; Renewable and Green Energy

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02849-1](http://www.springer.com/978-3-319-02849-1)

### Hardcover

2014. XI, 291 p. 171 illus., 152 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 21)  
ISBN 978-3-319-02849-1

usually dispatched within 3 to 5 business days

## Mathematics

T. Andreescu, D. Andrica

### Complex Numbers from A to ... Z

It is impossible to imagine modern mathematics without complex numbers. The second edition of Complex Numbers from A to ... Z introduces the reader to this fascinating subject that from the time of L. Euler has become one of the most utilized ideas in mathematics. The exposition concentrates on key concepts and then elementary results concerning these numbers. The reader learns how complex numbers can be used to solve algebraic equations and to understand the geometric interpretation of complex numbers and the operations involving them. The theoretical parts of the book are augmented with rich exercises and problems at various levels of difficulty. Many new problems and solutions have[...]

### Features

It is impossible to imagine modern mathematics without complex numbers. The second edition of Complex Numbers from A to ... Z introduces the reader to this fascinating subject that, from the time of L. Euler, has become one of the most utilized ideas in mathematics. The exposition concentrates on key concepts and then elementary results concerning these numbers. The reader learns how complex [...]

### Contents

Preface.- Complex Numbers in Algebraic Form.- Complex Numbers in Trigonometric Form.- Complex Numbers and Geometry.- More on Complex Numbers and Geometry.- Olympiad-Caliber Problems.- Answers, Hints and Solutions to Proposed Problems.- Glossary.- References.- Index of Authors.

### Fields of interest

Number Theory; Algebraic Geometry; Geometry

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-0-8176-8414-3](http://www.springer.com/978-0-8176-8414-3)

### Softcover

2014. X, 435 p. 81 illus.  
ISBN 978-0-8176-8414-3

Due: January 31, 2014

L. Beirao da Veiga, Università degli Studi di Milano, Milano, Italy;  
K. Lipnikov, Los Alamos National Laboratory, Los Alamos, USA; G.  
Manzini, Los Alamos National Laboratory, Los Alamos, USA

### The Mimetic Finite Difference Method for Elliptic Problems

This book describes the theoretical and computational aspects of the mimetic finite difference method for a wide class of multidimensional elliptic problems, which includes diffusion, advection-diffusion, Stokes, elasticity, magnetostatics and plate bending problems. The modern mimetic discretization technology developed in part by the Authors allows one to solve these equations on unstructured polygonal, polyhedral and generalized polyhedral meshes. The book provides a practical guide for those scientists and engineers that are interested in the computational properties of the mimetic finite difference method such as the accuracy, stability, robustness, and efficiency. Many examples[...]

### Features

This book describes the theoretical and computational aspects of the mimetic finite difference method for a wide class of multidimensional elliptic problems, which includes diffusion, advection-diffusion, Stokes, elasticity, magnetostatics and plate bending problems. The modern mimetic discretization technology developed in part by the Authors allows one to solve these equations on unstructured polygonal, [...]

### Contents

1 Model elliptic problems.- 2 Foundations of mimetic finite difference method.- 3 Mimetic inner products and reconstruction operators.- 4 Mimetic discretization of bilinear forms.- 5 The diffusion problem in mixed form.- 6 The diffusion problem in primal form.- 7 Maxwells equations. 8. The Stokes problem. 9 Elasticity and plates.- 10 Other linear and nonlinear mimetic schemes.- 11 Analysis of parameters and maximum principles.- 12 Diffusion problem on generalized polyhedral meshes.

### Fields of interest

Computational Mathematics and Numerical Analysis; Mathematical Applications in the Physical Sciences; Partial Differential Equations; Appl. Mathematics / Computational Methods of Engineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02662-6](http://www.springer.com/978-3-319-02662-6)

### Hardcover

2014. XVI, 392 p. (MS&A, Vol. 11)  
ISBN 978-3-319-02662-6

Due: December 31, 2013

F. Borceux

## An Axiomatic Approach to Geometry

### Geometric Trilogy I

Focusing methodologically on those historical aspects that are relevant to supporting intuition in axiomatic approaches to geometry, the book develops systematic and modern approaches to the three core aspects of axiomatic geometry: Euclidean, non-Euclidean and projective. Historically, axiomatic geometry marks the origin of formalized mathematical activity. It is in this discipline that most historically famous problems can be found, the solutions of which have led to various presently very active domains of research, especially in algebra. The recognition of the coherence of two-by-two contradictory axiomatic systems for geometry (like one single parallel, no parallel at all,...)

#### Features

Focusing methodologically on those historical aspects that are relevant to supporting intuition in axiomatic approaches to geometry, the book develops systematic and modern approaches to the three core aspects of axiomatic geometry: Euclidean, non-Euclidean and projective. Historically, axiomatic geometry marks the origin of formalized mathematical activity. It is in this discipline that most historically [...]

#### Contents

Introduction.- Preface.- 1.The Prehellenic Antiquity.- 2.Some Pioneers of Greek Geometry.- 3.Euclid's Elements.- 4.Some Masters of Greek Geometry.- 5.Post-Hellenic Euclidean Geometry.- 6.Projective Geometry.- 7.Non-Euclidean Geometry.- 8.Hilbert's Axiomatics of the Plane.- Appendices: A.Constructibility.- B.The Three Classical Problems.- C.Regular Polygons.- Index.- Bibliography.

#### Fields of interest

Geometry; History of Mathematics; Projective Geometry

#### Target groups

Graduate

#### Type of publication

Monograph

More on [www.springer.com/978-3-319-01729-7](http://www.springer.com/978-3-319-01729-7)

#### Hardcover

2014. XV, 403 p. 288 illus.  
ISBN 978-3-319-01729-7

**usually dispatched within 3 to 5 business days**

F. Borceux

## An Algebraic Approach to Geometry

### Geometric Trilogy II

This is a unified treatment of the various algebraic approaches to geometric spaces. The study of algebraic curves in the complex projective plane is the natural link between linear geometry at an undergraduate level and algebraic geometry at a graduate level, and it is also an important topic in geometric applications, such as cryptography. 380 years ago, the work of Fermat and Descartes led us to study geometric problems using coordinates and equations. Today, this is the most popular way of handling geometrical problems. Linear algebra provides an efficient tool for studying all the first degree (lines, planes, ...) and second degree (ellipses, hyperboloids, ...) geometric figures.[...]

#### Features

This is a unified treatment of the various algebraic approaches to geometric spaces. The study of algebraic curves in the complex projective plane is the natural link between linear geometry at an undergraduate level and algebraic geometry at a graduate level, and it is also an important topic in geometric applications, such as cryptography. 380 years ago, the work of Fermat and Descartes led us to [...]

#### Contents

Introduction.- Preface.- 1.The Birth of Analytic Geometry.- 2.Affine Geometry.- 3.More on Real Affine Spaces.- 4.Euclidean Geometry.- 5.Hermitian Spaces.- 6.Projective Geometry.- 7.Algebraic Curves.- Appendices: A.Polynomials Over a Field.- B.Polynomials in Several Variables.- C.Homogenous Polynomials.- D.Resultants.- E.Symmetric Polynomials.- F.Complex Numbers.- G.Quadratic Forms.- H.Dual Spaces.- Index.- Bibliography.

#### Fields of interest

Geometry; Projective Geometry; History of Mathematics

#### Target groups

Graduate

#### Type of publication

Monograph

More on [www.springer.com/978-3-319-01732-7](http://www.springer.com/978-3-319-01732-7)

#### Hardcover

2014. XVII, 430 p. 117 illus.  
ISBN 978-3-319-01732-7

**usually dispatched within 3 to 5 business days**

F. Borceux

## A Differential Approach to Geometry

### Geometric Trilogy III

This book presents the classical theory of curves in the plane and three-dimensional space, and the classical theory of surfaces in three-dimensional space. It pays particular attention to the historical development of the theory and the preliminary approaches that support contemporary geometrical notions. It includes a chapter that lists a very wide scope of plane curves and their properties. The book approaches the threshold of algebraic topology, providing an integrated presentation fully accessible to undergraduate-level students. At the end of the 17th century, Newton and Leibniz developed differential calculus, thus making available the very wide range of differentiable[...]

#### Features

This book presents the classical theory of curves in the plane and three-dimensional space, and the classical theory of surfaces in three-dimensional space. It pays particular attention to the historical development of the theory and the preliminary approaches that support contemporary geometrical notions. It includes a chapter that lists a very wide scope of plane curves and their properties. The book [...]

#### Contents

Introduction.- Preface.- 1.The Genesis of Differential Methods.- 2.Plane Curves.- 3.A Museum of Curves.- 4.Skew Curves.- 5.Local Theory of Surfaces.- 6.Towards Riemannian Geometry.- 7.Elements of Global Theory of Surfaces.- Appendices: A.Topology.- B.Differential Equations.- Index.- Bibliography.

#### Fields of interest

Geometry; Differential Geometry; History of Mathematics

#### Target groups

Graduate

#### Type of publication

Monograph

More on [www.springer.com/978-3-319-01735-8](http://www.springer.com/978-3-319-01735-8)

#### Hardcover

2014. XVI, 452 p. 159 illus.  
ISBN 978-3-319-01735-8

**usually dispatched within 3 to 5 business days**

J. Chaskalovic, Institut Jean le Rond d'Alembert, Paris, France

## Mathematical and Numerical Methods for Partial Differential Equations

Applications for Engineering Sciences

This self-tutorial offers a concise yet thorough introduction into the mathematical analysis of approximation methods for partial differential equation. A particular emphasis is put on finite element methods. The unique approach first summarizes and outlines the finite-element mathematics in general and then in the second and major part, formulates problem examples that clearly demonstrate the techniques of functional analysis via numerous and diverse exercises. The solutions of the problems are given directly afterwards. Using this approach, the author motivates and encourages the reader to actively acquire the knowledge of finite-element methods instead of passively absorbing the[...]

### Features

This self-tutorial offers a concise yet thorough introduction into the mathematical analysis of approximation methods for partial differential equation. A particular emphasis is put on finite element methods. The unique approach first summarizes and outlines the finite-element mathematics in general and then, in the second and major part, formulates problem examples that clearly demonstrate the techniques of [...]

### Contents

From the Contents: Introduction to functional analytical methods of partial differential equations.- The finite element method.- Variational Formulations of elliptic boundary problems.- Finite Elements and differential Introduction to functional analytical methods of partial differential equations.- The finite element method.- Variational Formulations of elliptic boundary problems.

### Fields of interest

Numerical Analysis; Continuum Mechanics and Mechanics of Materials; Partial Differential Equations; Appl. Mathematics / Computational Methods of Engineering

### Target groups

Research

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03562-8](http://www.springer.com/978-3-319-03562-8)

### Hardcover

2014. XI, 329 p. 38 illus. (Mathematical Engineering)  
ISBN 978-3-319-03562-8

**Due: January 31, 2014**

P.G. Ciarlet, City University of Hong Kong, Hong Kong, Hong Kong; T. Li, Fudan University, Shanghai, China (P.R.); Y. Maday, Université Pierre et Marie, Paris Cedex 05, France (Eds.)

## Partial Differential Equations: Theory, Control and Approximation

In Honor of the Scientific Heritage of Jacques-Louis Lions

This book collects papers mainly presented at the "International Conference on Partial Differential Equations: Theory, Control and Approximation" (May 28 to June 1, 2012 in Shanghai) in honor of the scientific legacy of the exceptional mathematician Jacques-Louis Lions. The contributors are leading experts from all over the world, including members of the Academies of Sciences in France, the USA and China etc., and their papers cover key fields of research, e.g. partial differential equations, control theory and numerical analysis, that Jacques-Louis Lions created or contributed so much to establishing.

### Features

This book collects papers mainly presented at the "International Conference on Partial Differential Equations: Theory, Control and Approximation" (May 28 to June 1, 2012 in Shanghai) in honor of the scientific legacy of the exceptional mathematician Jacques-Louis Lions. The contributors are leading experts from all over the world, including members of the Academies of Sciences in France, the USA and China [...]

### Contents

Control and Nash Games with Mean Field Effect.- The Rain on Underground Porous Media Part I: Analysis of a Richards Model.- Finite Volume Multilevel Approximation of the Shallow Water Equations.- Non-gaussian Test Models for Prediction and State Estimation with Model Errors.- Asymptotic Analysis in a Gas-Solid Combustion Model with Pattern Formation.- Implicit Sampling, with Application to Data Assimilation.- Periodic Homogenization for Inner Boundary Conditions with Equivalued Surfaces: the Unfolding Approach.- Global Null Controllability of the 1-Dimensional Nonlinear Slow Diffusion[...]

### Fields of interest

Partial Differential Equations; Calculus of Variations and Optimal Control; Optimization; Numerical Analysis

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-642-41400-8](http://www.springer.com/978-3-642-41400-8)

### Hardcover

2014. VIII, 429 p. 73 illus., 43 illus. in color.  
ISBN 978-3-642-41400-8

**usually dispatched within 3 to 5 business days  
December 31, 2013**

A. Contin, Politecnico di Milano, Milano, Italy; P. Paolini, Politecnico di Milano, Milano, Italy; R. Salerno, Politecnico di Milano, Milano, Italy (Eds.)

## Innovative Technologies in Urban Mapping

Built Space and Mental Space

The book presents a comprehensive vision of the impact of ICT on the contemporary city, heritage, public spaces and meta-cities on both urban and metropolitan scales, not only in producing innovative perspectives but also related to newly discovered scientific methods, which can be used to stimulate the emerging reciprocal relations between cities and information technologies. Using the principles established by multi-disciplinary interventions as examples and then expanding on them, this book demonstrates how by using ICT and new devices, metropolises can be organized for a future that preserves the historic nucleus of the city and the environment while preparing the necessary[...]

### Features

The book presents a comprehensive vision of the impact of ICT on the contemporary city, heritage, public spaces and meta-cities on both urban and metropolitan scales, not only in producing innovative perspectives but also related to newly discovered scientific methods, which can be used to stimulate the emerging reciprocal relations between cities and information technologies. Using the principles established [...]

### Contents

Part I The Academic Question of Research.- Part II The institution's claim.- Part III Technologies for communicating architecture and urban spaces.- Part IV Modelling tool software, Processing language and environment methodology, urban simulation and projects evaluation.- Part V Advanced digital design and manufacturing technologies and Architectonic and Urban design project.- Part VI Critical reactions: A bridge between academic core concepts and new PhD researches.

### Fields of interest

Mathematical Software; Computer Systems Organization and Communication Networks; Multimedia Information Systems; User Interfaces and Human Computer Interaction; Cities, Countries, Regions

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-03797-4](http://www.springer.com/978-3-319-03797-4)

### Softcover

2014. Approx. 200 p. (SxI - Springer for Innovation / SxI - Springer per l'Innovazione, Vol. 10)  
ISBN 978-3-319-03797-4

**Due: January 28, 2014**

B. Duplantier, Service de Physique Théorique, Gif-sur-Yvette Cedex, France; S. Nonnenmacher, CEA Saclay, Gif-sur-Yvette, France; V. Rivasseau, Université Paris-Sud, Orsay, France (Eds.)

## Chaos

Poincaré Seminar 2010

This twelfth volume in the Poincaré Seminar Series presents a complete and interdisciplinary perspective on the concept of Chaos, both in classical mechanics in its deterministic version, and in quantum mechanics. This book expounds some of the most wide ranging questions in science, from uncovering the fingerprints of classical chaotic dynamics in quantum systems, to predicting the fate of our own planetary system. Its seven articles are also highly pedagogical, as befits their origin in lectures to a broad scientific audience. Highlights include a complete description by the mathematician É. Ghys of the paradigmatic Lorenz attractor, and of the famed Lorenz butterfly effect as it is [...]

### Features

This twelfth volume in the Poincaré Seminar Series presents a complete and interdisciplinary perspective on the concept of Chaos, both in classical mechanics in its deterministic version, and in quantum mechanics. This book expounds some of the most wide ranging questions in science, from uncovering the fingerprints of classical chaotic dynamics in quantum systems, to predicting the fate of our own [...]

### Contents

Foreword.- 1 Étienne Ghys, The Lorenz Attractor, a Paradigm for Chaos.- 2 Stéphane Fauve, Chaotic Dynamos Generated by Fully Turbulent Flows.- 3 Uzy Smilansky, Discrete Graphs - A Paradigm Model for Quantum Chaos.- 4 Paul Bourgade and Jonathan P. Keating, Quantum Chaos, Random Matrix Theory, and the Riemann  $\zeta$ -function.- 5 Hans-Jürgen Stöckmann, Chaos in Microwave Resonators.- 6 Stéphane Nonnenmacher, Anatomy of Quantum Chaotic Eigenstates.- 7 Jacques Laskar, Is the Solar System Stable?.

### Fields of interest

Dynamical Systems and Ergodic Theory; Number Theory; Quantum Field Theories, String Theory; Statistical Physics, Dynamical Systems and Complexity

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-0348-0696-1](http://www.springer.com/978-3-0348-0696-1)

### Hardcover

2013. XII, 270 p. 100 illus., 61 illus. in color. (Progress in Mathematical Physics, Vol. 66)  
ISBN 978-3-0348-0696-1

usually dispatched within 3 to 5 business days

M. Emmer, Sapienza University of Rome, Rome, Italy (Ed.)

## Imagine Math 3

Between Culture and Mathematics

Imagine mathematics, imagine with the help of mathematics, imagine new worlds, new geometries, new forms. This volume in the series Imagine Math casts light on what is new and interesting in the relationships between mathematics, imagination, and culture. The book opens by examining the connections between modern and contemporary art and mathematics, the contributors including Linda D. Henderson. Two very interesting papers are provided by the architect and engineer Mark Burry, who is in charge of completing the famous "Sagrada Familia" in Barcelona, the incredible vision of Gaudí. Several further papers are devoted to mathematical models and their influence on modern and contemporary [...]

### Features

Imagine mathematics, imagine with the help of mathematics, imagine new worlds, new geometries, new forms. This volume in the series Imagine Math casts light on what is new and interesting in the relationships between mathematics, imagination, and culture. The book opens by examining the connections between modern and contemporary art and mathematics, the contributors including Linda D. Henderson. Two very [...]

### Contents

Science Fiction, Art and the Fourth Dimension.- From Modernity to Immortality: Art and Mathematics in the Twenties.- Geometrical Models and Imaginations.- From Sinisgalli to Hiroshi Sugimoto.- Mathematical Narratives and the Surrealist Tradition.- Anxious Geometries.- Pasta By Design: The New Geometries of Pasta.- Photos, Objects and 3D Reconstructions.- Geometry, Numbers & Diagrams in the New York Art Scene around 1960.- The Islands of Benoit Mandelbrot: On the relationship between abstract reasoning and visual imagination.- Fractals and Nervous System.- New Mathematics and [...]

### Fields of interest

Mathematics in Art and Architecture; Mathematics Education; Popular Science in Mathematics / Natural Science / Technology

### Target groups

Upper undergraduate

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01230-8](http://www.springer.com/978-3-319-01230-8)

### Hardcover

2014. X, 270 p. 50 illus.  
ISBN 978-3-319-01230-8

Due: May 17, 2014

D.G. Figueiredo, D.G. Costa, University of Nevada Las Vegas, Las Vegas, USA (Ed.)

## Djairo G. de Figueiredo - Selected Papers

This volume presents a collection of selected papers by the prominent Brazilian mathematician Djairo G. de Figueiredo, who has made significant contributions in the area of Differential Equations and Analysis. His work has been highly influential as a challenge and inspiration to young mathematicians as well as in development of the general area of analysis in his home country of Brazil. In addition to a large body of research covering a variety of areas including geometry of Banach spaces, monotone operators, nonlinear elliptic problems and variational methods applied to differential equations, de Figueiredo is known for his many monographs and books. Among others, this book offers a [...]

### Features

This volume presents a collection of selected papers by the prominent Brazilian mathematician Djairo G. de Figueiredo, who has made significant contributions in the area of Differential Equations and Analysis. His work has been highly influential as a challenge and inspiration to young mathematicians as well as in development of the general area of analysis in his home country of Brazil. In addition [...]

### Contents

Preface.- A Short Summary of the Scientific Life of Djairo G. de Figueiredo.- 43 Papers by Djairo G. de Figueiredo.- Complete List of Publications by Djairo G. de Figueiredo.- List of D.Sc. Students of Djairo de Figueiredo.- Acknowledgements.

### Fields of interest

Partial Differential Equations; Ordinary Differential Equations; Functional Analysis

### Target groups

Research

### Type of publication

Collected works

More on [www.springer.com/978-3-319-02855-2](http://www.springer.com/978-3-319-02855-2)

### Hardcover

2014. XX, 738 p. 63 illus., 14 illus. in color.  
ISBN 978-3-319-02855-2

Due: February 28, 2014

A. Freed

## Soft Solids

A Primer to the Theoretical Mechanics of Materials

This textbook presents the physical principles pertinent to the mathematical modeling of soft materials used in engineering practice, including both man-made materials and biological tissues. It is intended for seniors and masters-level graduate students in engineering, physics or applied mathematics. It will also be a valuable resource for researchers working in mechanics, biomechanics and other fields where the mechanical response of soft solids is relevant. *Soft Solids: A Primer to the Theoretical Mechanics of Materials* is divided into two parts. Part I introduces the basic concepts needed to give both Eulerian and Lagrangian descriptions of the mechanical response of soft solids.[...]

