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Hiding Data - Selected Topics
Rudolf Ahlswede’s Lectures on Information Theory 3

Devoted to information security, this volume begins with a short course on cryptography, mainly based on lectures given by Rudolf Ahlswede at the University of Bielefeld in the mid 1990s. It was the second of his cycle of lectures on information theory which opened with an introductory course on basic coding theorems, as covered in Volume 1 of this series. In this third volume, Shannon’s historical work on secrecy systems is detailed, followed by an introduction to an information-theoretic model of wiretap channels, and such important concepts as homophonic coding and authentication. Once the theoretical arguments have been presented, comprehensive technical details of AES are given.[...]

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Hardcover
2016. XIV, 356 p. 17 illus. in color. (Foundations in Signal Processing, Communications and Networking, Band 12)
► 117,69 €
ISBN 978-3-319-31513-3
Gewöhnlich versandfertig in 3-5 Werktagen.

BetOnMath
Azzardo e matematica a scuola

Il libro ha origine dall’attività svolta durante il progetto “BetOnMath”, un’esperienza di Matematica Civile finalizzata alla prevenzione dell’abuso di gioco d’azzardo tra gli studenti della scuola secondaria di secondo grado attraverso un insegnamento innovativo della matematica. In particolare, durante il progetto gli autori del libro hanno sviluppato un percorso didattico modulare sulla matematica del gioco d’azzardo che gli insegnanti di matematica delle scuole secondarie possono utilizzare sia per introdurre gli strumenti di base del calcolo delle probabilità sia per sensibilizzare sui rischi legati al gioco d’azzardo. Il libro descrive i pilastri metodologici e concettuali che[...]

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Softcover
2016. XIV, 182 pagg. 20 figg.
► ca. 24,68 €
ISBN 978-88-470-3941-4
Erscheinungstermin: settembre 27, 2016

Measure and Integration

This book covers the material of a one year course in real analysis. It includes an original axiomatic approach to Lebesgue integration which the authors have found to be effective in the classroom. Each chapter contains numerous examples and an extensive problem set which expands considerably the breadth of the material covered in the text. Hints are included for some of the more difficult problems.

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Geometry and Dynamics of Integrable Systems

Based on lectures given at an advanced course on integrable systems at the Centre de Recerca Matemàtica in Barcelona, these lecture notes address three major aspects of integrable systems: obstructions to integrability from differential Galois theory; the description of singularities of integrable systems on the basis of their relation to bi-Hamiltonian systems; and the generalization of integrable systems to the non-Hamiltonian settings. All three sections were written by top experts in their respective fields. Native to actual problem-solving challenges in mechanics, the topic of integrable systems is currently at the crossroads of several disciplines in pure and applied[...]

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Softcover
2016. X, 135 p. 22 illus. 3 illus. in color. (Advanced Courses in Mathematics - CRM Barcelona)
► 26,74 €
ISBN 978-3-319-33502-5
Erscheinungstermin: September 6, 2016
Winning at Litigation through Decision Analysis
Creating and Executing Winning Strategies in any Litigation or Dispute
This book is the first in-depth guide to applying the philosophy, theory, and methods of decision analysis to creating and executing winning legal strategies. With explanations that progress from introductory to advanced and practice problems at the end of each chapter, this is a book the reader will want to use and refer to for years to come. Practicing decision analysts, operations research and management science students, attorneys and law students will find this book an invaluable addition to their knowledge and skills. John Celona has over three decades of experience in teaching and applying decision analysis. John

Introduction to Mathematical Biology
Modeling, Analysis, and Simulations
This book is based on a one semester course that the authors have been teaching for several years, and includes two sets of case studies. The first includes chemostat models, predator-prey interaction, competition among species, the spread of infectious diseases, and oscillations arising from bifurcations. In developing these topics, readers will also be introduced to the basic theory of ordinary differential equations, and how to work with MATLAB without having any prior programming experience. The second set of

An Introductory Course in Lebesgue Spaces
This book is devoted exclusively to Lebesgue spaces and their direct derived spaces. Unique in its sole dedication, this book explores Lebesgue-spaces, distribution functions and nonincreasing rearrangement. Moreover, it also deals with weak, Lorentz and the more recent variable exponent and grand Lebesgue spaces with considerable detail to proofs. The book also touches on basic harmonic analysis in the aforementioned spaces. An appendix is given at the end of the book giving it a self-contained character. This work is ideal for teachers, graduate students and researchers.

