

New Titles: October 2017

Mathematics / Statistics



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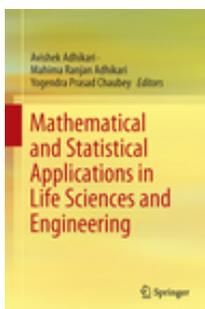
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Mathematics



A. Adhikari, M.R. Adhikari, Y.P. Chaubey (Eds.)

Mathematical and Statistical Applications in Life Sciences and Engineering

The book includes articles from eminent international scientists discussing a wide spectrum of topics of current importance in mathematics and statistics and their applications. It presents state-of-the-art material along with a clear and detailed review of the relevant topics and issues concerned. The topics discussed include message transmission, colouring problem, control of stochastic structures and information dynamics, image denoising, life testing and reliability, survival and frailty models, analysis of drought periods, prediction of genomic profiles, competing risks, environmental applications and chronic disease control. It is a valuable resource for researchers and[...]

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Hardcover

2017. XI, 347 p. 87 illus.

► **approx. 109,99 €**

ISBN 978-981-10-5369-6

December 20, 2017



and emphasize their connections to group theory, mostly relating to free and virtually-free groups. The material covered is sufficient to present full proofs of many of the existing interesting characterizations of virtually-free groups. In turn, the last chapter comprehensively[...]

More on www.springer.com/978-3-319-60939-3



Softcover



2017. X, 146 p. 27 illus. (Advanced Courses in Mathematics - CRM Barcelona)

► **24,99 €**

ISBN 978-3-319-60939-3

November 11, 2017



C. Bachas, B. Duplantier, V. Rivasseau (Eds.)

The H Boson

This volume provides a detailed description of the seminal theoretical construction in 1964, independently by Robert Brout and Francois Englert, and by Peter W. Higgs, of a mechanism for short-range fundamental interactions, now called the Brout-Englert-Higgs (BEH) mechanism. It accounts for the non-zero mass of elementary particles and predicts the existence of a new particle - an elementary massive scalar boson. In addition to this the book describes the experimental discovery of this fundamental missing element in the Standard Model of particle physics. The H Boson, also called the Higgs Boson, was produced and detected in the Large Hadron Collider (LHC) of CERN near Geneva by two[...]

More on www.springer.com/978-3-319-57408-0



Hardcover

2017. XII, 133 p. 74 illus., 62 illus. in color. (Progress in Mathematical Physics, Vol. 72)

► **76,99 €**

ISBN 978-3-319-57408-0

Usually dispatched within 3 to 5 business days.

Forthcoming

J. Ball, E. Feireisl, F. Otto

E. Feireisl, E. Rocca (Eds.)

Mathematical Thermodynamics of Complex Fluids

Cetraro, Italy 2015

The main goal of this book is to provide an overview of the state of the art in the mathematical modeling of complex fluids, with particular emphasis on its thermodynamical aspects. The central topics of the text, the modeling, analysis and numerical simulation of complex fluids, are of great interest and importance both for the understanding of various aspects of fluid dynamics and for its applications to special real-world problems. New emerging trends in the subject are highlighted with the intent to inspire and motivate young researchers and PhD students.

More on www.springer.com/978-3-319-67599-2

Softcover

2017. VIII, 82 p. 13 illus., 11 illus. in color. (C.I.M.E. Foundation Subseries, Vol. 2200)

► **34,99 €**

ISBN 978-3-319-67599-2

December 2017

Forthcoming

H.G. Bock, H.X. Phu, R. Rannacher, J. Schlöder (Eds.)

Modeling, Simulation and Optimization of Complex Processes HPSC 2015

Proceedings of the Sixth International Conference on High Performance Scientific Computing, March 16-20, 2015, Hanoi, Vietnam

This proceedings volume highlights a selection of papers presented at the Sixth International Conference on High Performance Scientific Computing, which took place in Hanoi, Vietnam on March 16-20, 2015. The conference was jointly organized by the Heidelberg Institute of Theoretical Studies (HITS), the Institute of Mathematics of the Vietnam Academy of Science and Technology (VAST), the Interdisciplinary Center for Scientific Computing (IWR) at Heidelberg University, and the Vietnam Institute for Advanced Study in Mathematics, Ministry of Education. The contributions cover a broad, interdisciplinary spectrum of scientific computing and showcase recent advances in theory, methods, and[...]

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2017. XII, 254 p. 88 illus., 64 illus. in color.

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November 10, 2017

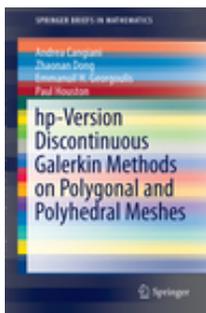


J. Aramayona, V. Diekert, C.J. Leininger, P.V. Silva, A. Weiß, J. González-Meneses, M. Lustig, E. Ventura (Eds.)

Algorithmic and Geometric Topics Around Free Groups and Automorphisms

This volume presents the lecture notes from the authors' three summer courses offered during the program "Automorphisms of Free Groups: Geometry, Topology, and Dynamics," held at the Centre de Recerca Matemàtica (CRM) in Bellaterra, Spain. The first two chapters present the basic tools needed, from formal language theory (regular and context-free languages, automata, rewriting systems, transducers, etc)





A. Cangiani, Z. Dong, E.H. Georgoulis, P. Houston

hp-Version Discontinuous Galerkin Methods on Polygonal and Polyhedral Meshes

Over the last few decades discontinuous Galerkin finite element methods (DGFEMs) have been witnessed tremendous interest as a computational framework for the numerical solution of partial differential equations. Their success is due to their extreme versatility in the design of the underlying meshes and local basis functions, while retaining key features of both (classical) finite element and finite volume methods. Somewhat surprisingly, DGFEMs on general tessellations consisting of polygonal (in 2D) or polyhedral (in 3D) element shapes have received little attention within the literature, despite the potential computational advantages. This volume introduces the basic principles of[...]