### Features

This textbook presents the physical principles pertinent to the mathematical modeling of soft materials used in engineering practice, including both man-made materials and biological tissues. It is intended for seniors and masters-level graduate students in engineering, physics, or applied mathematics. It will also be a valuable resource for researchers working in mechanics, biomechanics, and other fields [...]

### Contents

Part I: Continuum  
Fields.- 1 Kinematics.- 2 Deformation.- 3 Strain.- 4 Stress  
II: Constitutive Equations.- 5 Explicit  
Elasticity.- 6 Implicit  
Elasticity.- 7 Viscoelasticity.- Appendices.- A Linear  
Algebra.- B Covariant and Contravariant  
Issues: Configuration Physics.- C Kronecker  
Products.- D General Linear ODE Solver.- E Solver  
for Convolution Integrals.- F Solver for the Mit-  
tag-Leer Function.- Bibliography.- Index.

### Fields of interest

Functional Analysis; Soft and Granular Matter,  
Complex Fluids and Microfluidics; Mathematical  
Applications in the Physical Sciences; Biomaterials

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03550-5](http://www.springer.com/978-3-319-03550-5)

### Hardcover

2014. VIII, 426 p. 57 illus., 1 illus. in color. (Modeling and  
Simulation in Science, Engineering and Technology)  
ISBN 978-3-319-03550-5

**Due: February 28, 2014**

G. Frei, F. Lemmermeyer, P.J. Roquette, Universität Heidelberg,  
Heidelberg, Germany (Eds.)

## Emil Artin and Helmut Hasse

The Correspondence 1923-1958

This volume consists of the English translations of the letters exchanged between Emil Artin to Helmut Hasse written from 1921 until 1958. The letters are accompanied by extensive comments explaining the mathematical background and giving the information needed for understanding these letters. Most letters deal with class field theory and shed a light on the birth of one of its most profound results: Artin's reciprocity law.

### Features

This volume presents English translations of the letters exchanged between Emil Artin and Helmut Hasse written from 1921 to 1958. The letters are accompanied by extensive comments explaining the mathematical background and providing other essential context. Most letters deal with class field theory and shed new light on the birth of one of its most profound results: Artin's reciprocity law.

### Contents

Part I: Introduction to the Correspondence.- 1.  
Introduction.- 2. Emil Artin, his Life and his Work.-  
3. Reminiscing Helmut Hasse.- 4. Reciprocity Laws  
for Power Residues.- 5. Class Field Theory.- 6. Time  
Table.- Part II: The Letters. References.- Name  
Index.- Subject Index.

### Fields of interest

Number Theory; History of Mathematics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-0348-0714-2](http://www.springer.com/978-3-0348-0714-2)

### Hardcover

2014. X, 401 p. 28 illus. (Contributions in Mathematical  
and Computational Sciences, Vol. 5)  
ISBN 978-3-0348-0714-2

**Due: December 31, 2013**

L. Fridman, Universidad Nacional Autonoma De Mexico, Mexico  
City, Mexico; A. Poznyak, Centro de Investigacion y, México City,  
Mexico; F.J. Bejarano Rodriguez

## Robust Output LQ Optimal Control via Integral Sliding Modes

Featuring original research from well-known experts in the field of sliding mode control, this monograph presents new design schemes for implementing LQ control solutions in situations where the output system is the only information provided about the state of the plant. This new design works under the restrictions of matched disturbances without losing its desirable features. On the cutting-edge of optimal control research, Robust Output LQ Optimal Control via Integral Sliding Modes is an excellent resource for both graduate students and professionals involved in linear systems, optimal control, observation of systems with unknown inputs, and automatization. In the theory of optimal[...]

### Features

Featuring original research from well-known experts in the field of sliding mode control, this monograph presents new design schemes for implementing LQ control solutions in situations where the output system is the only information provided about the state of the plant. This new design works under the restrictions of matched disturbances without losing its desirable features. On the cutting-edge of optimal [...]

### Contents

Introduction.- Part I OPTIMAL CONTROL AND  
SLIDING MODE.- 2 Integral Sliding Mode Control.-  
3 Observer Based on ISM.- 4 Output Integral Sliding  
Mode Based Control.- Part II MINI-MAX OUTPUT  
ROBUST LQ CONTROL.- 5 The Robust Maximum  
Principle.- 6 Multimodel and ISM Control.- 7 Multi-  
plant and ISM Output Control.- 8 Fault Detection.-  
9 Stewart Platform.- 10 Magnetic Bearing.- Part IV  
APPENDIXES.- B Min-Max Multimodel LQ Con-  
trol.- Notations.- References.- Index.

### Fields of interest

Systems Theory, Control; Control; Calculus of Vari-  
ations and Optimal Control; Optimization; Appl.  
Mathematics / Computational Methods of Engineer-  
ing; Engineering Design; Vibration, Dynamical Sys-  
tems, Control

### Target groups

Professional/practitioner

### Type of publication

Monograph

More on [www.springer.com/978-0-8176-4961-6](http://www.springer.com/978-0-8176-4961-6)

### Hardcover

2014. XV, 146 p. 40 illus., 34 illus. in color. (Systems &  
Control: Foundations & Applications)  
ISBN 978-0-8176-4961-6

**Due: March 15, 2014**

M. Gorelik, Weizmann Institute of Science, Rehovot, Israel; P. Papi, Sapienza Università di Roma, Roma, Italy (Eds.)

## Advances in Lie Superalgebras

The volume is the outcome of the conference "Lie superalgebras," which was held at the Istituto Nazionale di Alta Matematica, in 2012. The conference gathered many specialists in the subject, and the talks held provided comprehensive insights into the newest trends in research on Lie superalgebras (and related topics like vertex algebras, representation theory and supergeometry). The book contains contributions of many leading experts in the field and provides a complete account of the newest trends in research on Lie Superalgebras.

### Features

The volume is the outcome of the conference "Lie superalgebras," which was held at the Istituto Nazionale di Alta Matematica, in 2012. The conference gathered many specialists in the subject, and the talks held provided comprehensive insights into the newest trends in research on Lie superalgebras (and related topics like vertex algebras, representation theory and supergeometry). The book contains [...]

### Contents

1 A. Alldridge, Z. Shaikh: Superbosonisation, Riesz superdistributions, and highest weight modules.- 2 K. Coulembier: Homological algebra for  $\mathfrak{osp}(1|2n)$ .- 3 A. D'Andrea: Finiteness and orbifold vertex operator algebras.- 4 A. De Sole: On classical finite and affine  $W$ -algebras.- 5 M. Gorelik, D. Grantcharov:  $Q$ -type Lie superalgebras.- 6 C. Hoyt: Weight modules for the Lie superalgebra  $D(2,1,a)$ .- 7 R. Fiorese, S. Kwok: On SUSY curves.- 8 V. G. Kac, P. Moseneder Frajria, P. Papi: Dirac operators and the Very Strange Formula for Lie superalgebras.- 9 V. Mazorchuk: Parabolic category  $\mathcal{O}$  for [...]

### Fields of interest

Algebra; Topology

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-02951-1](http://www.springer.com/978-3-319-02951-1)

### Hardcover

2014. VIII, 280 p. (Springer INdAM Series, Vol. 7)  
ISBN 978-3-319-02951-1

**Due: December 31, 2013**

V. Gupta, Netaji Subhas Institute of Technology, New Delhi, India; R.P. Agarwal, Texas A&M University - Kingsville, Kingsville, USA

## Convergence Estimates in Approximation Theory

The study of linear positive operators is an area of mathematical studies with significant relevance to studies of computer-aided geometric design, numerical analysis, and differential equations. This book focuses on the convergence of linear positive operators in real and complex domains. The theoretical aspects of these operators have been an active area of research over the past few decades. In this volume, authors Gupta and Agarwal explore new and more efficient methods of applying this research to studies in Optimization and Analysis. The text will be of interest to upper-level students seeking an introduction to the field and to researchers developing innovative approaches.

### Features

The study of linear positive operators is an area of mathematical studies with significant relevance to studies of computer-aided geometric design, numerical analysis, and differential equations. This book focuses on the convergence of linear positive operators in real and complex domains. The theoretical aspects of these operators have been an active area of research over the past few decades. In this volume, [...]

### Contents

1. Preliminaries.- 2. Approximation by Certain Operators.- 3. Complete Asymptotic Expansion.- 4. Linear and Iterative Combinations.- 5. Better Approximation.- 6. Complex Operators in Compact Disks.- 7. Rate of Convergence for Functions of BV.- 8. Convergence for BV/Bounded Functions on Bezier Variants.- 9. Some More Results on Rate of Convergence.- 10. Rate of Convergence in Simultaneous Approximation.- 11. Future Scope and Open Problems.

### Fields of interest

Approximations and Expansions; Operator Theory; Analysis; Partial Differential Equations

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02764-7](http://www.springer.com/978-3-319-02764-7)

### Hardcover

2014. VIII, 300 p.  
ISBN 978-3-319-02764-7

**Due: January 31, 2014**

W. Hackbusch, MPI für Mathematik in den, Leipzig, Germany

## The Concept of Stability in Numerical Mathematics

In this book, the author compares the meaning of stability in different subfields of numerical mathematics. Concept of Stability in numerical mathematics opens by examining the stability of finite algorithms. A more precise definition of stability holds for quadrature and interpolation methods, which the following chapters focus on. The discussion then progresses to the numerical treatment of ordinary differential equations (ODEs). While one-step methods for ODEs are always stable, this is not the case for hyperbolic or parabolic differential equations, which are investigated next. The final chapters discuss stability for discretisations of elliptic differential equations and integral [...]

### Features

In this book, the author compares the meaning of stability in different subfields of numerical mathematics. Concept of Stability in numerical mathematics opens by examining the stability of finite algorithms. A more precise definition of stability holds for quadrature and interpolation methods, which the following chapters focus on. The discussion then progresses to the numerical treatment of [...]

### Contents

Preface.- Introduction.- Stability of Finite Algorithms.- Quadrature.- Interpolation.- Ordinary Differential Equations.- Instationary Partial Difference Equations.- Stability for Discretisations of Elliptic Problems.- Stability for Discretisations of Integral Equations.- Index.

### Fields of interest

Numerical Analysis; Partial Differential Equations; Integral Equations

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-39385-3](http://www.springer.com/978-3-642-39385-3)

### Hardcover

2014. X, 196 p. (Springer Series in Computational Mathematics, Vol. 45)

ISBN 978-3-642-39385-3

**Due: February 28, 2014**

G.T. Herman, The Graduate Center, New York, USA; J. Frank, Columbia University, New York, USA (Eds.)

## Computational Methods for Three-Dimensional Microscopy Reconstruction

Approaches to the recovery of three-dimensional information on a biological object, which are often formulated or implemented initially in an intuitive way, are concisely described here based on physical models of the object and the image-formation process. Both three-dimensional electron microscopy and X-ray tomography can be captured in the same mathematical framework, leading to closely-related computational approaches, but the methodologies differ in detail and hence pose different challenges. The editors of this volume, Gabor T. Herman and Joachim Frank, are experts in the respective methodologies and present research at the forefront of biological imaging and structural[...]

### Features

Approaches to the recovery of three-dimensional information on a biological object, which are often formulated or implemented initially in an intuitive way, are concisely described here based on physical models of the object and the image-formation process. Both three-dimensional electron microscopy and X-ray tomography can be captured in the same mathematical framework, leading to closely-related [...]

### Contents

1 Introduction.- 2 Interchanging geometry conventions in 3DEM: Mathematical context for the development of standards.- 3 Fully automated particle selection and verification in single-particle cryo-EM.- 4 Quantitative analysis in iterative classification schemes for cryo-EM applications.- 5 High-resolution cryo-EM structure of the Trypanosoma brucei ribosome of a case study.- 6 Computational methods for electron tomography of influenza virus.- 7 Reconstruction from microscopic projections with defocus-gradient and attenuation effects.- 8 Soft X-ray tomography imaging for biological[...]

### Fields of interest

Physiological, Cellular and Medical Topics; Computational Biology / Bioinformatics; Bioinformatics; Visualization; Mathematical Modeling and Industrial Mathematics; Manifolds and Cell Complexes (incl. Diff. Topology)

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-1-4614-9520-8](http://www.springer.com/978-1-4614-9520-8)

### Hardcover

2014. XIV, 260 p. 111 illus., 59 illus. in color. (Applied and Numerical Harmonic Analysis)  
ISBN 978-1-4614-9520-8

Due: December 31, 2013

F. Hiai, Tohoku University, Sendai, Japan; D. Petz, Budapest University of Technology, Budapest, Hungary

## Introduction to Matrix Analysis and Applications

Matrices can be studied in different ways. They are a linear algebraic structure and have a topological/analytical aspect (for example, the normed space of matrices) and they also carry an order structure that is induced by positive semidefinite matrices. The interplay of these closely related structures is an essential feature of matrix analysis. This book explains these aspects of matrix analysis from a functional analysis point of view. After an introduction to matrices and functional analysis, it covers more advanced topics such as matrix monotone functions, matrix means, majorization and entropies. Several applications to quantum information are also included. Introduction to [...]

### Features

Matrices can be studied in different ways. They are a linear algebraic structure and have a topological/analytical aspect (for example, the normed space of matrices) and they also carry an order structure that is induced by positive semidefinite matrices. The interplay of these closely related structures is an essential feature of matrix analysis. This book explains these aspects of matrix analysis [...]

### Contents

Fundamentals of operators and matrices.- Mappings and algebras.- Functional calculus and derivation.- Matrix monotone functions and convexity.- Matrix means and inequalities.- Majorization and singular values.- Some applications.

### Fields of interest

Linear and Multilinear Algebras, Matrix Theory

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-04149-0](http://www.springer.com/978-3-319-04149-0)

### Softcover

Jointly published with HBA, New Delhi, India  
2014. Approx. 345 p. 1 illus. (Universitext)  
ISBN 978-3-319-04149-0

Due: July 2014

N. Hritonenko, Prairie View A&M University, Prairie View, USA; Y. Yatsenko, Houston Baptist University, Houston, USA

## Mathematical Modeling in Economics, Ecology and the Environment

Updated to textbook form by popular demand, this second edition discusses diverse mathematical models used in economics, ecology, and the environmental sciences with emphasis on control and optimization. It is intended for graduate and upper-undergraduate course use, however, applied mathematicians, industry practitioners, and a vast number of interdisciplinary academics will find the presentation highly useful. Core topics of this text are: Economic growth and technological development- Population dynamics and human impact on the environment- Resource extraction and scarcity- Air and water contamination- Rational management of the economy and environment- Climate change and global[...]

### Features

Updated to textbook form by popular demand, this second edition discusses diverse mathematical models used in economics, ecology, and the environmental sciences with emphasis on control and optimization. It is intended for graduate and upper-undergraduate course use, however, applied mathematicians, industry practitioners, and a vast number of interdisciplinary academics will find the presentation highly [...]

### Contents

Preface.- 1. Introduction: Principles and Tools of Mathematical Modeling. Part I. Models of Controlled Economic Systems.- 2. Aggregate Models of Economic Dynamics.- 3. Modeling of Technological Change.- 4. Models with Heterogeneous Capital.- 5. Optimization of Economic Renovation.- Part II. Models in Ecology and Environment.- 6. Mathematical Models of Biological Populations.- 7. Modeling and Control of Biological Communities.- 8. Models of Air Pollution Propagation.- 9. Models of Water Pollution Propagation.- Part III. Models of Economic-Environmental Systems.- 10. Modeling of [...]

### Fields of interest

Mathematical Modeling and Industrial Mathematics; Business & Economics (general); Math. Appl. in Environmental Science

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4614-9310-5](http://www.springer.com/978-1-4614-9310-5)

### Hardcover

2013. XII, 242 p. 34 illus., 8 illus. in color. (Springer Optimization and Its Applications, Vol. 88)  
ISBN 978-1-4614-9310-5

Due: February 28, 2014

M. Joswig, TU Berlin, Berlin, Germany

## Essentials of Tropical Combinatorics

The goal of this book is to explain, at the graduate student level, how tropical geometry can be accessed via geometric combinatorics. This way the book offers a viable path to a topic of very active research. At the same time the reader learns how a number of seemingly unrelated combinatorial results fall into place, once viewed through the "tropical lens". No attempt is made to cover the entire field of tropical geometry, which has been evolving too rapidly anyway to be covered by a book so small. The book's central concept is the "tropical convexity" introduced by Develin and Sturmfels, which is a version of "tropical linear algebra". This is used in the book as a general language[...]

### Features

The goal of this book is to explain, at the graduate student level, how tropical geometry can be accessed via geometric combinatorics. This way the book offers a viable path to a topic of very active research. At the same time the reader learns how a number of seemingly unrelated combinatorial results fall into place, once viewed through the "tropical lens". No attempt is made to cover the entire field of [...]

### Contents

Preface.- Contents.- Introduction.- 1 Tropical Arithmetic and Polynomials.- 2 Puiseux Series and Tropicalization.- 3 Graph Algorithms and the Tropical Determinant.- 4 Tropical Polytopes.- 5 Products of Simplices.- 6 Tropical Halfspaces.- 7 Polytopes.- 8 Resolutions of Monomial Ideals.- 9 Tropical Linear Spaces.- 10 Matroid Subdivisions of Hyper-simplices.- 11 Buildings.- 12 Using polymake.- Appendix A Ordinary Convex Polytopes.- Appendix B Matroids and Oriented Matroids.- Appendix C Gröbner Bases.- Bibliography.- Index

### Fields of interest

Algebraic Geometry; Convex and Discrete Geometry; Field Theory and Polynomials; Operations Research, Mathematical Programming

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4419-8365-7](http://www.springer.com/978-1-4419-8365-7)

### Hardcover

2014. XX, 180 p. 50 illus.  
ISBN 978-1-4419-8365-7

Due: **March 31, 2014**

R. Kress, Georg-August-Universität Göttingen, Göttingen, Germany

## Linear Integral Equations

This book combines theory, applications, and numerical methods, and covers each of these fields with the same weight. In order to make the book accessible to mathematicians, physicists, and engineers alike, the author has made it as self-contained as possible, requiring only a solid foundation in differential and integral calculus. The functional analysis which is necessary for an adequate treatment of the theory and the numerical solution of integral equations is developed within the book itself. Problems are included at the end of each chapter. For this third edition in order to make the introduction to the basic functional analytic tools more complete the Hahn-Banach extension[...]

### Features

This book combines theory, applications, and numerical methods, and covers each of these fields with the same weight. In order to make the book accessible to mathematicians, physicists, and engineers alike, the author has made it as self-contained as possible, requiring only a solid foundation in differential and integral calculus. The functional analysis which is necessary for an adequate treatment of the [...]

### Contents

Normed Spaces.- Bounded and Compact Operators.- Riesz Theory.- Dual Systems and Fredholm Alternative.- Regularization in Dual Systems.- Potential Theory.- Singular Integral Equations.- Sobolev Spaces.- The Heat Equation.- Operator Approximations.- Degenerate Kernel Approximation.- Quadrature Methods.- Projection Methods.- Iterative Solution and Stability.- Equations of the First Kind.- Tikhonov Regularization.- Regularization by Discretization.- Inverse Boundary Value Problems.- References.- Index.

### Fields of interest

Analysis; Numerical Analysis; Measure and Integration; Signal, Image and Speech Processing

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-1-4614-9592-5](http://www.springer.com/978-1-4614-9592-5)

### Hardcover

2014. XVI, 412 p. 1 illus. (Applied Mathematical Sciences, Vol. 82)  
ISBN 978-1-4614-9592-5

usually dispatched within 3 to 5 business days  
**December 31, 2013**

W.E. Langlois, San Jose City College, San Jose, USA; M. Deville, EPFL STI DO, Lausanne, Switzerland

## Slow Viscous Flow

Leonardo wrote, 'Mechanics is the paradise of the mathematical sciences, because by means of it one comes to the fruits of mathematics'; replace 'Mechanics' by 'Fluid mechanics' and here we are." - from the Preface to the Second Edition Although the exponential growth of computer power has advanced the importance of simulations and visualization tools for elaborating new models, designs and technologies, the discipline of fluid mechanics is still large, and turbulence in flows remains a challenging problem in classical physics. Like its predecessor, the revised and expanded Second Edition of this book addresses the basic principles of fluid mechanics and solves fluid flow problems[...]

### Features

Leonardo wrote, 'Mechanics is the paradise of the mathematical sciences, because by means of it one comes to the fruits of mathematics'; replace 'Mechanics' by 'Fluid mechanics' and here we are." - from the Preface to the Second Edition Although the exponential growth of computer power has advanced the importance of simulations and visualization tools for elaborating new models, designs and [...]

### Contents

Cartesian Tensors.- The Equations of Viscous Flow.- Curvilinear Coordinates.- Exact Solutions to the Equations of Viscous Flow.- Pipe Flow.- Flow Past a Sphere.- Plane Flow.- Rotary Flow.- Lubrication Theory.- Introduction to the Finite Element Method.- Variational Principle, Weak Formulation and Finite Elements.- Stokes Ow and Corner Eddies.- References.- Index.

### Fields of interest

Approximations and Expansions; Applications of Mathematics; Computational Mathematics and Numerical Analysis; Computational Science and Engineering; Theoretical, Mathematical and Computational Physics

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03834-6](http://www.springer.com/978-3-319-03834-6)

### Hardcover

2014. Approx. 320 p. 70 illus., 10 illus. in color.  
ISBN 978-3-319-03834-6

Due: **February 28, 2014**

R. Lupacchini, University of Bologna, Bologna, Italy; A. Angelini, University of Bologna, Bologna, Italy (Eds.)

## The Art of Science

From Perspective Drawing to Quantum Randomness

In addition to linear perspective, complex numbers and probability were notable discoveries of the Renaissance. While the power of perspective, which transformed Renaissance art, was quickly recognized, the scientific establishment treated both complex numbers and probability with much suspicion. It was only in the twentieth century that quantum theory showed how probability might be molded from complex numbers and defined the notion of "complex probability amplitude". From a theoretical point of view, however, the space opened to painting by linear perspective and that opened to science by complex numbers share significant characteristics. The Art of Science explores this shared [...]