Recueil de Modèles Aléatoires
Ce recueil puise sa source dans les cours de masters de mathématiques appliquées et de préparation à l’épreuve de modélisation de l’agrégation de mathématiques. Le parti pris de cet ouvrage est de polariser la rédaction par les modèles plutôt que par les outils, et de consacrer chaque chapitre à un modèle. Le premier public visé est celui des enseignantschercheurs en probabilités, débutants ou confirmés. De nombreux chapitres peuvent également bénéficier directement à des étudiants de master ou préparant l’agrégation. This collection was inspired by applied mathematics Master classes in stochastic modeling. The focus is on models rather than on tools, and each chapter is devoted to a [...]
importance. However, because of the complex ways

...
Mathematical Modelling

This book provides a thorough introduction to the challenge of applying mathematics in real-world scenarios. Modelling tasks rarely involve well-defined categories, and they often require multidisciplinary input from mathematics, physics, computer sciences, or engineering. In keeping with this spirit of modelling, the book includes a wealth of cross-references between the chapters and frequently points to the real-world context. The book combines classical approaches to modelling with novel areas such as soft computing methods, inverse problems, and model uncertainty. Attention is also paid to the interaction between models, data and the use of mathematical software. The reader will...
typical beginning Real Analysis course, it never loses sight of the fact[...]
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S. Kusuoka, T. Maruyama (Eds.)

Computational Linear and Commutative Algebra

This book combines, in a novel and general way, an extensive development of the theory of families of commuting matrices with applications to zero-dimensional commutative rings, primary decompositions and polynomial system solving. It integrates the Linear Algebra of the Third Millennium, developed exclusively here, with classical algorithmic and algebraic techniques. Even the experienced reader will be pleasantly surprised to discover new and unexpected aspects in a variety of subjects including eigenvalues and eigenspaces of linear maps, joint eigenspaces of commuting families of endomorphisms, multiplication maps of zero-dimensional affine algebras, computation of primary[...]
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B.V. Limaye

Linear Functional Analysis for Scientists and Engineers

This book provides a concise and meticulous introduction to functional analysis. Since the topic draws heavily on the interplay between the algebraic structure of a linear space and the distance structure of a metric space, functional analysis is increasingly gaining the attention of not only mathematicians but also scientists and engineers. The purpose of the text is to present the basic aspects of functional analysis to this varied audience, keeping in mind the considerations of applicability. A novelty of this book is the inclusion of a result by Zabreiko, which states that every countably subadditive seminorm on a Banach space is continuous. Several major theorems in functional[...]

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M.A. Lewis, S.V. Petrovskii, J.R. Potts

The Mathematics Behind Biological Invasions

This book investigates the mathematical analysis of biological invasions. Unlike purely qualitative treatments of ecology, it draws on mathematical theory and methods, equipping the reader with sharp tools and rigorous methodology. Subjects include invasion dynamics, species interactions, population spread, long-distance dispersal, stochastic effects, risk analysis, and optimal responses to invaders. While based on the theory of dynamical systems, including partial differential equations and integrodifference equations, the book also draws on information theory, machine learning, Monte Carlo methods, optimal control, statistics, and stochastic processes. Applications to real[...]
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M. Kreuzer, L. Robbiano

Advances in Mathematical Economics Volume 20

The series is designed to bring together those mathematicians who are seriously interested in getting new challenging stimuli from economic theories with those economists who are seeking effective mathematical tools for their research. A lot of economic problems can be formulated as constrained optimizations and equilibration of their solutions. Various mathematical theories have been supplying economists with indispensable machineries for these problems arising in economic theory. Conversely, mathematicians have been stimulated by various mathematical difficulties raised by economic theories.
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Notes on the Infinity Laplace Equation

This BCAM SpringerBriefs is a treaty of the Infinity-Laplace Equation, which has inherited many features from the ordinary Laplace Equation, and is based on lectures by the author. The Infinity-Laplace Equation has delightful counterparts to the Dirichlet integral, the mean value property, the Brownian motion, Harnack’s inequality, and so on. This “fully non-linear” equation has applications to image processing and to mass transfer problems, and it provides optimal Lipschitz extensions of boundary values.