### Features

In addition to linear perspective, complex numbers and probability were notable discoveries of the Renaissance. While the power of perspective, which transformed Renaissance art, was quickly recognized, the scientific establishment treated both complex numbers and probability with much suspicion. It was only in the twentieth century that quantum theory showed how probability might be molded from complex [...]

### Contents

From Perspective Drawing to the Eighth Dimension.- Seeing Reality in Perspective. The 'Art of Optics' and the 'Science of Painting.- The Role of Perspective in the Transformation of European Culture.- All Done by Mirrors. Symmetries, Quaternions, Spinors, and Clifford Algebras.- Artists & Gamblers on the Way to Quantum Physics.- Radices sophisticae, racines imaginaires: the Origins of Complex Numbers in the Late Renaissance.

### Fields of interest

Mathematics in Art and Architecture; History and Philosophical Foundations of Physics; History of Mathematics; Cultural Heritage; Philosophy of Science; Quantum Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02110-2](http://www.springer.com/978-3-319-02110-2)

### Hardcover

2014. X, 190 p. 80 illus.  
ISBN 978-3-319-02110-2

**Due: April 11, 2014**

Y. Orlov, L.T. Aguilar

## Advanced H $\infty$ Control

Towards Nonsmooth Theory and Applications

This compact monograph is focused on disturbance attenuation in nonsmooth dynamic systems, developing an H $\infty$  approach in the nonsmooth setting. Similar to the standard nonlinear H $\infty$  approach, the proposed nonsmooth design guarantees both the internal asymptotic stability of a nominal closed-loop system and the dissipativity inequality, which states that the size of an error signal is uniformly bounded with respect to the worst-case size of an external disturbance signal. This guarantee is achieved by constructing an energy or storage function that satisfies the dissipativity inequality and is then utilized as a Lyapunov function to ensure the internal stability requirements. Advanced H $\infty$  [...]

### Features

This compact monograph is focused on disturbance attenuation in nonsmooth dynamic systems, developing an H $\infty$  approach in the nonsmooth setting. Similar to the standard nonlinear H $\infty$  approach, the proposed nonsmooth design guarantees both the internal asymptotic stability of a nominal closed-loop system and the dissipativity inequality, which states that the [...]

### Contents

Part I Introduction.- 1 Linear H1 control of autonomous systems.- 2 LMI approach in infinite dimensional setting.- 3 Linear H1 control of time-varying systems.- 4 Nonlinear H1 control.- Part II Nonsmooth H1 Control.- 5 Elements of nonsmooth analysis.- 6 Synthesis of nonsmooth systems.- 7 LMI-based H1 boundary control of nonsmooth parabolic and hyperbolic systems.- Part III Benchmark Applications.- 8 Advanced H1 synthesis of fully actuated robot manipulators with frictional joints.- 9 Nonsmooth H1 synthesis in the presence of backlash.- 10 H1 generation of periodic motion.- 11 LMI-based [...]

### Fields of interest

Systems Theory, Control; Vibration, Dynamical Systems, Control; Dynamical Systems and Ergodic Theory; Partial Differential Equations; Appl. Mathematics / Computational Methods of Engineering; Applications of Mathematics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4939-0291-0](http://www.springer.com/978-1-4939-0291-0)

### Hardcover

2014. XI, 231 p. 39 illus., 12 illus. in color. (Systems & Control: Foundations & Applications)  
ISBN 978-1-4939-0291-0

**Due: February 28, 2014**

M.A. Pons

## Real Analysis for the Undergraduate

With an Invitation to Functional Analysis

This undergraduate textbook introduces students to the basics of real analysis, provides an introduction to more advanced topics including measure theory and Lebesgue integration, and offers an invitation to functional analysis. While these advanced topics are not typically encountered until graduate study, the text is designed for the beginner. The author's engaging style makes advanced topics approachable without sacrificing rigor. The text also consistently encourages the reader to pick up a pencil and take an active part in the learning process. Key features include: - examples to reinforce theory; - thorough explanations preceding definitions, theorems and formal proofs; - [...]

### Features

This undergraduate textbook introduces students to the basics of real analysis, provides an introduction to more advanced topics including measure theory and Lebesgue integration, and offers an invitation to functional analysis. While these advanced topics are not typically encountered until graduate study, the text is designed for the beginner. The author's engaging style makes advanced topics approachable [...]

### Contents

The Real Numbers.- Sequences in R.- Numerical Series.- Continuity.- The Derivative.- Sequence and Series of Functions.- The Riemann Integral.- Lebesgue Measure on R.- Lebesgue Integration.

### Fields of interest

Analysis; Real Functions; Functional Analysis

### Target groups

Upper undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-1-4614-9637-3](http://www.springer.com/978-1-4614-9637-3)

### Hardcover

2014. XX, 398 p. 43 illus.  
ISBN 978-1-4614-9637-3

**Due: February 28, 2014**

H.J. Prömel, TU Darmstadt, Darmstadt, Germany

## Ramsey Theory for Discrete Structures

This monograph covers some of the most important developments in Ramsey theory from its beginnings in the early 20th century via its many breakthroughs to recent important developments in the early 21st century. The book first presents a detailed discussion of the roots of Ramsey theory before offering a thorough discussion of the role of parameter sets. It presents several examples of structures that can be interpreted in terms of parameter sets and features the most fundamental Ramsey-type results for parameter sets: Hales-Jewett's theorem and Graham-Rothschild's Ramsey theorem as well as their canonical versions and several applications. Next, the book steps back to the most basic[...]

### Features

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### Contents

Foreword by Angelika Steger.- Preface.- Conventions.- Part I Roots of Ramsey Theory: 1.1 Ramsey's theorem.- 1.2 From Hilbert's cube lemma to Rado's thesis.- Part II A Starting Point of Ramsey Theory: Parameter Sets: 2.1 Definitions and basic examples.- 2.2 Hales-Jewett's theorem.- 2.3 Graham-Rothschild's theorem.- 2.4 Canonical partitions.- Part III Back to the Roots: Sets: 3.1 Ramsey numbers.- 3.2 Rapidly growing Ramsey functions.- 3.3 Product theorems.- 3.4 A quasi Ramsey theorem.- 3.5 Partition relations for cardinal numbers.- Part IV Graphs and Hypergraphs: 4.1 Finite graphs.- 4.2[...]

### Fields of interest

Combinatorics; Discrete Mathematics; Discrete Mathematics in Computer Science

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-01314-5](http://www.springer.com/978-3-319-01314-5)

### Hardcover

2013. XVI, 232 p. 13 illus.  
ISBN 978-3-319-01314-5

usually dispatched within 3 to 5 business days  
December 27, 2013

F. Pukelsheim, Universität Augsburg, Augsburg, Germany

## Proportional Representation

### Apportionment Methods and Their Applications

The book offers a rigorous description of the procedures that proportional representation systems use to translate vote counts into seat numbers. Since the methodological analysis is guided by practical needs, plenty of empirical instances are provided and reviewed to motivate the development, and to illustrate the results. Concrete examples, like the 2009 elections to the European Parliament in each of the 27 Member States and the 2013 election to the German Bundestag, are analyzed in full detail. The level of mathematical exposition, as well as the relation to political sciences and constitutional jurisprudence makes this book suitable for special graduate courses and seminars.

### Features

The book offers a rigorous description of the procedures that proportional representation systems use to translate vote counts into seat numbers. Since the methodological analysis is guided by practical needs, plenty of empirical instances are provided and reviewed to motivate the development, and to illustrate the results. Concrete examples, like the 2009 elections to the European Parliament in each of the 27 [...]

### Contents

Exposing Methods: The 2009 European Parliament Elections.- Imposing Constitutionality: The 2009 Bundestag Election.- From Reals to Integers: Rounding Functions, Rounding Rules.- Divisor Methods of Apportionment: Divide and Round.- Quota Methods of Apportionment: Divide and Rank.- Targeting the House Size: Discrepancy Distribution.- Favoring Some at the Expense of Others: Seat Biases.- Preferring Stronger Parties to Weaker Parties: Majorization.- Securing System Consistency: Coherence and Paradoxes.- Appraising Electoral Equality: Goodness-of-Fit Criteria.- Tracing Peculiarities: Vote[...]

### Fields of interest

Game Theory, Economics, Social and Behavioral Sciences; Statistics for Social Science, Behavioral Science, Education, Public Policy, and Law; Political Science, general

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03855-1](http://www.springer.com/978-3-319-03855-1)

### Softcover

2014. X, 250 p.  
ISBN 978-3-319-03855-1

Due: January 31, 2014

A. Quarteroni, École Polytechnique Fédérale, Lausanne, Switzerland

## Numerical Models for Differential Problems

In this text, we introduce the basic concepts for the numerical modelling of partial differential equations. We consider the classical elliptic, parabolic and hyperbolic linear equations, but also the diffusion, transport, and Navier-Stokes equations, as well as equations representing conservation laws, saddle-point problems and optimal control problems. Furthermore, we provide numerous physical examples which underline such equations. We then analyze numerical solution methods based on finite elements, finite differences, finite volumes, spectral methods and domain decomposition methods, and reduced basis methods. In particular, we discuss the algorithmic and computer implementation[...]

### Features

In this text, we introduce the basic concepts for the numerical modelling of partial differential equations. We consider the classical elliptic, parabolic and hyperbolic linear equations, but also the diffusion, transport, and Navier-Stokes equations, as well as equations representing conservation laws, saddle-point problems and optimal control problems. Furthermore, we provide numerous physical examples which [...]

### Contents

1 A brief survey of partial differential equations.- 2 Elements of functional analysis.- 3 Elliptic equations.- 4 The Galerkin finite element method for elliptic problems.- 5 Parabolic equations.- 6 Generation of 1D and 2D grids.- 7 Algorithms for the solution of linear systems.- 8 Elements of finite element programming.- 9 The finite volume method.- 10 Spectral methods.- 11 Discontinuous element methods (DG and mortar).- 12 Diffusion-transport-reaction equations.- 13 Finite differences for hyperbolic equations.- 14 Finite elements and spectral methods for hyperbolic equations.- 15[...]

### Fields of interest

Mathematics (general); Analysis; Numerical Analysis; Mathematical Modeling and Industrial Mathematics; Applications of Mathematics; Computational Mathematics and Numerical Analysis

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-88-470-5521-6](http://www.springer.com/978-88-470-5521-6)

### Hardcover

2014. XVIII, 656 p. (MS&A, Vol. 8)  
ISBN 978-88-470-5521-6

Due: January 28, 2014

S. Reich, Technion-Israel Institute of Technology, Haifa, Israel; A.J. Zaslavski, Technion- Israel Institute of Technology, Haifa, Israel

## Genericity in Nonlinear Analysis

This book presents an extensive collection of state-of-the-art results and references in nonlinear functional analysis demonstrating how the generic approach proves to be very useful in solving many interesting and important problems. Nonlinear analysis plays an ever-increasing role in theoretical and applied mathematics, as well as in many other areas of science such as engineering, statistics, computer science, economics, finance, and medicine. The text may be used as supplementary material for graduate courses in nonlinear functional analysis, optimization theory and approximation theory, and is a treasure trove for instructors, researchers, and practitioners in mathematics and in [...]

### Features

This book presents an extensive collection of state-of-the-art results and references in nonlinear functional analysis demonstrating how the generic approach proves to be very useful in solving many interesting and important problems. Nonlinear analysis plays an ever-increasing role in theoretical and applied mathematics, as well as in many other areas of science such as engineering, statistics, computer [...]

### Contents

Preface.- 1. Introduction.- 2. Fixed Point Results and Convergence of Powers of Operators.- 3. Contractive Mappings.- 4. Dynamical Systems with Convex Lyapunov Functions.- 5. Relatively Nonexpansive Operators with Respect to Bregman Distances.- 6. Infinite Products.- 7. Best Approximation.- 8. Descent Methods.- 9. Set-Valued Mappings.- 10. Minimal Configurations in the Aubry-Mather Theory.- References.- Index.

### Fields of interest

Functional Analysis; Operator Theory; Calculus of Variations and Optimal Control; Optimization

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9532-1](http://www.springer.com/978-1-4614-9532-1)

### Hardcover

2014. XIII, 520 p. (Developments in Mathematics, Vol. 34)

ISBN 978-1-4614-9532-1

usually dispatched within 3 to 5 business days

E. Salinelli, Università degli Studi del, Novara, Italy; F. Tomarelli, Politecnico di Milano, Milano, Italy

## Discrete Dynamical Models

This book provides an introduction to the analysis of discrete dynamical systems. The content is presented by an unitary approach that blends the perspective of mathematical modeling together with the ones of several discipline as Mathematical Analysis, Linear Algebra, Numerical Analysis, Systems Theory and Probability. After a preliminary discussion of several models, the main tools for the study of linear and non-linear scalar dynamical systems are presented, paying particular attention to the stability analysis. Linear difference equations are studied in detail and an elementary introduction of Z and Discrete Fourier Transform is presented. A whole chapter is devoted to the study [...]

### Features

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### Contents

1 Recursive phenomena and difference equations.- 2 Linear difference equations.- 3 Discrete dynamical systems: one-step scalar equations.- 4 Complex behavior of nonlinear dynamical systems: bifurcations and chaos.- 5 Discrete dynamical systems: vector equations.- 6 Markov chains.- 7 Matrix.- 8 Solutions.

### Fields of interest

Dynamical Systems and Ergodic Theory; Difference and Functional Equations; Linear and Multilinear Algebras, Matrix Theory; Applications of Mathematics; Discrete Mathematics

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-02290-1](http://www.springer.com/978-3-319-02290-1)

### Softcover

2014. XVI, 388 p. (La Matematica per il 3+2, Vol. 76)

ISBN 978-3-319-02290-1

Due: December 31, 2013

M.E. Schmidt

## Integrating Routing Decisions in Public Transportation Problems

This book treats three planning problems arising in public railway transportation planning: line planning, timetabling, and delay management, with the objective to minimize passengers' travel time. While many optimization approaches simplify these problems by assuming that passengers' route choice is independent of the solution, this book focuses on models which take into account that passengers will adapt their travel route to the implemented planning solution. That is, a planning solution and passengers' routes are determined and evaluated simultaneously. This work is technically deep, with insightful finding regarding complexity and algorithmic approaches to public transportation [...]

### Features

This book treats three planning problems arising in public railway transportation planning: line planning, timetabling, and delay management, with the objective to minimize passengers' travel time. While many optimization approaches simplify these problems by assuming that passengers' route choice is independent of the solution, this book focuses on models which take into account that passengers will adapt [...]

### Contents

1. Introduction.- 2. Line Planning.- 3. Timetabling.- 4. Delay Management.- 5. An Iterative Solution Approach for General Network Problems with Routing.- 6. Conclusions and Outlook.- Frequently Used Notation.- References.- Index.

### Fields of interest

Operations Research, Mathematical Programming; Civil Engineering; Algorithm Analysis and Problem Complexity

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9565-9](http://www.springer.com/978-1-4614-9565-9)

### Hardcover

2014. IX, 227 p. 23 illus. (Springer Optimization and Its Applications, Vol. 89)

ISBN 978-1-4614-9565-9

Due: January 31, 2014

R. Sentis, Université Pierre-et-Marie-Curie, Paris, France

## Mathematical Models and Methods for Plasma Physics, Volume 1

### Fluid Models

This monograph is dedicated to the derivation and analysis of fluid models occurring in plasma physics. It focuses on models involving quasi-neutrality approximation, problems related to laser propagation in a plasma, and coupling plasma waves and electromagnetic waves. Applied mathematicians will find a stimulating introduction to the world of plasma physics and a few open problems that are mathematically rich. Physicists who may be overwhelmed by the abundance of models and uncertain of their underlying assumptions will find basic mathematical properties of the related systems of partial differential equations. A planned second volume will be devoted to kinetic models. First and [...]

### Features

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### Contents

Chapter 1. Introduction. Some Plasma characteristic quantities.- Chapter 2. Quasi-neutrality, Magneto-hydrodynamics.- Chapter 3. Laser propagation. Coupling with ion acoustic waves.- Chapter 4. Langmuir waves and Zakharov equations.- Chapter 5. Coupling electron waves and laser waves.- Chapter 6. Models with several species.- Appendix.- Bibliography.- Index.

### Fields of interest

Mathematical Applications in the Physical Sciences; Plasma Physics; Mathematical Methods in Physics; Partial Differential Equations

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03803-2](http://www.springer.com/978-3-319-03803-2)

### Hardcover

2014. X, 200 p. 15 illus., 10 illus. in color. (Modeling and Simulation in Science, Engineering and Technology) ISBN 978-3-319-03803-2

Due: February 28, 2014

J. Sesiano, Ecole polytechnique fédérale, Lausanne, Switzerland

## Liber Mahameleth

The Liber mahameleth is a work in Latin written in the mid-12th century based (mainly) on Arabic sources from Islamic Spain. It is now our principal source on mathematics in Islamic Spain at that time; There are few extant Arabic texts and no one is as complete as the LM. It is also the second largest mathematical work from the Latin Middle Ages (the other is by Fibonacci, some 50 years later). Since the three main manuscripts preserving it are incomplete and there are many scribal errors, a reliable Latin text has been established, which reports (in notes) the various readings of the manuscripts and the errors in them. This is how a so-called critical edition is made. This edition of [...]

### Features

The Liber mahameleth is a work in Latin written in the mid-12th century based (mainly) on Arabic sources from Islamic Spain. It is now our principal source on mathematics in Islamic Spain at that time; There are few extant Arabic texts and no one is as complete as the LM. It is also the second largest mathematical work from the Latin Middle Ages (the other is by Fibonacci, some 50 years later). Since [...]

### Contents

Part I.- 1. The rebirth of mathematics in medieval Europe.- 2. The Liber mahameleth.- 3. Manuscripts of the Liber mahameleth.- 4. Transmission of the Liber mahameleth.- 5. Mathematics in the Liber mahameleth.- 6. The edited Latin text.- Part II.- Translation.- Beginning of the Book (on mahameleth.- A-I. on Numbers.- A-II. on the Premises necessary for practical arithmetic.- A-III. on Multiplication.- A-IV. on Division.- A-V. on the Multiplication of fractions.- A-VI. on the Addition of fractions to fractions.- A-VII. on Subtracting.- A-VIII. on the Division of fractions, with or [...]

### Fields of interest

History of Mathematics; Algebra; Sequences, Series, Summability; Geometry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03939-8](http://www.springer.com/978-3-319-03939-8)

### Hardcover

2014. XCVIII, 1738 p. 465 illus. (Sources and Studies in the History of Mathematics and Physical Sciences) ISBN 978-3-319-03939-8

Due: January 29, 2014

X. Tolsa, Universitat Autònoma de Barcelona, Bellaterra (Cerdanyola), Spain

## Analytic Capacity, the Cauchy Transform, and Non-homogeneous Calderón–Zygmund Theory

This book studies some of the groundbreaking advances that have been made regarding analytic capacity and its relationship to rectifiability in the decade 1995–2005. The Cauchy transform plays a fundamental role in this area and is accordingly one of the main subjects covered. Another important topic, which may be of independent interest for many analysts, is the so-called non-homogeneous Calderón–Zygmund theory, the development of which has been largely motivated by the problems arising in connection with analytic capacity. The Painlevé problem, which was first posed around 1900, consists in finding a description of the removable singularities for bounded analytic functions in metric [...]

### Features

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### Contents

Introduction.- Basic notation.- Chapter 1. Analytic capacity.- Chapter 2. Basic Calderón–Zygmund theory with non doubling measures.- Chapter 3. The Cauchy transform and Menger curvature.- Chapter 4. The capacity  $\gamma_+$ - Chapter 5. A Tb theorem of Nazarov, Treil and Volberg.- Chapter 6. The comparability between  $\gamma$  and  $\gamma_+$ , and the semiadditivity of analytic capacity.- Chapter 7. Curvature and rectifiability.- Chapter 8. Principal values for the Cauchy transform and rectifiability.- Chapter 9. RBMO( $\mu$ ) and  $H^1_{atb}(\mu)$ - Bibliography.- Index.

### Fields of interest

Functions of a Complex Variable; Potential Theory; Calculus of Variations and Optimal Control; Optimization

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-00595-9](http://www.springer.com/978-3-319-00595-9)

### Hardcover

2014. XIII, 396 p. 8 illus., 1 illus. in color. (Progress in Mathematics, Vol. 307) ISBN 978-3-319-00595-9

Due: December 31, 2013

T.M. Tonietti

## And Yet it is Heard

Musical, Multilingual and Multicultural History of Mathematical Sciences, Volume 2

We bring into full light some excerpts on musical subjects which were until now scattered throughout the most famous scientific texts. The main scientific and musical cultures outside of Europe are also taken into consideration. The first and most important property to underline in the scientific texts examined here is the language they are written in. This means that our multicultural history of the sciences necessarily also becomes a review of the various dominant languages used in the different historical contexts. In this volume, the history of the development of the sciences is told as it happened in real contexts, not in an alienated ideal world.

### Features

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### Contents

PART II: In the world of the scientific revolution.- 6. Not only in Latin, but also in Dutch, Chinese, Italian and German.- 7. Beyond Latin, French, English, German, Italian and Flemish: the invention of symbolism.- 8. Between Latin, French, English and German: the language of transcendence.- 9. Between Latin and French.- 10. From French to German.- PART III: It is not even heard.- 11. In the language of the Venusians.- 12. Come on, Apophis.- Bibliography.- Index of names and works.

### Fields of interest

Mathematics (general); Mathematics in Music; History of Mathematics; Music; Linguistics (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-0348-0674-9](http://www.springer.com/978-3-0348-0674-9)

### Hardcover

2014. X, 620 p. 12 illus. (Science Networks. Historical Studies, Vol. 47)  
ISBN 978-3-0348-0674-9

**Due: December 31, 2013**

T.M. Tonietti

## And Yet It Is Heard

Musical, Multilingual and Multicultural History of Mathematical Sciences, Volume 1

We bring into full light some excerpts on musical subjects which were until now scattered throughout the most famous scientific texts. The main scientific and musical cultures outside of Europe are also taken into consideration. The first and most important property to underline in the scientific texts examined here is the language they are written in. This means that our multicultural history of the sciences necessarily also becomes a review of the various dominant languages used in the different historical contexts. In this volume, the history of the development of the sciences is told as it happened in real contexts, not in an alienated ideal world.

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### Contents

0. Introduction.- PART I: In the ancient world.- 1. Above all with the Greek alphabet.- 2. In Chinese characters.- 3. In the Sanskrit of sacred Indian texts.- 4. Not only in Arabic.- 5. Above all in the Latin alphabet.- Appendices.

### Fields of interest

Mathematics (general); Mathematics in Music; History of Mathematics; Music; Linguistics (general)

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-0348-0671-8](http://www.springer.com/978-3-0348-0671-8)

### Hardcover

2014. X, 420 p. 46 illus. (Science Networks. Historical Studies, Vol. 46)  
ISBN 978-3-0348-0671-8

**Due: December 31, 2013**

T.M. Tonietti

## And yet it is heard

Musical, Multilingual and Polycultural History of Mathematics

We bring into full light some excerpts on musical subjects which were until now scattered throughout the most famous scientific texts. The main scientific and musical cultures outside of Europe are also taken into consideration. The first and most important property to underline in the scientific texts examined here is the language they are written in. This means that our multicultural history of the sciences necessarily also becomes a review of the various dominant languages used in the different historical contexts. In this volume, the history of the development of the sciences is told as it happened in real contexts, not in an alienated ideal world.

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### Contents

Volume 1.- 0. Introduction.- PART I: In the ancient world.- 1. Above all with the Greek alphabet.- 2. In Chinese characters.- 3. In the Sanskrit of sacred Indian texts.- 4. Not only in Arabic.- 5. Above all in the Latin alphabet.- Appendices.- Volume 2.- PART II: In the world of the scientific revolution.- 6. Not only in Latin, but also in Dutch, Chinese, Italian and German.- 7. Beyond Latin, French, English, German, Italian and Flemish: the invention of symbolism.- 8. Between Latin, French, English and German: the language of transcendence.- 9. Between Latin and French.- 10. From French[...]

### Fields of interest

Mathematics (general); Mathematics in Music; History of Mathematics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-0348-0677-0](http://www.springer.com/978-3-0348-0677-0)

### Hardcover

2014. Approx. 1200 p. 2 volume-set. (Science Networks. Historical Studies, Vol. 46/47)  
ISBN 978-3-0348-0677-0

**Due: April 28, 2014**

J. Xin, University of California, Irvine, Irvine, USA; Y. Qi, University of California, Irvine, Irvine, USA

## Mathematical Modeling and Signal Processing in Speech and Hearing Sciences

The aim of the book is to give an accessible introduction of mathematical models and signal processing methods in speech and hearing sciences for senior undergraduate and beginning graduate students with basic knowledge of linear algebra, differential equations, numerical analysis, and probability. Speech and hearing sciences are fundamental to numerous technological advances of the digital world in the past decade, from music compression in MP3 to digital hearing aids, from network based voice enabled services to speech interaction with mobile phones. Mathematics and computation are intimately related to these leaps and bounds. On the other hand, speech and hearing are strongly[...]

### Features

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### Contents

1 Background Signal Processing, Statistical and Optimization Methods.- 2 Speech Modeling.- 3 Auditory Modeling.- 4 Speech Recognition.- 5 Blind Source Separation and Speech Enhancement.

### Fields of interest

Applications of Mathematics; Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences; Mathematical Applications in Computer Science; Simulation and Modeling

### Target groups

Upper undergraduate

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03085-2](http://www.springer.com/978-3-319-03085-2)

### Hardcover

2014. XII, 208 p. (MS&A, Vol. 10)  
ISBN 978-3-319-03085-2

Due: December 31, 2013

## Physics

H. Aoki, University of Tokyo, Tokyo, Japan; M. S. Dresselhaus, Massachusetts Institute of Technology, Cambridge, USA (Eds.)

### Physics of Graphene

This book provides a state of the art report of the knowledge accumulated in graphene research. The fascination with graphene has been growing very rapidly in recent years and the physics of graphene is now becoming one of the most interesting as well as the most fast-moving topics in condensed-matter physics. The Nobel prize in physics awarded in 2010 has given a tremendous impetus to this topic. The horizon of the physics of graphene is ever becoming wider, where physical concepts go hand in hand with advances in experimental techniques. Thus this book is expanding the interests to not only transport but optical and other properties for systems that include multilayer as well as [...]

### Features

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### Contents

From the Contents: Experimental Manifestation of Berry Phase.- Probing Dirac Fermions in Graphene by Scanning Tunneling Microscopy and Spectroscopy.- Electron and Phonon Transport in Graphene in and out of the Bulk.- Optical Magneto-Spectroscopy of Graphene-Based Systems.- Graphene Constrictions.

### Fields of interest

Nanoscale Science and Technology; Nanotechnology; Nanotechnology and Microengineering; Semiconductors; Surfaces and Interfaces, Thin Films

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02632-9](http://www.springer.com/978-3-319-02632-9)

### Hardcover

2014. XII, 350 p. 146 illus., 64 illus. in color. (NanoScience and Technology)  
ISBN 978-3-319-02632-9

Due: January 31, 2014

A. Ashtekar, Pennsylvania State University, University Park, USA; V. Petkov, Concordia University, Montreal, Canada (Eds.)

## Springer Handbook of Spacetime

The Springer Handbook of Space time brings together the theories of space time and their implications for our understanding of the universe and the quantum world. Unlike any existing book, the handbook will contain in a single volume detailed chapters, which address the physics, the mathematics, the experimental evidence, and the cosmological implications of the profound idea that gravity is not a force but is caused by the curvature of space time, as well as chapters on the efforts to create a theory of quantum gravity. Authored by the world's leading experts, this volume will be a valuable resource to students, teachers, and researchers alike.

### Features

The Springer Handbook of Spacetime brings together the theories of spacetime and their implications for our understanding of the universe and the quantum world. Unlike any existing book, the handbook will contain in a single volume detailed chapters, which address the physics, the mathematics, the experimental evidence, and the cosmological implications of the profound idea that gravity is not a force but is [...]

### Contents

Introduction to Spacetime Structure.- Foundational Issues.- Spacetime Structure and Mathematics.- Confronting Relativity Theories with Observations.- General Relativity and the Universe.- Spacetime Beyond Einstein.

### Fields of interest

Classical and Quantum Gravitation, Relativity Theory; Astronomy, Astrophysics and Cosmology; Mathematical Applications in the Physical Sciences; History and Philosophical Foundations of Physics

### Target groups

Professional/practitioner

### Type of publication

Handbook

More on [www.springer.com/978-3-642-41991-1](http://www.springer.com/978-3-642-41991-1)

### Hardcover

2014. C, 1100 p. 130 illus.  
ISBN 978-3-642-41991-1

Due: April 13, 2014

P.B. Baranov, Ioffe Physical-Technical Institute, St. Petersburg, Russia

## Magnetic Resonance of Semiconductors and Semiconductor Nanostructures

Different magnetic resonance (MR) methods and their applications in solids (e.g. semiconductors and nanostructures) are the focus of this work. Techniques and combinations thereof are explained and used to analyze defects in semiconductors and nanostructures. Presented for the first time are novelties such as single defects MR as well as state-of-art high-frequency pulse methods: EPR, ODMR, ENDOR. An overview of MR methods currently used to study defects, such as electron paramagnetic resonance (EPR), optically detected magnetic resonance (ODMR), electron-nuclear double resonance (ENDOR) etc. is provided. Problems existing in semiconductor and nanotechnology sciences which are [...]

### Features

Different magnetic resonance (MR) methods and their applications in solids (e.g. semiconductors and nanostructures) are the focus of this work. Techniques and combinations thereof are explained and used to analyze defects in semiconductors and nanostructures. Presented for the first time are novelties such as single defects MR as well as state-of-art high-frequency pulse methods: EPR, ODMR, ENDOR. An overview [...]

### Contents

1. Introduction.- 2. Fundamentals of electron paramagnetic resonance and related methods.- 2.1. Electron paramagnetic resonance (epr) - 2.2. Electron spin echo (ese).- 2.3. Electron-nuclear double resonance (endor).- 2.4. Optically detected magnetic resonance (odmr).- 2.5. Optically detected cyclotron resonance (odcr) - 3. Retrospectives: milestones of magnetic resonance in semiconductors.- 3.1. Donors, acceptors, transition metals in si.- 3.2. Defects in diamond.- 3.3. II-vi, iii-v.- 3.4 silver halides.- 3.5. Wide-band-gap semiconductors.- 3.6. Beginning of nanostructure era.- 4. [...]

### Fields of interest

Semiconductors; Nanotechnology; Physical Chemistry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-7091-1156-7](http://www.springer.com/978-3-7091-1156-7)

### Hardcover

2014. 400 p. 150 illus., 8 illus. in color.  
ISBN 978-3-7091-1156-7

**Due: December 28, 2013**

J. Bland-Hawthorn, University of Sydney, Sydney, Australia; K. Freeman, Australian National University, Australian Capital Territory, Australia; F. Matteucci, Trieste University, Trieste, Italy; B. Moore, University of Zurich, Zurich, Switzerland (Ed.)

## The Origin of the Galaxy and Local Group

Saas-Fee Advanced Course 37. Swiss Society for Astrophysics and Astronomy

This volume contains the updated and expanded lecture notes of the 37th Saas-Fee Advanced Course organised by the Swiss Society for Astrophysics and Astronomy. It offers the most comprehensive and up to date review of one of the hottest research topics in astrophysics - how our Milky Way galaxy formed. Joss Bland-Hawthorn & Ken Freeman lectured on Near Field Cosmology - The Origin of the Galaxy and the Local Group. Francesca Matteucci's chapter is on Chemical evolution of the Milky Way and its Satellites. As designed by the SSAA, books in this series - and this one too - are targeted at graduate and PhD students and young researchers in astronomy, astrophysics and cosmology. Lecturers [...]

### Features

This volume contains the updated and expanded lecture notes of the 37th Saas-Fee Advanced Course organised by the Swiss Society for Astrophysics and Astronomy. It offers the most comprehensive and up to date review of one of the hottest research topics in astrophysics - how our Milky Way galaxy formed. Joss Bland-Hawthorn & Ken Freeman lectured on Near Field Cosmology - The Origin of the Galaxy and the [...]

### Contents

Near Field Cosmology - The Origin of the Galaxy and the Local Group.- Chemical evolution of the Milky Way and its Satellites.

### Fields of interest

Astronomy, Astrophysics and Cosmology

### Target groups

Graduate

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41719-1](http://www.springer.com/978-3-642-41719-1)

### Hardcover

2014. 250 p. 115 illus., 60 illus. in color. (Saas-Fee Advanced Course, Vol. 37)  
ISBN 978-3-642-41719-1

**Due: February 2014**

F. Bourgeois, Université Paris-Sud, Orsay, France; C. Vincent, University of Nantes, Nantes, France; A. Stipsicz, Hungarian Academy of Sciences, Budapest, Hungary (Eds.)

## Contact and Symplectic Topology

Symplectic and contact geometry naturally emerged from the mathematical description of classical physics. The discovery of new rigidity phenomena and properties satisfied by these geometric structures launched a new research field worldwide. The intense activity of many European research groups in this field is reflected by the ESF Research Networking Programme "Contact And Symplectic Topology" (CAST). The lectures of the Summer School in Nantes (June 2011) and of the CAST Summer School in Budapest (July 2012) provide a nice panorama of many aspects of the present status of contact and symplectic topology. The notes of the minicourses offer a gentle introduction to topics which have [...]

### Features

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### Contents

Mathematical contributions from V.I. Arnold.- Topological methods in 3-dimensional contact geometry.- A short introduction to Fukaya categories.- Open books and Lefschetz pencils in contact geometry.- Introduction to contact topology in higher dimensions.- Bordered Heegaard Floer homology.- Stein structures: existence and flexibility.- Embedded contact homology, cobordism maps, and applications.- Knot contact homology and applications.

### Fields of interest

Mathematical Methods in Physics; Geometry; Mathematical Applications in the Physical Sciences; Mathematical Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02035-8](http://www.springer.com/978-3-319-02035-8)

### Hardcover

2014. VIII, 460 p. 143 illus., 79 illus. in color. (Bolyai Society Mathematical Studies, Vol. 26)  
ISBN 978-3-319-02035-8

**Due: January 31, 2014**

S. Brandt

## Data Analysis

Statistical and Computational Methods for Scientists and Engineers

The fourth edition of this successful textbook presents a comprehensive introduction to statistical and numerical methods for the evaluation of empirical and experimental data. Equal weight is given to statistical theory and practical problems. The concise mathematical treatment of the subject matter is illustrated by many examples and for the present edition a library of Java programs has been developed. It comprises methods of numerical data analysis and graphical representation as well as many example programs and solutions to programming problems. The programs (source code, Java classes and documentation) and extensive appendices to the main text are available for free download[...]

### Features

The fourth edition of this successful textbook presents a comprehensive introduction to statistical and numerical methods for the evaluation of empirical and experimental data. Equal weight is given to statistical theory and practical problems. The concise mathematical treatment of the subject matter is illustrated by many examples, and for the present edition a library of Java programs has been developed. [...]

### Contents

Introduction.- Probabilities.- Random Variables: Distributions.- Computer-Generated Random Numbers: The Monte Carlo Method.- Some Important Distributions and Theorems.- Samples.- The Method of Maximum Likelihood.- Testing Statistical Hypotheses.- The Method of Least Squares.- Function Minimization.- Analysis of Variance.- Linear and Polynomial Regression.- Time-Series Analysis.- A) Matrix Calculations.- B) Combinatorics.- C) Formulas and Methods for the Computation of Statistical Functions.- D) The Gamma Function and Related Functions: Methods and Programs for their Computation.- E)[...]

### Fields of interest

Mathematical Methods in Physics; Appl. Mathematics / Computational Methods of Engineering; Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences; Math. Applications in Chemistry; Numerical and Computational Physics

### Target groups

Graduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-03761-5](http://www.springer.com/978-3-319-03761-5)

### Hardcover

2014. X, 352 p. 97 illus.  
ISBN 978-3-319-03761-5

Due: February 28, 2014

Z. Cao, Shanghai Jiao Tong University, Shanghai, China (P.R.); C. Yin, Hohai University, Changzhou, China (P.R.)

## Advances in One-Dimensional Wave Mechanics

Towards A Unified Classical View

Advances in One-Dimensional Wave Mechanics provides a comprehensive description of the motion of microscopic particles in one-dimensional, arbitrary-shaped potentials based on the analogy between Quantum Mechanics and Electromagnetism. Utilizing a deeper understanding of the wave nature of matter, this book introduces the concept of the scattered sub-waves and a series of new analytical results using the Analytical Transfer Matrix (ATM) method. This work will be useful for graduate students majoring in physics, mainly in basic quantum theory, as well as for academic researchers exploring electromagnetism, particle physics, and wave mechanics and for experts in the field of optical[...]

### Features

Advances in One-Dimensional Wave Mechanics provides a comprehensive description of the motion of microscopic particles in one-dimensional, arbitrary-shaped potentials based on the analogy between Quantum Mechanics and Electromagnetism. Utilizing a deeper understanding of the wave nature of matter, this book introduces the concept of the scattered sub-waves and a series of new analytical results using [...]

### Contents

Analogy between Quantum Mechanics and Optics.- Analytical Transfer Matrix method.- Semiclassical Approximation.- Exact Quantization Condition via Analytical Transfer Matrix method.- Barrier Tunneling.- The Scattered Subwaves.

### Fields of interest

Quantum Physics; Mathematical Methods in Physics; Quantum Optics, Quantum Electronics, Nonlinear Optics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40890-8](http://www.springer.com/978-3-642-40890-8)

### Hardcover

Jointly published with Shanghai Jiao Tong University Press, Shanghai, China  
2014. X, 158 p. 83 illus., 3 illus. in color.  
ISBN 978-3-642-40890-8

Due: February 28, 2014

M. Castillejo, Instituto de Química Física Rocasolano, Madrid, Spain; P.M. Ossi, Politecnico di Milano, Milan, Italy; L. Zhigilei, University of Virginia, Charlottesville, USA (Eds.)

## Lasers in Materials Science

This book covers various aspects of lasers in materials science, including a comprehensive overview on basic principles of laser-materials interactions and applications enabled by pulsed laser systems. The material is organized in a coherent way, providing the reader with a harmonic architecture. While systematically covering the major current and emerging areas of lasers processing applications, the Volume provides examples of targeted modification of material properties achieved through careful control of the processing conditions and laser irradiation parameters. Special emphasis is placed on specific strategies aimed at nanoscale control of material structure and properties to[...]

### Features

This book covers various aspects of lasers in materials science, including a comprehensive overview on basic principles of laser-materials interactions and applications enabled by pulsed laser systems. The material is organized in a coherent way, providing the reader with a harmonic architecture. While systematically covering the major current and emerging areas of lasers processing applications, the [...]

### Contents

From the Contents: Laser Physics for Materials Scientists: A Primer.- Material Response to Laser Energy Deposition (Thermal and Hyper thermal Processes).- Non-Thermal Material Response to Laser Energy Deposition.- Atomic Movies of Laser-Induced Structural and Phase Transformations from Molecular Dynamics Simulations.

### Fields of interest

Laser Technology and Physics, Photonics; Optical and Electronic Materials; Surface and Interface Science, Thin Films; Nanotechnology and Micro-engineering; Surfaces and Interfaces, Thin Films

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02897-2](http://www.springer.com/978-3-319-02897-2)

### Hardcover

2014. XIV, 387 p. 203 illus., 74 illus. in color. (Springer Series in Materials Science, Vol. 191)  
ISBN 978-3-319-02897-2

Due: December 14, 2013

G. Galati, Tor Vergata University - Roma, Roma, Italy

## 100 Years of Radar

This book, written by an expert in the field with a worldwide reputation, outlines the developments in radar and its applications during the past 100 years. Special attention is paid to the Italian and German contributions, which tend to be neglected in the scarce international literature. The entire historical period up to the present day is considered, with documentation of all significant events since the issue of the first patent to Christian Hülsmeier in 1904. Information is also provided on the exceptional people who have made possible the development of this technology. The book is divided into ten chapters and is organized in such a way as to be easily read by both [...]

### Features

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### Contents

The unfortunate inventor and the lucky one - the Ur-radar, primordial apparatus.- The owls and the Owl - birth of the Italian radar.- A simultaneous invention - the first developments.- The air defense and the alleged father of radar.- The Second World War and its legacies.- The radar flies: birth and development of airborne radar systems.- The Italian situation in post-war period: SMA, Microlambda, Sindel, Selenia, Contraves, GEM, IDS.- From terrestrial to space-based radar: the adventure of Synthetic Aperture Radar (SAR).- Scops owls and bats - some considerations on the development [...]

### Fields of interest

Electronic Circuits and Devices; Aerospace Technology and Astronautics; History and Philosophical Foundations of Physics; History of Science

### Target groups

Upper undergraduate

### Type of publication

Monograph

More on [www.springer.com/978-3-319-00583-6](http://www.springer.com/978-3-319-00583-6)

### Hardcover

2014. Approx. 500 p. 200 illus.  
ISBN 978-3-319-00583-6

**Due: March 28, 2014**

V. Girka, I. Girka, M. Thumm, Karlsruhe Institute of Technology, Karlsruhe, Germany

## Surface Flute Waves in Plasmas

### Theory and Applications

The book presents results of a comprehensive study of various features of eigen electromagnetic waves propagating across the axis of plasma filled metal waveguides with cylindrical geometry. The authors collected in one book material on various features of surface flute waves, i.e. impact of waveguide design on wave dispersion, wave damping influenced by various reasons, impact of plasma density and external magnetic field inhomogeneity on the wave, and impact of waveguide corrugation and electric current on the wave. A variety of present surface waves applications and possible future applications is also included. Using the method of successive approximations it is shown how one can [...]

### Features

The book presents results of a comprehensive study of various features of eigen electromagnetic waves propagating across the axis of plasma filled metal waveguides with cylindrical geometry. The authors collected in one book material on various features of surface flute waves, i. e. impact of waveguide design on wave dispersion, wave damping influenced by various reasons, impact of plasma density and external [...]