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Introduction to Turbulent Dynamical Systems in Complex Systems

This volume is a research expository article on the applied mathematics of turbulent dynamical systems through the paradigm of modern applied mathematics. It involves the blending of rigorous mathematical theory, qualitative and quantitative modeling, and novel numerical procedures driven by the goal of understanding physical phenomena which are of central importance to the field. The contents cover general framework, concrete examples, and instructive qualitative models. Accessible open problems are mentioned throughout. Topics covered include: Geophysical flows with rotation, topography, deterministic and random forcing. New statistical energy principles for general [...] More on www.springer.com/978-3-319-32215-5

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Erscheinungstermin: September 17, 2016

Algebra for Cryptologists

This textbook provides an introduction to the mathematics on which modern cryptology is based. It covers not only public key cryptography, the glamorous component of modern cryptology, but also pays considerable attention to secret key cryptography, its workhorse in practice. Modern cryptology has been described as the science of the integrity of information, covering all aspects like confidentiality, authenticity and non-repudiation and also including the protocols required for achieving these aims. In both theory and practice it requires notions and constructions from three major disciplines: computer science, electronic engineering and mathematics. Within mathematics, group [...] More on www.springer.com/978-3-319-30395-6

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Modèles aléatoires en Ecologie et Evolution

Le but du livre est de définir et développer une grande gamme d'outils probabilistes pour la modélisation en biologie des populations, afin de décire des dynamiques temporelles de quantités biologiques telles que la taille d'une ou plusieurs populations, la proportion d'un allèle dans une population ou la position d'un individu. En partant de modèles markoviens discrets (marches aléatoires, processus de Galton-Watson), nous abordons progressivement le calcul stochastique et les équations différentielles stochastiques, puis les processus markoviens de saut, tels les processus de branchement à temps continu et les processus de naissance et mort. Nous étudions également les [...] More on www.springer.com/978-3-662-49454-7

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Real Analysis

This textbook is designed for a year-long course in real analysis taken by beginning graduate and advanced undergraduate students in mathematics and other areas such as statistics, engineering, and economics. Written by one of the leading scholars in the field, it elegantly explores the core concepts in real analysis and introduces new, accessible methods for both students and instructors. The first half of the book develops both Lebesgue measure and, with essentially no additional work for the student, general Borel measures for the real line. Notation indicates when a result holds only for Lebesgue measure.

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Continuity Theory

This book presents a detailed, self-contained theory of continuous mappings. It is mainly addressed to students who have already studied these mappings in the setting of metric spaces, as well as multidimensional differential calculus. The needed background facts about sets, metric spaces and linear algebra are developed in detail, so as to provide a seamless transition between students’ previous studies and new material. In view of its many novel features, this book will be of interest also to mature readers who have studied continuous mappings from the subject’s classical texts and wish to become acquainted with a new approach. The theory of continuous mappings serves as [...] More on www.springer.com/978-3-319-31158-6

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Optimal Design through the Sub-Relaxation Method

Understanding the Basic Principles

This book provides a comprehensive guide to analyzing and solving optimal design problems in continuous media by means of the so-called sub-relaxation method. Though the underlying ideas are borrowed from other, more classical approaches, here they are used and organized in a novel way, yielding a distinct perspective on how to approach this kind of optimization problems. Starting with a discussion of the background motivation, the book broadly explains the sub-relaxation method in general terms, helping readers to grasp, from the very beginning, the driving idea and where the text is heading. In addition to the analytical content of the method, it examines practical issues like [...] More on www.springer.com/978-3-319-41158-3

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Understanding and Building Financial Intuition

This textbook aims to fill the gap between those that offer a theoretical treatment without many applications and those that present and apply formulas without appropriately deriving them. The balance achieved will give readers a fundamental understanding of key financial ideas and tools that form the basis for building realistic models, including those that may become proprietary. Numerous carefully chosen examples and exercises reinforce the student’s conceptual understanding and facility with applications. The exercises are divided into conceptual, application-based, and theoretical problems, which probe the material deeper. The book is aimed toward advanced undergraduates and [...] More on www.springer.com/978-1-4939-3781-3

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An Introduction to the Language of Category Theory

This textbook provides an introduction to elementary category theory, with the aim of making what can be a confusing and sometimes overwhelming subject more accessible. In writing about this challenging subject, the author has brought to bear all of the experience he has gained in authoring over 30 books in university-level mathematics. The goal of this book is to present the five major ideas of category theory: categories, functors, natural transformations, universality, and adjoints in as friendly and relaxed a manner as possible while at the same time not sacrificing rigor. These topics are developed in a straightforward,
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Lorenz, Marcinkiewicz and Orlicz Spaces

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