### Contents

Surface Flute Waves Propagating in Uniform Magneto-Active Plasma Filled Waveguides.- Coupled Surface Flute Waves Propagating in Current-Carrying Plasma Waveguides.- Surface Flute Waves Propagating in Non-Isotropic Plasma Filled Waveguides.- Surface Flute Waves Propagating in Waveguides with Non-Circular Cross-Section.- Applications of Surface Wave Propagation.

### Fields of interest

Plasma Physics; Classical Electrodynamics, Wave Phenomena; Applied and Technical Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02026-6](http://www.springer.com/978-3-319-02026-6)

### Hardcover

2014. VIII, 163 p. 50 illus., 3 illus. in color. (Springer Series on Atomic, Optical, and Plasma Physics, Vol. 79)  
ISBN 978-3-319-02026-6

**usually dispatched within 3 to 5 business days**

W. Han, Chinese Academy of Sciences, Beijing, China (P.R.); Z.M. Wang (Eds.)

## Toward Quantum FinFET

### Features

This book reviews a range of quantum phenomena in novel nanoscale transistors called FinFETs, including quantized conductance of 1D transport, single electron effect, tunneling transport, etc. The goal is to create a fundamental bridge between quantum FinFET and nanotechnology to stimulate readers' interest in developing new types of semiconductor technology. Although the rapid development of micro-nano [...]

### Fields of interest

Nanoscale Science and Technology; Nanotechnology and Microengineering; Optical and Electronic Materials; Semiconductors; Nanotechnology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-02020-4](http://www.springer.com/978-3-319-02020-4)

### Hardcover

2013. XI, 363 p. 235 illus., 168 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 17)  
ISBN 978-3-319-02020-4

**usually dispatched within 3 to 5 business days**

G. Iadonisi, Università di Napoli "Federico II", Napoli, Italy; G. Cantale, Università di Napoli "Federico II", Napoli, Italy; M.L. Chiofalo, University of Pisa, Pisa, Italy

## Introduction to Solid State Physics and Crystalline Nanostructures

This textbook provides conceptual, procedural, and factual knowledge on solid state and nanostructure physics. It is designed to acquaint readers with key concepts and their connections, to stimulate intuition and curiosity, and to enable the acquisition of competences in general strategies and specific procedures for problem solving and their use in specific applications. To these ends, a multidisciplinary approach is adopted, integrating physics, chemistry, and engineering and reflecting how these disciplines are converging towards common tools and languages in the field. Each chapter discusses essential ideas before the introduction of formalisms and the step-wise addition of[...]

### Features

This textbook provides conceptual, procedural, and factual knowledge on solid state and nanostructure physics. It is designed to acquaint readers with key concepts and their connections, to stimulate intuition and curiosity, and to enable the acquisition of competences in general strategies and specific procedures for problem solving and their use in specific applications. To these ends, a multidisciplinary [..]

### Contents

Crystals and Nanosystems Structure.- Electronic structure of nanosystems and crystals.- Elements of continuum mechanics and lattice vibrations.- Transport and Equilibrium Properties.- Optical Properties.- Correlations and Density Functional Theory.

### Fields of interest

Physics (general); Materials Science (general); Chemistry (general); Engineering Design

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-88-470-2804-3](http://www.springer.com/978-88-470-2804-3)

### Softcover

2014. XXIV, 688 p. 50 illus. in color. (Collana di Fisica e Astronomia)

ISBN 978-88-470-2804-3

**Due: March 28, 2014**

C.-D. Jan, National Cheng Kung University, Tainan, Taiwan

## Gradually-varied Flow Profiles in Open Channels

Analytical Solutions by Using Gaussian Hypergeometric Function

Gradually-varied flow (GVF) is a steady non-uniform flow in an open channel with gradual changes in its water surface elevation. The evaluation of GVF profiles under a specific flow discharge is very important in hydraulic engineering. This book proposes a novel approach to analytically solve the GVF profiles by using the direct integration and Gaussian hypergeometric function. Both normal-depth- and critical-depth-based dimensionless GVF profiles are presented. The novel approach has laid the foundation to compute at one sweep the GVF profiles in a series of sustaining and adverse channels, which may have horizontal slopes sandwiched in between them.

### Features

Gradually-varied flow (GVF) is a steady non-uniform flow in an open channel with gradual changes in its water surface elevation. The evaluation of GVF profiles under a specific flow discharge is very important in hydraulic engineering. This book proposes a novel approach to analytically solve the GVF profiles by using the direct integration and Gaussian hypergeometric function. Both normal-depth- and [..]

### Fields of interest

Classical Continuum Physics; Mechanics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-35241-6](http://www.springer.com/978-3-642-35241-6)

### Hardcover

2014. XV, 203 p. 34 illus., 7 illus. in color. (Advances in Geophysical and Environmental Mechanics and Mathematics)

ISBN 978-3-642-35241-6

**Due: February 28, 2014**

K.K. Kar, Indian Institute of Technology Kanpur, Kanpur, India; S.K. Rana, Nanyang Technological University, Singapore, Singapore; J.K. Pandey, The University of Tokushima, Tokushima, Japan (Eds.)

## Handbook of Polymernanocomposites. Processing, Performance and Application

Volume B: Carbon Nanotube Based Polymer Composites

Volume B forms one volume of a Handbook about Polymer Nanocomposites. Volume B deals with Carbon nanotube based polymer composites. The preparation, architecture, characterisation, properties and application of polymer nanocomposites are discussed within some 25 chapters. Each chapter has been authored by experts in the respective field.

### Features

Volume B forms one volume of a Handbook about Polymer Nanocomposites. Volume B deals with Carbon nanotube based polymer composites. The preparation, architecture, characterisation, properties and application of polymer nanocomposites are discussed within some 25 chapters. Each chapter has been authored by experts in the respective field.

### Contents

Polystyrene Carbon Nanotube Nanocomposites.- Crystallization Behaviors and Mechanical Strength of Poly(butylene succinate)s/carbon Nanotubes Composites.- Functionalization of Carbon Nanotubes and their Polyurethane Nanocomposites.- Polyaniline/carbonnanocomposite Films for Gas Sensing.- Preparation and Properties of Nanocomposites Based on Poly(Ethylene-Co-Methyl Acrylate) and Multi-walled Carbon Nanotubes.- Synthesis and Characterization of Poly(phenylene sulphide) (PPS)-grafted Carbon Nanotube Nanocomposites.- CNT-Based Inherent Sensing and Interfacial Properties of Glass Fiber[...]

### Fields of interest

Physics (general); Polymer Sciences

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-45228-4](http://www.springer.com/978-3-642-45228-4)

### Hardcover

2014. Approx. 200 p.  
ISBN 978-3-642-45228-4

**Due: March 3, 2014**

H.G. Merkus, Retired Associate Professor, Pijnacker, Netherlands; G.M.H. Meesters, DSM Food Specialities & Delft Univ. of T, Delft, Netherlands (Eds.)

## Particulate Products

### Tailoring Properties for Optimal Performance

Particulate products make up around 80% of chemical products, from all industry sectors. Examples given in this book include the construction materials, fine ceramics and concrete; the delicacies, chocolate and ice cream; pharmaceutical, powders, medical inhalers and sun screen; liquid and powder paints. Size distribution and the shape of the particles provide for different functionalities in these products. Some functions are general, others specific. General functions are powder flow and require – at the typical particulate concentrations of these products – that the particles cause adequate rheological behavior during processing and/or for product performance. Therefore, this book [...]

### Features

Particulate products make up around eighty percent of chemical products, from all industry sectors. Examples given in this book include construction materials, fine ceramics and concrete, chocolate and ice cream, pharmaceutical, powders, medical inhalers and sun screen, liquid and powder paints. Size distribution and the shape of the particles provide for different functionalities in these products, [...]

### Contents

Preface.- 1 Introduction by Henk G. Merkus and Gabriel M.H. Meesters.- 2 Basic Information for Design of Particulate Products by G. Henk Merkus.- 3 Measurement of Particle Size, Shape, Porosity and Zeta-potential by Henk G. Merkus.- 4 Assessment and Control of Fire and Explosion Hazards and Risks of Particulates by Saul M. Lemkowitz and Hans J. Pasman.- 5 Particle and Fiber Toxicology by Georgia K. Hinkley and Stephen M. Roberts.- 6 Ceramics - Effect of Powder and Slurry Properties on Quality by Makio Naito.- 7 Chocolate.- 8 Propellants.- 9 Dry powder inhalers.- 10 Powder coatings.- 11 [...]

### Fields of interest

Soft and Granular Matter, Complex Fluids and Microfluidics; Characterization and Evaluation of Materials; Nanoscale Science and Technology; Quality Control, Reliability, Safety and Risk

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-00713-7](http://www.springer.com/978-3-319-00713-7)

### Hardcover

2014. XVIII, 469 p. 151 illus., 72 illus. in color. (Particle Technology Series, Vol. 19)  
ISBN 978-3-319-00713-7

usually dispatched within 3 to 5 business days

E.L. Michelsen

## Quirky Quantum Concepts

Physical, Conceptual, Geometric, and Pictorial Physics that Didn't Fit in Your Textbook

Quirky Quantum Concepts explains the more important and more difficult concepts in theoretical quantum mechanics, especially those which are consistently neglected or confusing in many common expositions. The emphasis is on physical understanding, which is necessary for the development of new, cutting edge science. In particular, this book explains the basis for many standard quantum methods, which are too often presented without sufficient motivation or interpretation. The book is not a simplification or popularization: it is real science for real scientists. Physics includes math, and this book does not shy away from it, but neither does it hide behind it. Without conceptual [...]

### Features

Quirky Quantum Concepts explains the more important and more difficult concepts in theoretical quantum mechanics, especially those which are consistently neglected or confusing in many common expositions. The emphasis is on physical understanding, which is necessary for the development of new, cutting edge science. In particular, this book explains the basis for many standard quantum methods, [...]

### Contents

Introduction To Quirky Quantum Concepts.- Basic Wave Mechanics Concepts.- Riding the Wave: More on Wave Mechanics.- Introduction to Scattering.- Matrix Mechanics.- Angular Momentum.- Multi-Particle Quantum Mechanics.- Quantum Electromagnetic Radiation.- Desultory Topics in Quantum Mechanics.- Appendices.

### Fields of interest

Quantum Physics; Mathematical Physics; Mathematical Methods in Physics; Mechanical Engineering

### Target groups

Upper undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-1-4614-9304-4](http://www.springer.com/978-1-4614-9304-4)

### Softcover

2014. XIX, 361 p. 71 illus., 10 illus. in color. (Undergraduate Lecture Notes in Physics)  
ISBN 978-1-4614-9304-4

Due: December 31, 2013

S. Musazzi, Ricerca sul Sistema Energetico - RSE SpA, Milano, Italy; U. Perini, Ricerca sul Sistema Energetico - RSE SpA, Milano, Italy (Eds.)

## Laser-Induced Breakdown Spectroscopy

### Theory and Applications

This book deals with the Laser-Induced Breakdown Spectroscopy (LIBS) a widely used atomic emission spectroscopy technique for elemental analysis of materials. It is based on the use of a high-power, short pulse laser excitation. The book is divided into two main sections: the first one concerning the theoretical aspects of the technique, the second one describing the state of the art in applications of the technique in different scientific/technological areas. Numerous examples of state of the art applications provide the readers an almost complete scenario of the LIBS technique. The LIBS theoretical aspects are reviewed. The book helps the readers who are less familiar with the technique [...]

### Features

This book deals with the Laser-Induced Breakdown Spectroscopy (LIBS), a widely used atomic emission spectroscopy technique for elemental analysis of materials. It is based on the use of a high-power, short pulse laser excitation. The book is divided into two main sections: the first one concerning theoretical aspects of the technique, the second one describing the state of the art in applications of the [...]

### Contents

Part I Fundamentals of LIBS.- Physical processes in optical emission spectroscopy.- A review of LIBS instrumental techniques.- Effect of atmospheric conditions on LIBS spectra.- Temporal evolution of the LIBS signals.- The LIBS double pulse technique.- Part II Applications of LIBS.- Analysis of solid materials by means of LIBS.- Analysis of liquids/aerosol by means of LIBS.- Detection of contaminants in soil by means of LIBS.- Forensic applications by means of LIBS.- Biological applications of LIBS.- LIBS analysis of coal.- Detection of explosives in traces.- Cultural heritage [...]

### Fields of interest

Laser Technology and Physics, Photonics; Spectroscopy and Microscopy; Characterization and Evaluation of Materials; Physical Chemistry; Classical Electrodynamics, Wave Phenomena

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45084-6](http://www.springer.com/978-3-642-45084-6)

### Hardcover

2014. 350 p. 190 illus., 10 illus. in color. (Springer Series in Optical Sciences, Vol. 182)  
ISBN 978-3-642-45084-6

Due: February 2014

V. Méndez, Universitat Autònoma de Barcelona, Cerdanyola del Vallès (Bellaterra), Spain; D. Campos, Universitat Autònoma de Barcelona, Cerdanyola del Vallès (Bellaterra), Spain; F. Bartumeus, Centre d'Estudis Avançats de Blanes, Blanes (Girona), Spain

## Stochastic Foundations in Movement Ecology

**Anomalous Diffusion, Front Propagation and Random Searches**

This book presents the fundamental theory for non-standard diffusion problems in movement ecology. Lévy processes and anomalous diffusion have shown to be both powerful and useful tools for qualitatively and quantitatively describing a wide variety of spatial population ecological phenomena and dynamics, such as invasion fronts and search strategies. Adopting a self-contained, textbook-style approach, the authors provide the elements of statistical physics and stochastic processes on which the modeling of movement ecology is based and systematically introduce the physical characterization of ecological processes at the microscopic, mesoscopic and macroscopic levels. The explicit[...]

### Features

This book presents the fundamental theory for non-standard diffusion problems in movement ecology. Lévy processes and anomalous diffusion have shown to be both powerful and useful tools for qualitatively and quantitatively describing a wide variety of spatial population ecological phenomena and dynamics, such as invasion fronts and search strategies. Adopting a self-contained, textbook-style [...]

### Contents

Elements of Probability Theory.- Introduction to Stochastic Processes.- Microscopic, Mesoscopic and Macroscopic Descriptions of Dispersal- Continuous-Time Random Walks and Anomalous Diffusion.- Reaction-Dispersal Models and Front Propagation.- Stochastic Optimal Foraging Theory.- Cell Motion and Chemotaxis.- Host-Pathogen Interactions.- Biological Invasions.- Random Search in Model Organisms.

### Fields of interest

Socio- and Econophysics, Population and Evolutionary Models; Theoretical Ecology / Statistics; Genetics and Population Dynamics; Complexity; Complex Systems

### Target groups

Graduate

### Type of publication

Monograph

More on [www.springer.com/978-3-642-39009-8](http://www.springer.com/978-3-642-39009-8)

### Hardcover

2014. XVII, 310 p. 84 illus., 16 illus. in color. (Springer Series in Synergetics)  
ISBN 978-3-642-39009-8

**usually dispatched within 3 to 5 business days**

M. Naruse (Ed.)

## Nanophotonic Information Physics

**Nanointelligence and Nanophotonic Computing**

This book provides a new direction in the field of nano-optics and nanophotonics from information and computing-related sciences and technology. Entitled by "Information Physics and Computing in Nanoscale Photonics and Materials", IPCN in short, the book aims to bring together recent progresses in the intersection of nano-scale photonics, information, and enabling technologies. The topic will include (1) an overview of information physics in nanophotonics, (2) DNA self-assembled nanophotonic systems, (3) Functional molecular sensing, (4) Smart fold computing, an architecture for nanophotonics, (5) semiconductor nanowire and its photonic applications, (6) single photoelectron[...]

### Features

This book provides a new direction in the field of nano-optics and nanophotonics from information and computing-related sciences and technology. Entitled by "Information Physics and Computing in Nanoscale Photonics and Materials", IPCN in short, the book aims to bring together recent progresses in the intersection of nano-scale photonics, information, and enabling technologies. The topic will include (1) an [...]

### Contents

Information Physics in Nanophotonics.- DNA Self-assembled Nanostructures for Resonance Energy Transfer Circuits.- Functional Molecular Sensing Using Photonic DNA Nanoprocessor.- Smart Fold Computing - A Distributed Approach to Overcome Diffraction Limit of Light.- Nonlinear Behaviors in III-V Semiconductor Nanowires and Their Application to Information Detection and Processing.- Single Photoelectron Manipulation and Detection with Sub-nanosecond Resolution in CMOS Imagers.- Engineering of Nanometric Optical System Based on Optical Near-field Interactions for Macroscale Applications.-[...]

### Fields of interest

Classical Electrodynamics, Wave Phenomena; Nanotechnology and Microengineering; Information Systems Applications (incl.Internet); Nanotechnology; Nanoscale Science and Technology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40223-4](http://www.springer.com/978-3-642-40223-4)

### Hardcover

2014. XV, 250 p. 151 illus., 57 illus. in color. (Nano-Optics and Nanophotonics)  
ISBN 978-3-642-40223-4

**Due: December 31, 2013**

T. Padmanabhan, Inter University Centre, Pune, India (Ed.)

## Astronomy in India: A Historical Perspective

### Fields of interest

Astronomy, Astrophysics and Cosmology; History and Philosophical Foundations of Physics; History of Science; Popular Science in Astronomy; Regional and Cultural Studies

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-81-8489-997-9](http://www.springer.com/978-81-8489-997-9)

### Hardcover

2014. Approx. 250 p.  
ISBN 978-81-8489-997-9

**Due: March 28, 2014**

J.K. Pandey, The University of Tokushima, Tokushima, Japan; H. Takagi, The University of Tokushima, Tokushima, Japan; A.N. Nakagaito, The University of Tokushima, Tokushima, Japan; H.-J. Kim, Seoul National University, Seoul, Korea, Republic of (South Korea) (Eds.)

## Handbook of Polymernanocomposites. Processing, Performance and Application

Volume C: Polymernanocomposites of Cellulose Nanoparticles

Volume C forms one volume of a Handbook about Polymer Nanocomposites. Volume C deals with Polymer nano-composites of cellulose nano-particles. The preparation, architecture, characterisation, properties and application of polymer nanocomposites are discussed within some 27 chapters. Each chapter has been authored by experts in the respective field.

### Features

Volume C forms one volume of a Handbook about Polymer Nanocomposites. Volume C deals with Polymer nano-composites of cellulose nano-particles. The preparation, architecture, characterisation, properties and application of polymer nanocomposites are discussed within some 27 chapters. Each chapter has been authored by experts in the respective field.

### Contents

Preparation of Nanocellulose from Kenaf (*Hibiscus cannabinus* L.) via Chemical and Chemo-Mechanical Processes.- Bagasse and Rice Straw Nanocellulosic Materials and their Applications.- Extraction and Characterization of Cellulose Nanofibres from Banana Plant.- Isolation and Characterization of Cellulose Nanofibers from the Aquatic Weed Water Hyacinth - *Eichhornia crassipes*.- Dispersion of Cellulose Nano Fibers.- Extraction and Production of Cellulose Nanofibers.- Enzymatically Produced Nano-ordered Elements Containing Cellulose Crystalline Domains of *Cladophora cellulose*.- [...]

### Fields of interest

Physics (general); Polymer Sciences

### Target groups

Research

### Type of publication

Handbook

More on [www.springer.com/978-3-642-45231-4](http://www.springer.com/978-3-642-45231-4)

### Hardcover

2014. 200 p.  
ISBN 978-3-642-45231-4

Due: January 13, 2014

A.L. Peratt

## Physics of the Plasma Universe

Today many scientists recognize plasma as the key element to understanding the generation of magnetic fields in planets, stars, and galaxies; the behavior of stellar atmospheres and the interstellar medium; the acceleration and transport of cosmic rays, their effect on earth-bound artifacts; and many other phenomena occurring in radio galaxies, galactic nuclei, and quasars. These phenomena increasingly are recognized as a unified discipline. The material in *Physics of the Plasma Universe* addresses topics in contemporary astrophysics such as magnetism in plasma; the generation of electric fields in space plasmas; double-layers; synchrotron radiation, cosmic radiation, energy transport[...]

### Features

Today many scientists recognize plasma as the key element to understanding the generation of magnetic fields in planets, stars, and galaxies; the behavior of stellar atmospheres and the interstellar medium; the acceleration and transport of cosmic rays, their effect on earth-bound artifacts; and many other phenomena occurring in radio galaxies, galactic nuclei, and quasars. These phenomena [...]

### Contents

Cosmic Plasma Fundamentals.- Birkeland Currents in Cosmic Plasma.- Biot-Savart Law in Cosmic Plasma.- Electric Fields in Cosmic Plasma.- Double Layers in Astrophysics.- Synchrotron Radiation.- Transport of Cosmic Radiation.- Particle in Cell Simulation of Cosmic Plasma.

### Fields of interest

Plasma Physics; Astronomy, Astrophysics and Cosmology; Cosmology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-7818-8](http://www.springer.com/978-1-4614-7818-8)

### Hardcover

2014. X, 400 p. 220 illus.  
ISBN 978-1-4614-7818-8

Due: June 2, 2014

W. Quint, Gesellschaft f. Schwerionenforschung, Darmstadt, Germany; M. Vogel (Eds.)

## Fundamental Physics in Particle Traps

This volume provides detailed insight into the field of precision spectroscopy and fundamental physics with particles confined in traps. It comprises experiments with electrons and positrons, protons and antiprotons, antimatter and highly charged ions together with corresponding theoretical background. Such investigations represent stringent tests of quantum electrodynamics and the Standard model, antiparticle and antimatter research, test of fundamental symmetries, constants and their possible variations with time and space. They are key to various aspects within metrology such as mass measurements and time standards, as well as promising to further developments in quantum[...]

### Features

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### Contents

Precise Matter and Antimatter Tests of the Standard Model with  $e^-$ ,  $e^+$ ,  $p$ ,  $\bar{p}$  and  $H$  (G. Gabrielse, S. Fogwell Hoogerheide, J. Dorr and E. Novitski).- Theory of Anomalous Magnetic Dipole Moments of the Electron (M. Hayakawa).- Magnetic Moment of the Bound Electron (M. Vogel and W. Quint).- QED Theory of the Bound-Electron Magnetic Moment (D.A. Glazov, A.V. Volotka, V.M. Shabaev, and G. Plunien).- The Magnetic Moments of the Proton and the Antiproton (S. Ulmer and C. Smorra).- Fundamental Physics with Antihydrogen (J.S. Hangst).- High-precision Mass Measurements of Radionuclides with[...]

### Fields of interest

Spectroscopy and Microscopy; Quantum Physics; Atomic/Molecular Structure and Spectra; Measurement Science, Instrumentation

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45200-0](http://www.springer.com/978-3-642-45200-0)

### Hardcover

2014. XIX, 411 p. 166 illus. (Springer Tracts in Modern Physics, Vol. 256)  
ISBN 978-3-642-45200-0

Due: January 31, 2014

D. Rickles

## A Brief History of String Theory

From Dual Models to M-Theory

During its forty year lifespan, string theory has always had the power to divide, being called both a 'theory of everything' and a 'theory of nothing'. Critics have even questioned whether it qualifies as a scientific theory at all. This book adopts an objective stance, standing back from the question of the truth or falsity of string theory and instead focusing on how it came to be and how it came to occupy its present position in physics. An unexpectedly rich history is revealed, with deep connections to our most well-established physical theories. Fully self-contained and written in a lively fashion, the book will appeal to a wide variety of readers from novice to specialist.

### Features

During its forty year lifespan, string theory has always had the power to divide, being called both a 'theory of everything' and a 'theory of nothing'. Critics have even questioned whether it qualifies as a scientific theory at all. This book adopts an objective stance, standing back from the question of the truth or falsity of string theory and instead focusing on how it came to be and how it [...]

### Contents

History and Mythology.- Part I: The (Very) Early Years: 1959-1973.- Particle Physics in the Sixties.- The Veneziano Model.- The Hadronic String.- Supersymmetric Strings and Field Theoretic Limits.- Part II: A Decade of Darkness: 1974-1984.- An Early Demise? Theoretical Exaptation in String Theory.- Turning Point(s).- Part III: String Theory Becomes Super: 1985-1995.- Superstring Theory and the Real World.- A 'Second Superstring Revolution' and the Future of String Theory.

### Fields of interest

Quantum Field Theories, String Theory; Philosophy of Science; History and Philosophical Foundations of Physics; Elementary Particles, Quantum Field Theory; Classical and Quantum Gravitation, Relativity Theory

### Target groups

Upper undergraduate

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45127-0](http://www.springer.com/978-3-642-45127-0)

### Hardcover

2014. XIX, 250 p. 39 illus. (The Frontiers Collection)  
ISBN 978-3-642-45127-0

Due: January 15, 2014

J.G. Roederer, University of Alaska-Fairbanks, Fairbanks, USA; H. Zhang, University of Alaska-Fairbanks, Fairbanks, USA

## Dynamics of Magnetically Trapped Particles

Foundations of the Physics of Radiation Belts and Space Plasmas

This book is a new edition of Roederer's classic Dynamics of Geomagnetically Trapped Radiation, updated and considerably expanded. The main objective is to describe the dynamic properties of magnetically trapped particles in planetary radiation belts and plasmas and explain the physical processes involved from the theoretical point of view. The approach is to examine in detail the orbital and adiabatic motion of individual particles in typical configurations of magnetic and electric fields in the magnetosphere and, from there, derive basic features of the particles' collective "macroscopic" behavior in general planetary environments. Emphasis is not on the "what" but on the "why" of [...]

### Features

This book is a new edition of Roederer's classic Dynamics of Geomagnetically Trapped Radiation, updated and considerably expanded. The main objective is to describe the dynamic properties of magnetically trapped particles in planetary radiation belts and plasmas and explain the physical processes involved from the theoretical point of view. The approach is to examine in detail the orbital and [...]

### Contents

Particle Drifts and the First Adiabatic Invariant.- Particle Trapping, Drift Shells and the Second Adiabatic Invariant.- Periodic Drift Motion and the Third Adiabatic Invariant.- Trapped Particle Distributions and Flux Mapping.- Violation of the Adiabatic Invariants and Trapped Particle Diffusion.- Introduction to Plasma Physics.

### Fields of interest

Extraterrestrial Physics, Space Sciences; Plasma Physics; Geophysics / Geodesy; Applied and Technical Physics; Magnetism, Magnetic Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41529-6](http://www.springer.com/978-3-642-41529-6)

### Hardcover

2014. XVIII, 192 p. 100 illus., 1 illus. in color. (Astrophysics and Space Science Library, Vol. 403)  
ISBN 978-3-642-41529-6

Due: December 31, 2013

A. Rubin, Lomonosov Moscow State University, Moscow, Russian Federation; G. Rizinchenko, Lomonosov Moscow State University, Moscow, Russian Federation

## Mathematical Biophysics

This book presents concise descriptions and analysis of the classical and modern models used in mathematical biophysics. The authors ask the question "what new information can be provided by the models that cannot be obtained directly from experimental data?" Actively developing fields such as regulatory mechanisms in cells and subcellular systems and electron transport and energy transport in membranes are addressed together with more classical topics such as metabolic processes, nerve conduction and heart activity, chemical kinetics, population dynamics, and photosynthesis. The main approach is to describe biological processes using different mathematical approaches necessary to [...]

### Features

This book presents concise descriptions and analysis of the classical and modern models used in mathematical biophysics. The authors ask the question "what new information can be provided by the models that cannot be obtained directly from experimental data?" Actively developing fields such as regulatory mechanisms in cells and subcellular systems and electron transport and energy transport in membranes are [...]

### Contents

Preface.- Part I Basic models in mathematical biophysics.- Chapter 1 Growth and catalysis models.- Chapter 2 Oscillations, rhythms and chaos in biological systems.- Chapter 3 Spatiotemporal self-organization of biological systems.- Chapter 4 Model of the impact of a weak electric field on the nonlinear system of trans-membrane ion transport.- Part II Models of complex systems.- Chapter 5 Oscillations and periodic space structures of pH and electric potential along the cell membrane of algae Chara corallina.- Chapter 6 Models of Morphogenesis.- Chapter 7 Autowave processes, nerve pulse [...]

### Fields of interest

Biophysics and Biological Physics; Computer Applications in Life Sciences; Math. Applications in Chemistry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-8701-2](http://www.springer.com/978-1-4614-8701-2)

### Hardcover

2014. XV, 273 p. 150 illus., 43 illus. in color. (Biological and Medical Physics, Biomedical Engineering)  
ISBN 978-1-4614-8701-2

usually dispatched within 3 to 5 business days

H. Satz

## Ultimate Horizons

Probing the Limits of the Universe

In the last hundred years, modern physics and cosmology have shown that there exist regions of the universe forever beyond our reach, hidden by truly ultimate horizons. Such regions exist in those remote parts of the universe where, from our point of view, space expands faster than the speed of light. They are found in black holes, where the gravity is strong enough to retain even light within its field of attraction. And in the realm of the very small, quarks must remain forever confined to their world of extreme density and can never be removed from it. The aim of this book is to describe these ultimate horizons, how they were discovered, how they shape our view of the world, and[...]

### Features

In the last hundred years, modern physics and cosmology have shown that there exist regions of the universe forever beyond our reach, hidden by truly ultimate horizons. Such regions exist in those remote parts of the universe where, from our point of view, space expands faster than the speed of light. They are found in black holes, where the gravity is strong enough to retain even light within its field of [...]

### Contents

Horizons.- The Vanishing Stars.- The Secret Glow of Black Holes.- The Visions of the Accelerating Observer.- The Smallest Possible Thing.- Primordial Matter.-The Last Veil.

### Fields of interest

Astronomy, Astrophysics and Cosmology; Elementary Particles, Quantum Field Theory; Epistemology; Philosophy of Science

### Target groups

Upper undergraduate

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41656-9](http://www.springer.com/978-3-642-41656-9)

### Hardcover

2013. XII, 172 p. 68 illus., 53 illus. in color. (The Frontiers Collection)  
ISBN 978-3-642-41656-9

**Due: December 31, 2013**

G. Schaller, Technische Universität Berlin, Berlin, Germany

## Open Quantum Systems Far from Equilibrium

This monograph provides graduate students and also professional researchers aiming to understand the dynamics of open quantum systems with a valuable and self-contained toolbox. Special focus is laid on the link between microscopic models and the resulting open-system dynamics. This includes how to derive the celebrated Lindblad master equation without applying the rotating wave approximation. As typical representatives for non-equilibrium configurations it treats systems coupled to multiple reservoirs (including the description of quantum transport), driven systems and feedback-controlled quantum systems. Each method is illustrated with easy-to-follow examples from recent research.[...]

### Features

This monograph provides graduate students and also professional researchers aiming to understand the dynamics of open quantum systems with a valuable and self-contained toolbox. Special focus is laid on the link between microscopic models and the resulting open-system dynamics. This includes how to derive the celebrated Lindblad master equation without applying the rotating wave approximation. As typical [...]

### Contents

An Introduction to Master Equations.- Obtaining a Master Equation.- Solving Master Equations.- Multi-Terminal Coupling: Non-Equilibrium Case I.- Direct Bath Coupling: Non-Equilibrium Case II.- Open-Loop Control: Non-Equilibrium Case III.- Closed-Loop Control: Non-Equilibrium Case IV.

### Fields of interest

Quantum Physics; Mathematical Methods in Physics; Mathematical Applications in the Physical Sciences; Mathematical Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-03876-6](http://www.springer.com/978-3-319-03876-6)

### Softcover

2014. X, 242 p. 44 illus., 10 illus. in color. (Lecture Notes in Physics, Vol. 881)  
ISBN 978-3-319-03876-6

**Due: February 28, 2014**

C. Scheidenberger, Gesellschaft für, Darmstadt, Germany; M. Pfützner, University of Warsaw, Warsaw, Poland (Eds.)

## The Euroschool on Exotic Beams, Vol. IV

This is the forth volume in a series of Lecture Notes based on the highly successful Euro Summer School on Exotic Beams. The aim of these notes is to provide a thorough introduction to radioactive ion-beam physics at the level of graduate students and young postdocs starting out in the field. Each volume covers a range of topics from nuclear theory to experiment and applications. Vol I has been published as LNP 651, Vol II has been published as LNP 700, and Vol. III has been published as LNP 764.

### Features

This is the forth volume in a series of Lecture Notes based on the highly successful Euro Summer School on Exotic Beams. The aim of these notes is to provide a thorough introduction to radioactive ion-beam physics at the level of graduate students and young postdocs starting out in the field. Each volume covers a range of topics from nuclear theory to experiment and applications. Vol I has been [...]

### Contents

Clustering in Light Nuclei: From the Stable to the Exotic.- A Pedestrian Approach to the Theory of Transfer Reactions: Applications to Weekly-bound and Unbound Exotic Nuclei.- Effective Field Theories of Loosely Bound Nuclei.- Direct Reactions at Relativistic Energies: A New Insight Into the Single-particle Structure of Exotic Nuclei.- Nuclear Charge Radii of Light Elements and Recent Developments in Collinear Laser Spectroscopy.- The Nuclear Energy Density Functional Formalism.

### Fields of interest

Nuclear Physics, Heavy Ions, Hadrons; Particle Acceleration and Detection, Beam Physics; Measurement Science, Instrumentation; Astrophysics and Astroparticles

### Target groups

Graduate

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45140-9](http://www.springer.com/978-3-642-45140-9)

### Softcover

2014. XIII, 350 p. 133 illus., 83 illus. in color. (Lecture Notes in Physics, Vol. 879)  
ISBN 978-3-642-45140-9

**Due: January 31, 2014**

V. Schmidt, Joanneum Research Forschungsges. mbH, Weiz, Austria; M.R. Beleggras, Joanneum Research Forschungsges. mbH, Weiz, Austria (Eds.)

## Laser Technology in Biomimetics

### Basics and Applications

Lasers are progressively more used as versatile tools for fabrication purposes. The wide range of available powers, wavelengths, operation modes, repetition rates etc. facilitate the processing of a large spectrum of materials at exceptional precision and quality. Hence, manifold methods were established in the past and novel methods are continuously under development. Biomimetics, the translation from nature-inspired principles to technical applications, is strongly multidisciplinary. This field offers intrinsically a wide scope of applications for laser based methods regarding structuring and modification of materials. This book is dedicated to laser fabrication methods in[...]

### Features

Lasers are progressively more used as versatile tools for fabrication purposes. The wide range of available powers, wavelengths, operation modes, repetition rates etc. facilitate the processing of a large spectrum of materials at exceptional precision and quality. Hence, manifold methods were established in the past and novel methods are continuously under development. Biomimetics, the translation from [...]

### Contents

Laser fabrication in biomimetics.- Laser technology in biomimetics applications.- Future perspectives.

### Fields of interest

Biophysics and Biological Physics; Laser Technology and Physics, Photonics; Biomedical Engineering; Classical Electrodynamics, Wave Phenomena

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-41340-7](http://www.springer.com/978-3-642-41340-7)

### Hardcover

2014. XXIII, 268 p. 82 illus., 50 illus. in color. (Biological and Medical Physics, Biomedical Engineering)  
ISBN 978-3-642-41340-7

**Due: January 31, 2014**

P. Schmüser, M. Dohlus, J. Rossbach, C. Behrens, DESY, Hamburg, Germany

## Free-Electron Lasers in the Ultraviolet and X-Ray Regime

### Physical Principles, Experimental Results, Technical Realization

The main goal of the book is to provide a systematic and didactic approach to the physics and technology of free-electron lasers. Numerous figures are used for illustrating the underlying ideas and concepts and links to other fields of physics are provided. After an introduction to undulator radiation and the low-gain FEL, the one-dimensional theory of the high-gain FEL is developed in a systematic way. Particular emphasis is put on explaining and justifying the various assumptions and approximations that are needed to obtain the differential and integral equations governing the FEL dynamics. Analytical and numerical solutions are presented and important FEL parameters are defined.[...]

### Features

The main goal of the book is to provide a systematic and didactic approach to the physics and technology of free-electron lasers. Numerous figures are used for illustrating the underlying ideas and concepts, and links to other fields of physics are provided. After an introduction to undulator radiation and the low-gain FEL, the one-dimensional theory of the high-gain FEL is developed in a systematic way. [...]

### Contents

Introduction.- Undulator Radiation.- Low-Gain FEL Theory.- One-Dimensional Theory of the High-Gain FEL.- Applications of the High-Gain FEL Equations.- Energy Spread, Space Charge and 3D Effects.- Self-Amplified Spontaneous Emission and FEL Seeding.- The EUV and Soft X-Ray FEL in Hamburg.- X-Ray Free-Electron Lasers: Technical Realization and Experimental Results.- Appendices.- A. Hamiltonian Formalism.- B. Supplements to Chapter 4.- C. Gaussian Modes of Laser Beams.- D. Eigenmode Approach.- E. Statistical Methods and Tools.- F. Conventions and Frequently used Symbols.- Index.

### Fields of interest

Laser Technology and Physics, Photonics; Particle Acceleration and Detection, Beam Physics; Measurement Science, Instrumentation

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-319-04080-6](http://www.springer.com/978-3-319-04080-6)

### Hardcover

2014. XIII, 242 p. 114 illus., 111 illus. in color. (Springer Tracts in Modern Physics, Vol. 258)  
ISBN 978-3-319-04080-6

**Due: February 28, 2014**

K.-I. Shudo, I. Katayama, S.-Y. Ohno (Eds.)

## Frontiers in Optical Methods

### Nano-Characterization and Coherent Control

This collection of reviews by leading Japanese researchers covers topics like ultrafast optical responses, terahertz and phonon studies, super-sensitive surface and high-pressure spectroscopy, combination of visible and x-ray photonics. Several related areas at the cutting edge of measurement technology and materials science are included. This book is partly based on well-cited review articles in the Japanese language in special volumes of the Journal of the Vacuum Society of Japan.

### Features

This collection of reviews by leading Japanese researchers covers topics like ultrafast optical responses, terahertz and phonon studies, super-sensitive surface and high-pressure spectroscopy, combination of visible and x-ray photonics. Several related areas at the cutting edge of measurement technology and materials science are included. This book is partly based on well-cited review articles in the Japanese [...]

### Contents

State-of-Art of Terahertz Science and Technology.- Broadband Terahertz Spectroscopy and its Application to the Characterization of Thin Films.- Single Photon Counting and Passive Microscopy of Terahertz Radiation.- Coherent Phonons in Carbon Nanotubes.- Time-resolved X-ray Diffraction Studies of Coherent Lattice Dynamics Using Synchrotron Radiation.- Imaging GHz-THz Acoustic Wave Propagation in Thin Films and Microstructures.- Material Evaluation with Various Optical Measurement Systems: Focusing on Terahertz Spectroscopy.- Ultrafast Excitation and Dynamics Measurements with Intense[...]

### Fields of interest

Laser Technology and Physics, Photonics; Atomic, Molecular, Optical and Plasma Physics; Applied Optics, Optoelectronics, Optical Devices; Spectroscopy and Microscopy; Microwaves, RF and Optical Engineering; Nanotechnology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40593-8](http://www.springer.com/978-3-642-40593-8)

### Hardcover

2014. XII, 228 p. 139 illus., 70 illus. in color. (Springer Series in Optical Sciences, Vol. 180)  
ISBN 978-3-642-40593-8

**usually dispatched within 3 to 5 business days  
December 31, 2013**

A. Solov'yov, Goethe Universität Frankfurt, Frankfurt, Germany; A. Korol, Goethe Universität Frankfurt, Frankfurt, Germany

## Polarization Bremsstrahlung

This book introduces and reviews both theory and applications of polarizational bremsstrahlung, i.e. the electromagnetic radiation emitted during collisions of charged particles with structured, thus polarizable targets, such as atoms, molecules and clusters. The subject, following the first experimental evidence a few decades ago, has gained importance through a number of modern applications. Thus, the study of several radiative mechanisms is expected to lead to the design of novel light sources, operating in various parts of the electromagnetic spectrum. Conversely, the analysis of the spectral and angular distribution of the photon emission constitutes a new tool for extracting [...]

### Features

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### Contents

Introduction.- Bremsstrahlung in Collisions of Structureless Charged Particles with Atoms and Ions.- Polarizational Bremsstrahlung in Collisions With Hydrogen Atom.- Cross Section of PBrS From Many-Electron Atoms and Ions.- PBrS in Non-Relativistic Collisions of Structural Particles with Atoms and Ions.- Relativistic Effects in the Polarizational BrS Process.- PBrS From Atomic Clusters and Fullerenes.- Conclusion.- References.

### Fields of interest

Atoms and Molecules in Strong Fields, Laser Matter Interaction; Physical Chemistry

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45223-9](http://www.springer.com/978-3-642-45223-9)

### Hardcover

2014. Approx. 280 p. (Springer Series on Atomic, Optical, and Plasma Physics, Vol. 80)  
ISBN 978-3-642-45223-9

**Due: March 28, 2014**

G. Srinivasan

## What are the Stars?

The outstanding question in astronomy at the turn of the twentieth century was: What are the stars and why are they as they are? In this volume, the story of how the answer to this fundamental question was unravelled is narrated in an informal style, with emphasis on the underlying physics. Although the foundations of astrophysics were laid down by 1870, and the edifice was sufficiently built up by 1920, the definitive proof of many of the prescient conjectures made in the 1920s and 1930s came to be established less than ten years ago. This book discusses these recent developments in the context of discussing the nature of the stars, their stability and the source of the energy they [...]

### Features

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### Contents

The Present Revolution in Astronomy: An Overview.- What Are the Stars?.- Stars as Globes of Gas.- Eddington's Theory of the Stars.- Why Are the Stars as They Are?.- Energy Generation in the Stars.- Sounds of the Sun.- The Smoking Gun is Finally Found.

### Fields of interest

Astrophysics and Astroparticles; Astronomy, Observations and Techniques

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-3-642-45301-4](http://www.springer.com/978-3-642-45301-4)

No distribution rights for India, Pakistan, Bhutan, Bangladesh, Sri Lanka, Nepal, The Maldives, Middle East, Malaysia, Indonesia and Singapore

### Hardcover

Originally published by Universities Press (India) Private Ltd., Himayatnagar, 2011  
2014. XLIX, 213 p. 105 illus. (Undergraduate Lecture Notes in Physics)  
ISBN 978-3-642-45301-4  
**Due: February 28, 2014**

G. Srinivasan

## Life and Death of the Stars

This volume is devoted to one of the fascinating things about stars: they evolve as they age. This evolution is different for stars of different mass. How stars end their lives when their supply of energy is exhausted also depends on their mass. Historically speaking, astronomers first worried about the ultimate fate of the stars, even before the details of their evolution became clear. The book is divided into two parts. Part I is an account of the remarkable predictions made during the 1920s and 1930s concerning the ultimate fate of the stars. Since much of this development hinged on the emerging quantum physics, a detailed introduction to the relevant physics is included. Part II [...]

### Features

This volume is devoted to one of the fascinating things about stars: they evolve as they age. This evolution is different for stars of different mass. How stars end their lives when their supply of energy is exhausted also depends on their mass. Historically speaking, astronomers first worried about the ultimate fate of the stars, even before the details of their evolution became clear. The book is [...]

### Contents

Part I: A Historical Perspective.- What Are the Stars?.- Stars in Their Youth.- White Dwarf Stars.- The Principles of Statistical Mechanics.- Fermi-Dirac Distribution.- Quantum Stars.- The Chandrasekhar Limit.- The Absurd Behaviour of Stars: Not All Stars Will Have Energy to Cool.- Guest Stars.- Supernovae, Neutron Stars and Black Holes.- A Profile of Chandra.- Part II: The Life History of Stars—A Modern Perspective.- To Burn or Not To Burn.- What Does the Future Hold for the Sun?.- Life History of Intermediate Mass Stars.- Diamonds in the Sky.- Exploding Stars.

### Fields of interest

Astrophysics and Astroparticles; Astronomy, Observations and Techniques

### Target groups

Lower undergraduate

### Type of publication

Undergraduate textbook

More on [www.springer.com/978-3-642-45383-0](http://www.springer.com/978-3-642-45383-0)

No distribution rights for India, Pakistan, Bhutan, Bangladesh, Sri Lanka, Nepal, The Maldives, Middle East, Malaysia, Indonesia and Singapore

### Hardcover

Originally published by Universities Press (India) Private Ltd., Himayatnagar, 2011  
2014. 268 p. 70 illus. (Undergraduate Lecture Notes in Physics)  
ISBN 978-3-642-45383-0  
**Due: February 28, 2014**

M. Stafe, A. Marcu, National Institute for Laser Plasma, Bucharest-Magurele, Romania; N. Puscas

## Pulsed Laser Ablation of Solids

### Basics, Theory and Applications

The book introduces 'the state of the art' of pulsed laser ablation and its applications. It is based on recent theoretical and experimental studies. The book reaches from the basics to advanced topics of pulsed laser ablation. Theoretical and experimental fundamental phenomena involved in pulsed laser ablation are discussed with respect to material properties, laser wavelength, fluence and intensity regime of the light absorbed linearly or non-linearly in the target material. The energy absorbed by the electrons leads to atom/molecule excitation, ionization and/or direct chemical bond breaking and is also transferred to the lattice leading to material heating and phase transitions.[...]

### Features

The book introduces 'the state of the art' of pulsed laser ablation and its applications. It is based on recent theoretical and experimental studies. The book reaches from the basics to advanced topics of pulsed laser ablation. Theoretical and experimental fundamental phenomena involved in pulsed laser ablation are discussed with respect to material properties, laser wavelength, fluence and intensity regime of [..]

### Contents

Lasers for Pulsed Laser Ablation.- Laser-Matter Interaction Below the Plasma Ignition Threshold Intensity.- Laser-Matter Interaction Above the Plasma Ignition Threshold Intensity.- Material Removal and Deposition by Pulsed Laser Ablation and Associated Phenomena.- Experimental Techniques for Analyzing the Material Removal and Deposition Rates in Real Time.

### Fields of interest

Surface and Interface Science, Thin Films; Classical Electrodynamics, Wave Phenomena; Surfaces and Interfaces, Thin Films; Applied and Technical Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-40977-6](http://www.springer.com/978-3-642-40977-6)

### Hardcover

2014. XII, 233 p. 140 illus., 11 illus. in color. (Springer Series in Surface Sciences, Vol. 53)  
ISBN 978-3-642-40977-6

usually dispatched within 3 to 5 business days

C. Sun, Nanyang Technological University, Singapore, Singapore

## Relaxation of the Chemical Bond

### Skin Chemisorption Size Matter ZTP Mechanics H2O Myths

The aim of this book is to explore the detectable properties of a material to the parameters of bond and non-bond involved and to clarify the interdependence of various properties. This book is composed of four parts; Part I deals with the formation and relaxation dynamics of bond and non-bond during chemisorptions with uncovering of the correlation among the chemical bond, energy band and surface potential barrier (3B) during reactions; Part II is focused on the relaxation of bonds between atoms with fewer neighbors than the ideal in bulk with unraveling of the bond order-length-strength (BOLS) correlation mechanism, which clarifies the nature difference between nanostructures and[...]

### Features

The aim of this book is to explore the detectable properties of a material to the parameters of bond and non-bond involved and to clarify the interdependence of various properties. This book is composed of four parts; Part I deals with the formation and relaxation dynamics of bond and non-bond during chemisorptions with uncovering of the correlation among the chemical bond, energy band, and surface potential [..]

### Contents

From the Contents: Part I Molecular Chemisorption.- Introduction.- Foundations.- STM and LEED: Atomic Valences and Bond Geometry.- Part II Atomic Undercoordination.- Introduction.- Principles: BOLS and NEP.- Surface Relaxation and Nanosolid Densification.- Part III Mechano and Thermo Activation.- Introduction.- Principles.- Liquid and Solid Surfaces.- Part IV Water and Ice.- Introduction.- Principles: Hypotheses and Expectations.

### Fields of interest

Surface and Interface Science, Thin Films; Physical Chemistry; Nanotechnology; Surfaces and Interfaces, Thin Films; Nanotechnology and Microengineering

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-981-4585-20-0](http://www.springer.com/978-981-4585-20-0)

### Hardcover

2014. 500 p. 250 illus., 20 illus. in color. (Springer Series in Chemical Physics, Vol. 108)  
ISBN 978-981-4585-20-0

Due: February 21, 2014

K. Sundermeyer

## Symmetries in Fundamental Physics

Over the course of the last century it has become clear that both elementary particle physics and relativity theories are based on the notion of symmetries. These symmetries become manifest in that the "laws of nature" are invariant under spacetime transformations and/or gauge transformations. The consequences of these symmetries were analyzed as early as in 1918 by Emmy Noether on the level of action functionals. Her work did not receive due recognition for nearly half a century, but can today be understood as a recurring theme in classical mechanics, electrodynamics and special relativity, Yang-Mills type quantum field theories, and in general relativity. As a matter of fact, as[...]

### Features

Over the course of the last century it has become clear that both elementary particle physics and relativity theories are based on the notion of symmetries. These symmetries become manifest in that the "laws of nature" are invariant under spacetime transformations and/or gauge transformations. The consequences of these symmetries were analyzed as early as in 1918 by Emmy Noether on the level of action [..]

### Contents

Preface.- Notation.- Introduction.- Symmetry: Argument, Principle, and Leitmotif.- Operations and Invariants.- "Symmetries" in "Fundamental Physics".- The Scope of Symmetries.- Bibliographical Notes.- Classical Mechanics.- Newtonian and Analytical Mechanics.- Symmetries and Conservation Laws.- Galilei Group.- Electrodynamics and Special Relativity.- Electrodynamics à la Maxwell.- Special Relativity.- Noether Theorems.- Poincaré Transformations.- Generalizations of Poincaré Symmetry.- On the Validity of Special Relativity.- Quantum Mechanics.- Principles of Quantum Mechanics.- Symmetry[...]

### Fields of interest

Theoretical, Mathematical and Computational Physics; Elementary Particles, Quantum Field Theory; Phase Transitions and Multiphase Systems; Classical and Quantum Gravitation, Relativity Theory; Mathematical Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7641-8](http://www.springer.com/978-94-007-7641-8)

### Hardcover

2014. XXVIII, 757 p. 25 illus. (Fundamental Theories of Physics, Vol. 176)  
ISBN 978-94-007-7641-8

Due: January 14, 2014

M. Thiriet

## Anatomy and Physiology of the Circulatory and Ventilatory Systems

Together, the volumes in this series present all of the data needed at various length scales for a multidisciplinary approach to modeling and simulation of flows in the cardiovascular and ventilatory systems, especially multiscale modeling and coupled simulations. The cardiovascular and respiratory systems are tightly coupled, as their primary function is to supply oxygen to, and remove carbon dioxide from, the body's cells. Because physiological conduits have deformable and reactive walls, macroscopic flow behavior and prediction must be coupled to nano- and microscopic events in a corrector scheme of regulated mechanism. Therefore, investigation of flows of blood and air in[...]

### Features

Together, the volumes in this series present all of the data needed at various length scales for a multidisciplinary approach to modeling and simulation of flows in the cardiovascular and ventilatory systems, especially multiscale modeling and coupled simulations. The cardiovascular and respiratory systems are tightly coupled, as their primary function is to supply oxygen to, and remove carbon dioxide from, [...]

### Contents

Preface.- Chapter 1: Anatomy of the Cardiovascular Apparatus.- Chapter 2: Anatomy of the Ventilatory Apparatus.- Chapter 3: Cardiovascular Physiology.- Chapter 4: Physiology of Ventilation.- Chapter 5: Medical Images and Physiological Signals.- Conclusions.- References.- List of Currently Used Prefixes and Suffixes.- List of Aliases and Primary Symbols.- Complementary Lists of Notations.- Index.

### Fields of interest

Biophysics and Biological Physics; Biomedical Engineering; Mathematical and Computational Biology; Systems Biology; Engineering Fluid Dynamics; Cardiology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9468-3](http://www.springer.com/978-1-4614-9468-3)

### Hardcover

2014. XV, 585 p. 75 illus., 25 illus. in color. (Biomathematical and Biomechanical Modeling of the Circulatory and Ventilatory Systems, Vol. 6)

ISBN 978-1-4614-9468-3

usually dispatched within 3 to 5 business days

W. Waldenfels

## A Measure Theoretical Approach to Quantum Stochastic Processes

This monograph takes as starting point that abstract quantum stochastic processes can be understood as a quantum field theory in one space and in one time coordinate. As a result it is appropriate to represent operators as power series of creation and annihilation operators in normal-ordered form, which can be achieved using classical measure theory. Considering in detail four basic examples (e.g. a two-level atom coupled to a heat bath of oscillators), in each case the Hamiltonian of the associated one-parameter strongly continuous group is determined and the spectral decomposition is explicitly calculated in the form of generalized eigen-vectors. Advanced topics include the theory of[...]

### Features

This monograph takes as starting point that abstract quantum stochastic processes can be understood as a quantum field theory in one space and in one time coordinate. As a result it is appropriate to represent operators as power series of creation and annihilation operators in normal-ordered form, which can be achieved using classical measure theory. Considering in detail four basic examples (e.g. a [...])

### Contents

Weyl Algebras.- Continuous Sets of Creation and Annihilation Operators.- One-Parameter Groups.- Four Explicitly Calculable One-Excitation Processes.- White Noise Calculus.- Circled Integrals.- White Noise Integration.- The Hudson-Parthasarathy Differential Equation.- The Amplifies Oscillator.- Approximation by Coloured Noise.- Index.

### Fields of interest

Quantum Physics; Mathematical Physics; Mathematical Methods in Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-45081-5](http://www.springer.com/978-3-642-45081-5)

### Softcover

2014. XVII, 228 p. (Lecture Notes in Physics, Vol. 878) ISBN 978-3-642-45081-5

usually dispatched within 3 to 5 business days  
December 31, 2013

A. Zjajo

## Stochastic Process Variation in Deep-Submicron CMOS

### Circuits and Algorithms

One of the most notable features of nanometer scale CMOS technology is the increasing magnitude of variability of the key device parameters affecting performance of integrated circuits. The growth of variability can be attributed to multiple factors, including the difficulty of manufacturing control, the emergence of new systematic variation-generating mechanisms, and most importantly, the increase in atomic-scale randomness, where device operation must be described as a stochastic process. In addition to wide-sense stationary stochastic device variability and temperature variation, existence of non-stationary stochastic electrical noise associated with fundamental processes in[...]

### Features

One of the most notable features of nanometer scale CMOS technology is the increasing magnitude of variability of the key device parameters affecting performance of integrated circuits. The growth of variability can be attributed to multiple factors, including the difficulty of manufacturing control, the emergence of new systematic variation-generating mechanisms, and most importantly, the increase in [...]

### Contents

1 Introduction.- 2 Random Process Variation in Deep-Submicron CMOS.- 3 Electronic Noise in Deep-Submicron CMOS.- 4 Thermal Effects in Deep-Submicron CMOS.- 5 Circuit Solutions.- 6 Conclusions and Recommendations.- Appendix. References.- Acknowledgement.- About the Author.

### Fields of interest

Electronic Circuits and Devices; Circuits and Systems; Statistical Physics, Dynamical Systems and Complexity; Appl. Mathematics / Computational Methods of Engineering; Physiological, Cellular and Medical Topics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-7780-4](http://www.springer.com/978-94-007-7780-4)

### Hardcover

2014. XIX, 192 p. 46 illus. (Springer Series in Advanced Microelectronics, Vol. 48)

ISBN 978-94-007-7780-4

usually dispatched within 3 to 5 business days

J. Äystö, University of Jyväskylä, Jyväskylä, Finland; T. Eronen, University of Jyväskylä, Jyväskylä, Finland; A. Jokinen, University of Jyväskylä, Jyväskylä, Finland; A. Kankainen, University of Jyväskylä, Jyväskylä, Finland; I. Moore, University of Jyväskylä, Jyväskylä, Finland; H. Penttilä, University of Jyväskylä, Jyväskylä, Finland (Eds.)

## IGISOL

Three decades of research using IGISOL technique at the University of Jyväskylä

The IGISOL group at the University of Jyväskylä studies the properties of nuclei far off the line of beta stability. These studies are performed locally at the Jyväskylä Ion Guide Isotope Separator On-Line (IGISOL) facility, as well as at a number of other laboratories such as the ISOLDE facility in CERN, at GANIL and in Helmholtzzentrum GSI, the location of the future radioactive beam facility FAIR. The group is also actively involved in work to support the development of international future facilities EURISOL and aforementioned FAIR. This book presents carefully selected papers to portrait the work at IGISOL. Previously published in the journals *Hyperfine Interactions* and *European* [...]

### Features

The IGISOL group at the University of Jyväskylä studies the properties of nuclei far off the line of beta stability. These studies are performed locally at the Jyväskylä Ion Guide Isotope Separator On-Line (IGISOL) facility, as well as at a number of other laboratories such as the ISOLDE facility in CERN, at GANIL and in Helmholtzzentrum GSI, the location of the future radioactive beam facility FAIR. The group [...]

### Contents

Introduction.- Experimental facilities and methods.- Decay Spectroscopy.- Ground state properties of nuclei. Charge radii and moments.- Ground State Properties. Atomic Masses.- Applied and miscellaneous.- Future developments.

### Fields of interest

Nuclear Physics, Heavy Ions, Hadrons; Particle Acceleration and Detection, Beam Physics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-94-007-5554-3](http://www.springer.com/978-94-007-5554-3)

### Hardcover

2014. 200 p. 120 illus.  
ISBN 978-94-007-5554-3

Due: February 2014

## Psychology

S. Chakrabarty, Michigan State University, East Lansing, USA

## CMOS Integrated Circuits for Self-powered and Energy-scavenging Systems

This book describes the fundamental principles of designing integrated circuits used for sensors that operate by scavenging energy from the environment. Although energy scavenging and self-powering is an area which spans several engineering and scientific disciplines, this book focuses on fundamental principles of energy scavenging circuits and therefore should be accessible to any researcher working in the area of integrated circuits. This book will be a valuable reference for anyone interested in designing sensors and systems that can operate without batteries by scavenging ambient energy. It will also be beneficial to designers working on ultra-low power analog and digital signal [...]

### Features

This book describes the fundamental principles of designing integrated circuits used for sensors that operate by scavenging energy from the environment. Although energy scavenging and self-powering is an area which spans several engineering and scientific disciplines, this book focuses on fundamental principles of energy scavenging circuits and therefore should be accessible to any researcher working in the [...]

### Contents

Overview of energy scavenging and self-powering sensors.- CMOS devices for energy scavenging.- Energy scavenging sensors and transducers.- Piezoelectric energy scavengers.- Principles of optimal energy scavenging.- Micro-energy storage techniques.- Micro-energy Conditioning Circuits.- Micro-energy Conversion Circuits.- DSP Techniques for Energy Scavenging.- ASP Techniques for Energy Scavenging.- Sensor Telemetry and Interrogation.- Case study: Self-powered Fatigue Monitoring Sensors.- Conclusions and Discussions.

### Fields of interest

Energy Systems; Circuits and Systems; Electronics and Microelectronics, Instrumentation

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4419-9576-6](http://www.springer.com/978-1-4419-9576-6)

### Hardcover

2014. 200p. 75 illus..  
ISBN 978-1-4419-9576-6

Due: February 28, 2014

D. Das, Bhabha Atomic Research Centre, Trombay, Mumbai, India; S.R. Bharadwaj (Eds.)

## Thoria-based Nuclear Fuels

Thermophysical and Thermodynamic Properties, Fabrication, Reprocessing, and Waste Management

This book presents the state of the art on thermo-physical and thermochemical properties, fabrication methodologies, irradiation behaviours, fuel reprocessing procedures, and aspects of waste management for oxide fuels in general and for thoria-based fuels in particular. The book covers all the essential features involved in the development of and working with nuclear technology. With the help of key databases, many of which were created by the authors, information is presented in the form of tables, figures, schematic diagrams and flow sheets, and photographs. This information will be useful for scientists and engineers working in the nuclear field, particularly for design and [...]

### Features

This book presents the state of the art on thermo-physical and thermochemical properties, fabrication methodologies, irradiation behaviours, fuel reprocessing procedures, and aspects of waste management for oxide fuels in general and for thoria-based fuels in particular. The book covers all the essential features involved in the development of and working with nuclear technology. With the help of key [...]

### Contents

Ch 1 Introduction.- Ch 2 Thermophysical properties - thermal expansion and thermal diffusivity.- Ch 3 Phase stability, thermodynamic properties and oxygen potential of thoria based oxide fuels with relevance to the fuel behaviour in handling & during irradiation.- Ch 4 Thermochemistry of fuel and fission products interactions with burnup.- Ch 5 Transport and release characteristics of gaseous and volatile fission products.- Ch 6 Fuel fabrication and characterizations.- Ch 7 Fuel reprocessing.- Ch 8 Waste management in the oxide fuels.

### Fields of interest

Nuclear Energy; Nuclear Engineering; Thermodynamics; Nuclear Physics, Heavy Ions, Hadrons

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5588-1](http://www.springer.com/978-1-4471-5588-1)

### Hardcover

2013. XII, 418 p. 173 illus. (Green Energy and Technology)  
ISBN 978-1-4471-5588-1

Due: December 31, 2013

N. Imanishi, Mie University, Tsu, Japan; A.C. Luntz, SUNCAT Center for Interface Science and, Menlo Park, USA; P. Bruce, University of St Andrews, St. Andrews, United Kingdom (Eds.)

## The Li-Air Battery

### Fundamentals

Lithium-air rechargeable batteries are the best candidate for a power source for electric vehicles, because of their high specific energy density. In this book, the history, scientific background, status and prospects of the lithium/air system are introduced by specialists in the field. This book will contain the basics, current statuses, and prospects for new technologies. This book is ideal for those interested in electrochemistry, energy storage, and materials science.

### Features

Lithium/air rechargeable batteries are the best candidate for a power source for electric vehicles, because of their high specific energy density. In this book, the history, scientific background, status and prospects of the lithium/air system are introduced by specialists in the field. This book will contain the basics, current statuses, and prospects for new technologies. This book is ideal for those [...]

### Contents

Introduction.- Non-aqueous Electrolytes.- Cathode Electrochemistry in Non-aqueous Li-air Batteries.- The Kinetics and Product Characteristics of Oxygen Reduction and Evolution in Li-O<sub>2</sub> Batteries.- Atomistic and First Principles -Computational Studies of Li-O<sub>2</sub> Batteries.- Lithium-air Batteries Based on Protected Lithium Electrodes.- Air Electrodes for Aqueous Li-air Batteries.- Solid Electrolytes for Aqueous Lithium-air Batteries.- A Solid State, Rechargeable Lithium-Oxygen Battery.- Primary Lithium-Air Batteries.- Overview of Li-O<sub>2</sub> Battery Systems, with a Focus on Oxygen Handling[...]

### Fields of interest

Energy Storage; Electrochemistry; Automotive Engineering; Characterization and Evaluation of Materials

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4899-8061-8](http://www.springer.com/978-1-4899-8061-8)

### Hardcover

2014. X, 342 p. 164 illus., 100 illus. in color.

ISBN 978-1-4899-8061-8

**Due: December 31, 2013**

T.R. Jow, U.S. Army Research Laboratory, Adelphi, USA; K. Xu, Driving Biological Discovery using Prote, Adelphi, USA; O. Borodin, U.S. Army Research Laboratory, Adelphi, USA; M. Ue, Mitsubishi Chemical Corporation, Yokohama, Japan (Eds.)

## Electrolytes for Lithium and Lithium-ion Batteries

Electrolytes for Lithium and Lithium-ion Batteries provides a comprehensive overview of the scientific understanding and technological development of electrolyte materials in the last 10 years. This book covers not only the key electrolytes such as LiPF<sub>6</sub> salt in mixed-carbonate solvents with additives for the state-of-the-art Li-ion batteries but also the new electrolyte materials developed recently that potentially lay the foundation for future advances. Characterization of electrolyte materials for their transport properties, structures, phase relationships, stabilities, and impurities is reviewed. Advances in the understanding of the electrode-electrolyte interactions and[...]

### Features

Electrolytes for Lithium and Lithium-ion Batteries provides a comprehensive overview of the scientific understanding and technological development of electrolyte materials in the last 10 years. This book covers not only the key electrolytes such as LiPF<sub>6</sub> salt in mixed-carbonate solvents with additives for the state-of-the-art Li-ion batteries but also the new electrolyte materials developed recently that [...]

### Fields of interest

Energy Storage; Electrochemistry; Industrial Chemistry / Chemical Engineering; Surfaces and Interfaces, Thin Films; Energy Technology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4939-0301-6](http://www.springer.com/978-1-4939-0301-6)

### Hardcover

2014. X, 10 p. 100 illus. (Modern Aspects of Electrochemistry)

ISBN 978-1-4939-0301-6

**Due: March 31, 2014**

J. Kurnitski (Ed.)

## Cost Optimal and Nearly Zero-Energy Buildings (nZEB)

### Definitions, Calculation Principles and Case Studies

Cost optimal and nearly zero energy performance levels are principles initiated by the European Union's (EU) Energy Performance of Buildings Directive which was recast in 2010. These will be major drivers in the construction sector in the next few years, because all new buildings in the EU from 2021 onwards are expected to be nearly zero energy buildings (nZEB). This book introduces the technical definitions, system boundaries, energy calculation methodology and input data needed to set primary energy based minimum/cost optimal and nZEB requirements in national energy frames. Worked examples are provided to illustrate the calculation of delivered, exported and primary energy, and[...]

### Features

Cost optimal and nearly zero energy performance levels are principles initiated by the European Union's (EU) Energy Performance of Buildings Directive which was recast in 2010. These will be major drivers in the construction sector in the next few years, because all new buildings in the EU from 2021 onwards are expected to be nearly zero energy buildings (nZEB). This book introduces the technical [...]

### Contents

Nearly zero energy buildings nZEB definitions and calculation frameworks.- Present energy performance requirements and future targets in some selected countries.- Cost optimal energy performance.- Indoor climate and standard building use input data for energy calculations.- Energy calculation methods with relevant accuracy for nZEB buildings.- Case studies of office and public nZEB buildings.- How to include nZEB and low carbon targets in architectural competitions.- Lessons learnt and future prospective.

### Fields of interest

Energy Efficiency (incl. Buildings); Building Construction, HVAC, Refrigeration; Renewable and Green Energy; Environmental Engineering / Biotechnology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5609-3](http://www.springer.com/978-1-4471-5609-3)

### Hardcover

2013. IX, 176 p. 84 illus. (Green Energy and Technology)

ISBN 978-1-4471-5609-3

**usually dispatched within 3 to 5 business days**

H. Liu, Chinese Academy of Sciences, Shaanxi, China (P.R.); X. Liu, Chinese Academy of Sciences, Shaanxi, China (P.R.); L. Xiong, Chinese Academy of Sciences, Shaanxi, China (P.R.); W. Zhao, Chinese Academy of Sciences, Shaanxi, China (P.R.)

## Packaging of High Power Semiconductor Lasers

This book introduces high power semiconductor laser packaging design. The challenges of the design and various packaging and testing techniques are detailed by the authors. New technologies and current applications are described in detail.

### Features

This book introduces high power semiconductor laser packaging design. The challenges of the design and various packaging and testing techniques are detailed by the authors. New technologies and current applications are described in detail.

### Contents

From the Contents: Introduction of High Power Semiconductor Lasers.- Package Types of High Power Semiconductor Lasers.- Thermal Design and Management in High Power Semiconductor Laser Packaging.- Thermal Stress Failures: Prediction and Prevention.- Optical Design and Beam Shaping in High Power Semiconductor Lasers.

### Fields of interest

Energy Systems

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9262-7](http://www.springer.com/978-1-4614-9262-7)

### Hardcover

2014. 400 p. 300 illus., 100 illus. in color. (Micro- and Opto-Electronic Materials, Structures, and Systems) ISBN 978-1-4614-9262-7

**Due: December 24, 2013**

X. Liu, Y. Jiang, Tsinghua University, Beijing, China (P.R.); T. Zhang, Tsinghua University, Beijing, China (P.R.)

## Temperature and Humidity Independent Control (THIC) of Air-conditioning System

Temperature and Humidity Independent Control (THIC) of Air-conditioning System focuses on temperature and humidity independent control (THIC) systems, which represents a new concept and new approach for indoor environmental control. This book presents the main components of the THIC systems, including dehumidification devices, high-temperature cooling devices and indoor terminal devices. Other relevant issues, such as operation and control strategy and case studies, are also included. This book is intended for air-conditioning system designers and engineers as well as researchers working with indoor environments. Xiaohua Liu is an associate professor at the Building Energy Research [...]

### Features

Temperature and Humidity Independent Control (THIC) of Air-conditioning System focuses on temperature and humidity independent control (THIC) systems, which represents a new concept and new approach for indoor environmental control. This book presents the main components of the THIC systems, including dehumidification devices, high-temperature cooling devices and indoor terminal devices. Other [...]

### Contents

Characteristics of conventional air-conditioning systems.- The basic idea of the THIC air-conditioning system.- Key components of the THIC system- Indoor terminals.- Key components of the THIC system- Outdoor air handling methods.- Key components of the THIC system- Outdoor air processor using liquid desiccant.- Key components of the THIC system- High temperature cooling sources.- Design and operation of THIC systems.- Application cases of THIC systems.- Development tendencies and perspectives of the THIC systems.

### Fields of interest

Energy Efficiency (incl. Buildings); Building Physics, HVAC; Thermodynamics; Engineering Thermodynamics, Heat and Mass Transfer; Energy Technology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-3-642-42221-8](http://www.springer.com/978-3-642-42221-8)

### Hardcover

2014. XIII, 356 p. 240 illus., 211 illus. in color. ISBN 978-3-642-42221-8

**Due: January 31, 2014**

E. Michalena, Paris Sorbonne and Paris 8 Universities, Paris, France; J.M. Hills (Eds.)

## Renewable Energy Governance

### Complexities and Challenges

This book focuses on Renewable Energy (RE) governance - the institutions, plans, policies and stakeholders that are involved in RE implementation - and the complexities and challenges associated with this much discussed energy area. Whilst RE technologies have advanced and become cheaper, governance schemes rarely support those technologies in an efficient and cost-effective way. To illustrate the problem, global case-studies delicately demonstrate successes and failures of renewable energy governance. RE here is considered from a number of perspectives: as a regional geopolitical agent, as a tool to meet national RE targets and as a promoter of local development. The book considers [...]

### Features

This book focuses on Renewable Energy (RE) governance - the institutions, plans, policies and stakeholders that are involved in RE implementation - and the complexities and challenges associated with this much discussed energy area. Whilst RE technologies have advanced and become cheaper, governance schemes rarely support those technologies in an efficient and cost-effective way. To illustrate the [...]

### Contents

Introduction - Renewable Energy Governance - Is it Blocking the Technically Feasible? - Renewable and Conventional Electricity Generation Systems: Technologies and Diversity of Energy Systems.- Institutional Factors that Determine Energy Transitions: A Comparative Case Study Approach.- Renewable Energy: Urban Centres Lead the Dance in Australia? - Endogenous Tourism Development Through Renewable Energy Governance: A Questionable Challenge.- Outliers or Frontrunners? Exploring the (Self-) Governance of Community-owned Sustainable Energy in Scotland and the Netherlands.- Renewable Energy [...]

### Fields of interest

Energy Policy, Economics and Management; Energy Economics

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4471-5594-2](http://www.springer.com/978-1-4471-5594-2)

### Hardcover

2013. IX, 397 p. 40 illus. (Lecture Notes in Energy, Vol. 57)

ISBN 978-1-4471-5594-2

**usually dispatched within 3 to 5 business days  
December 31, 2013**

H. Yoshikawa, Z. Zhang (Eds.)

## Progress of Nuclear Safety for Symbiosis and Sustainability

Advanced Digital Instrumentation, Control and Information Systems for Nuclear Power Plants

This book introduces advanced methods of computational and information systems allowing readers to better understand the state-of-the-art design and implementation technology needed to maintain and enhance the safe operation of nuclear power plants. The subjects dealt with in the book are (i) Full digital instrumentation and control systems and human-machine interface technologies (ii) Risk monitoring methods for large and complex plants (iii) Condition monitors for plant components (iv) Virtual and augmented reality for nuclear power plants and (v) Software reliability verification and validation for nuclear power plants. The target readers of this book are Ph.D. students, [...]

### Features

This book introduces advanced methods of computational and information systems, allowing readers to better understand the state-of-the-art design and implementation technology needed to maintain and enhance the safe operation of nuclear power plants. The subjects dealt with in the book are (i) Full digital instrumentation and control systems and human-machine interface technologies, (ii) Risk monitoring [...]

### Contents

Mitsubishi's computerized HSI and digital I&C system for PWR plants.- Design of an integrated operator support system for advanced NPP MCRs: Issues and perspectives.- Concept of advanced back-up control panel design of digital main control room.- U.S. Department of Energy instrumentation and controls technology research for advanced small modular reactors.- Application of FPGA to nuclear power plant I&C systems.- Prejob briefing using process data and tagout / line-up data on 2D drawings.- Study on modeling of an integrated control and condition monitoring system for nuclear power [...]

### Fields of interest

Nuclear Energy; Nuclear Engineering; Control; Quality Control, Reliability, Safety and Risk; Sustainable Development

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-4-431-54609-2](http://www.springer.com/978-4-431-54609-2)

### Hardcover

2014. XV, 304 p. 229 illus., 155 illus. in color. ISBN 978-4-431-54609-2

**Due: February 28, 2014**

## Statistics

M. Carpita, Università degli Studi di Brescia, Brescia, Italy; E. Brentari, University of Brescia, Brescia, Italy; E.M. Qannari, Oniris Nantes National College, Nantes, France (Eds.)

## Advances in Latent Variables

### Methods, Models and Applications

The book, belonging to the series "Studies in Theoretical and Applied Statistics – Selected Papers from the Statistical Societies", presents a peer-reviewed selection of contributions on relevant topics organized by the editors on the occasion of the SIS 2013 Statistical Conference "Advances in Latent Variables. Methods, Models and Applications", held at the Department of Economics and Management of the University of Brescia from June 19 to 21, 2013. The focus of the book is on advances in statistical methods for analyses with latent variables. In fact, in recent years, there has been increasing interest in this broad research area from both a theoretical and an applied point of view, [...]

### Features

The book, belonging to the series "Studies in Theoretical and Applied Statistics – Selected Papers from the Statistical Societies", presents a peer-reviewed selection of contributions on relevant topics organized by the editors on the occasion of the SIS 2013 Statistical Conference "Advances in Latent Variables. Methods, Models and Applications", held at the Department of Economics and Management of the [...]

### Contents

Introduction.- Part I: Latent Variables.- Part II: Methods, Models and Applications

### Fields of interest

Statistics (general); Statistical Theory and Methods; Statistics for Business, Economics, Mathematical Finance, Insurance; Statistics for Life Sciences, Medicine, Health Sciences

### Target groups

Research

### Type of publication

Contributed volume

More on [www.springer.com/978-3-319-02966-5](http://www.springer.com/978-3-319-02966-5)

### Hardcover

2014. Approx. 250 p. (Selected Papers of the Statistical Societies)

ISBN 978-3-319-02966-5

**Due: June 30, 2014**

T. Hibi, Osaka University, Toyonaka, Japan (Ed.)

## Gröbner Bases

### Statistics and Software Systems

The idea of the Gröbner basis first appeared in a 1927 paper by F. S. Macaulay, who succeeded in creating a combinatorial characterization of the Hilbert functions of homogeneous ideals of the polynomial ring. Later, the modern definition of the Gröbner basis was independently introduced by Heisuke Hironaka in 1964 and Bruno Buchberger in 1965. However, after the discovery of the notion of the Gröbner basis by Hironaka and Buchberger, it was not actively pursued for 20 years. A breakthrough was made in the mid-1980s by David Bayer and Michael Stillman, who created the Macaulay computer algebra system with the help of the Gröbner basis. Since then, rapid development on the Gröbner [...]

### Features

The idea of the Gröbner basis first appeared in a 1927 paper by F. S. Macaulay, who succeeded in creating a combinatorial characterization of the Hilbert functions of homogeneous ideals of the polynomial ring. Later, the modern definition of the Gröbner basis was independently introduced by Heisuke Hironaka in 1964 and Bruno Buchberger in 1965. However, after the discovery of the notion of the Gröbner basis [...]

### Contents

A Quick Introduction to Gröbner Bases.- Warm-up Drills and Tips for Mathematical Software.- Computation of Gröbner Bases.- Markov Bases and Designed Experiments.- Convex Polytopes and Gröbner Bases.- Gröbner Basis for Rings of Differential Operators and Applications.- Examples and Exercises.

### Fields of interest

Statistical Theory and Methods; Statistics and Computing / Statistics Programs; Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-4-431-54573-6](http://www.springer.com/978-4-431-54573-6)

### Hardcover

Original Japanese edition published by Kyoritsu Shuppan Co., Ltd, Tokyo, 2011

2014. XII, 460 p. 98 illus.

ISBN 978-4-431-54573-6

**Due: January 31, 2014**

J.-H. Jeong

## Statistical Inference on Residual Life

This is a monograph on the concept of residual life, which is an alternative summary measure of time-to-event data, or survival data. The mean residual life has been used for many years under the name of life expectancy, so it is a natural concept for summarizing survival or reliability data. It is also more interpretable than the popular hazard function, especially for communications between patients and physicians regarding the efficacy of a new drug in the medical field. This book reviews existing statistical methods to infer the residual life distribution. The review and comparison includes existing inference methods for mean and median, or quantile, residual life analysis through[...]

### Features

This is a monograph on the concept of residual life, which is an alternative summary measure of time-to-event data, or survival data. The mean residual life has been used for many years under the name of life expectancy, so it is a natural concept for summarizing survival or reliability data. It is also more interpretable than the popular hazard function, especially for communications between patients and [...]

### Contents

Introduction.- Inference on Mean Residual Life.- Quantile Residual Life.- Quantile Residual Life under Competing Risks.- Other Methods for Inference on Quantiles.- Study Design based on Quantile (Residual) Life.- Appendix: R codes.- References.- Index.

### Fields of interest

Statistics for Life Sciences, Medicine, Health Sciences; Biostatistics; Epidemiology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4939-0004-6](http://www.springer.com/978-1-4939-0004-6)

### Hardcover

2014. X, 212 p. 17 illus., 12 illus. in color. (Statistics for Biology and Health)

ISBN 978-1-4939-0004-6

**Due: January 31, 2014**

R.E. Kass, Carnegie Mellon University, Pittsburgh, USA; U. Eden, Boston University, Boston, USA; E.N. Brown, Massachusetts Institute of Technology, Cambridge, USA

## Analysis of Neural Data

Continual improvements in data collection and processing have had a huge impact on brain research, producing data sets that are often large and complicated. By emphasizing a few fundamental principles, and a handful of ubiquitous techniques, Analysis of Neural Data provides a unified treatment of analytical methods that have become essential for contemporary researchers. Throughout the book ideas are illustrated with more than 100 examples drawn from the literature, ranging from electrophysiology, to neuroimaging, to behavior. By demonstrating the commonality among various statistical approaches the authors provide the crucial tools for gaining knowledge from diverse types of data.[...]

### Features

Continual improvements in data collection and processing have had a huge impact on brain research, producing data sets that are often large and complicated. By emphasizing a few fundamental principles, and a handful of ubiquitous techniques, Analysis of Neural Data provides a unified treatment of analytical methods that have become essential for contemporary researchers. Throughout the book ideas are [...]

### Contents

Introduction.- Exploring Data.- Probability and Random Variables.- Random Vectors.- Important Probability Distributions.- Sequences of Random Variables.- Estimation and Uncertainty.- Estimation in Theory and Practice.- Uncertainty and the Bootstrap.- Statistical Significance.- General Methods for Testing Hypotheses.- Linear Regression.- Analysis of Variance.- Generalized Regression.- Nonparametric Regression.- Bayesian Methods.- Multivariate Analysis.- Time Series.- Point Processes.- Appendix: Mathematical Background.- Example Index.- Index.- Bibliography.

### Fields of interest

Statistics for Life Sciences, Medicine, Health Sciences; Neurosciences; Statistical Theory and Methods

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9601-4](http://www.springer.com/978-1-4614-9601-4)

### Hardcover

2014. XXV, 647 p. 135 illus., 17 illus. in color. (Springer Series in Statistics)

ISBN 978-1-4614-9601-4

**Due: January 31, 2014**

Th.J. Quirk

## Excel 2010 for Engineering Statistics

A Guide to Solving Practical Problems

This is the first book to show the capabilities of Microsoft Excel to teach engineering statistics effectively. It is a step-by-step exercise-driven guide for students and practitioners who need to master Excel to solve practical engineering problems. If understanding statistics isn't your strongest suit, you are not especially mathematically-inclined, or if you are wary of computers, this is the right book for you. Excel, a widely available computer program for students and managers, is also an effective teaching and learning tool for quantitative analyses in engineering courses. Its powerful computational ability and graphical functions make learning statistics much easier than in[...]

### Features

This is the first book to show the capabilities of Microsoft Excel to teach engineering statistics effectively. It is a step-by-step exercise-driven guide for students and practitioners who need to master Excel to solve practical engineering problems. If understanding statistics isn't your strongest suit, you are not especially mathematically-inclined, or if you are wary of computers, this is the right [...]

### Contents

Introduction.- Sample size, mean, standard deviation, standard error of the mean.- Random number generator.- Confidence interval about the mean using the TINV function and hypothesis testing.- One-group t-test for the mean.- Two-group t-test of the difference of the means for independent groups.- Correlation and simple linear regression.- Multiple correlation and multiple regression.- One-way analysis of variance (ANOVA).- Appendix A.- Appendix B.- Appendix C.- Appendix D.- Appendix E.- Index.

### Fields of interest

Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences; Statistics and Computing / Statistics Programs; Statistics (general)

### Target groups

Upper undergraduate

### Type of publication

Graduate/advanced undergraduate textbook

More on [www.springer.com/978-3-319-02829-3](http://www.springer.com/978-3-319-02829-3)

### Softcover

2014. XV, 246 p. 159 illus., 158 illus. in color.

ISBN 978-3-319-02829-3

**Due: January 28, 2014**

D. Stram

N.G. Swenson, Michigan State University, East Lansing, USA

## Design, Analysis, and Interpretation of Genome-Wide Association Scans

This book presents the statistical aspects of designing, analyzing and interpreting the results of genome-wide association scans (GWAS studies) for genetic causes of disease using unrelated subjects. Particular detail is given to the practical aspects of employing the bioinformatics and data handling methods necessary to prepare data for statistical analysis. The goal in writing this book is to give statisticians, epidemiologists, and students in these fields the tools to design a powerful genome-wide study based on current technology. The other part of this is showing readers how to conduct analysis of the created study. Design and Analysis of Genome-Wide Association Studies provides[...]

### Features

This book presents the statistical aspects of designing, analyzing and interpreting the results of genome-wide association scans (GWAS studies) for genetic causes of disease using unrelated subjects. Particular detail is given to the practical aspects of employing the bioinformatics and data handling methods necessary to prepare data for statistical analysis. The goal in writing this book is to give [...]

### Contents

Introduction to Genome-Wide Association Studies.- Topics of Quantitative Genetics.- An Introduction to Association Studies.- Correcting for Hidden Population Structure in Single Marker Association Testing and Estimation.- Haplotype Imputation for Association Analysis.- SNP Imputation for Association Studies.- Design of Large-scale Genetic Association Studies, Sample Size and Power.- Post-GWAS Analyses.

### Fields of interest

Statistics for Life Sciences, Medicine, Health Sciences; Human Genetics; Statistical Theory and Methods

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9442-3](http://www.springer.com/978-1-4614-9442-3)

### Hardcover

2014. XV, 334 p. 39 illus. (Statistics for Biology and Health)

ISBN 978-1-4614-9442-3

usually dispatched within 3 to 5 business days

## Functional and Phylogenetic Ecology in R

Phylogenetic and Functional Ecology in R is designed to teach readers to use R for phylogenetic and functional trait analyses. Over the past decade, a dizzying array of tools and methods were generated to incorporate phylogenetic and functional information into traditional ecological analyses. Increasingly these tools are implemented in R, thus greatly expanding their impact. Researchers getting started in R can use this volume as a step-by-step entryway into phylogenetic and functional analyses for ecology in R. More advanced users will be able to use this volume as a quick reference to understand particular analyses. The volume begins with an introduction to the R environment and[...]

### Features

Phylogenetic and Functional Ecology in R is designed to teach readers to use R for phylogenetic and functional trait analyses. Over the past decade, a dizzying array of tools and methods were generated to incorporate phylogenetic and functional information into traditional ecological analyses. Increasingly these tools are implemented in R, thus greatly expanding their impact. Researchers getting [...]

### Contents

Preface.- Introduction.- Phylogenetic Data in R.- Phylogenetic Diversity.- Functional Diversity.- Phylogenetic & Functional Beta Diversity.- Null Models.- Comparative Methods & Phylogenetic Signal.- Partitioning the Phylogenetic, Functional, Environmental and Spatial Components of Community Diversity.- Integrating R with Other Phylogenetic and Functional Trait Analytical Software.- References.- Index

### Fields of interest

Statistics and Computing / Statistics Programs; Ecology; Evolutionary Biology

### Target groups

Research

### Type of publication

Monograph

More on [www.springer.com/978-1-4614-9541-3](http://www.springer.com/978-1-4614-9541-3)

### Softcover

2014. X, 175 p. 30 illus., 5 illus. in color. (Use R!)

ISBN 978-1-4614-9541-3

Due: January 31, 2014