More on www.springer.com/978-3-319-67671-5

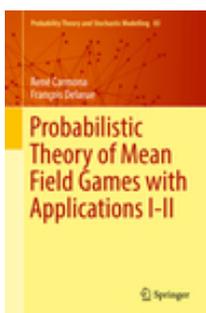
Softcover

2017. VIII, 135 p. 32 illus., 1 illus. in color. (SpringerBriefs in Mathematics)

► **49,99 €**

ISBN 978-3-319-67671-5

November 7, 2017



R. Carmona, F. Delarue

Probabilistic Theory of Mean Field Games with Applications I-II

This two-volume set offers an expansive overview of the probabilistic approach to game models and their applications. Considered the first comprehensive treatment of the theory of mean field games, much of the content is original and has been designed especially for the purpose of this book. Volume I of the set is entirely devoted to the theory of mean field games without a common noise, whereas Volume II analyzes mean field games in which the players are subject to games with a common noise. Together, both Volume I and Volume II will benefit researchers in the field

as well as PhD and graduate students working on the subject due to the self-contained nature and applications with[...]

More on www.springer.com/978-3-319-59820-8

Hardcover

2018. LIII, 1371 p. 2 volume-set. (Probability Theory and Stochastic Modelling, Vol. 83-84)

► **approx. 279,00 €**

ISBN 978-3-319-59820-8

January 11, 2018



F. Colombo, I. Sabadini, D.C. Struppa, M.B. Vajiac (Eds.)

Advances in Complex Analysis and Operator Theory

Festschrift in Honor of Daniel Alpay's 60th Birthday

This book gathers contributions written by Daniel Alpay's friends and collaborators. Several of the papers were presented at the International Conference on Complex Analysis and Operator Theory held in honor of Professor Alpay's 60th birthday at Chapman University in November 2016. The main topics covered are complex analysis, operator theory and other areas of mathematics close to Alpay's primary research interests. The book is recommended for mathematicians from the graduate level on, working in various areas of mathematical analysis, operator theory, infinite dimensional analysis, linear systems, and stochastic processes.

More on www.springer.com/978-3-319-62361-0



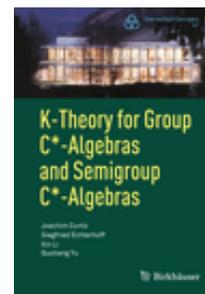
Hardcover

2017. VIII, 398 p. (Trends in Mathematics)

► **119,99 €**

ISBN 978-3-319-62361-0

Usually dispatched within 3 to 5 business days.



J. Cuntz, S. Echterhoff, X. Li, G. Yu

K-Theory for Group C*-Algebras and Semigroup C*-Algebras

This book gives an account of the necessary background for group algebras and crossed products for actions of a group or a semigroup on a space and reports on some very recently developed techniques with applications to particular examples. Much of the material is available here for the first time in book form. The topics discussed are among the most classical and intensely studied C*-algebras. They are important for applications in fields as diverse as the theory of unitary group representations, index theory, the topology of manifolds or ergodic theory of group actions. Part of the most basic structural information for such a C*-algebra is contained in its K-theory. The determination[...]

More on www.springer.com/978-3-319-59914-4



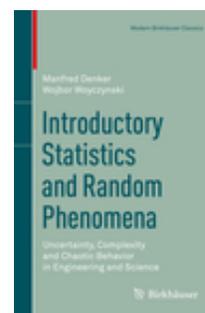
Softcover

2017. IX, 319 p. (Oberwolfach Seminars, Vol. 47)

► **39,99 €**

ISBN 978-3-319-59914-4

November 23, 2017



M. Denker, W. Wołczynski

Introductory Statistics and Random Phenomena

Uncertainty, Complexity and Chaotic Behavior in Engineering and Science

This textbook integrates traditional statistical data analysis with new computational experimentation capabilities and concepts of algorithmic complexity and chaotic behavior in nonlinear dynamic systems.

This was the first advanced text/reference to bring together such a comprehensive variety of tools for the

study of random phenomena occurring in engineering and the natural, life, and social sciences. The crucial computer experiments are conducted using the readily available computer program Mathematica® Uncertain Virtual Worlds™ software packages which optimize and facilitate the simulation environment. Brief tutorials are included that explain how to use the Mathematica® programs[...]

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 **Birkhäuser**

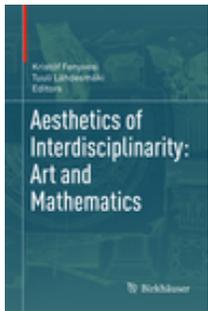
Softcover

 2017. XXVI, 509 p. 10 illus. (Modern Birkhäuser Classics)

► **79,99 €**

ISBN 978-3-319-66151-3

Usually dispatched within 3 to 5 business days.



K. Fenyvesi, T. Lähdesmäki (Eds.)

Aesthetics of Interdisciplinarity: Art and Mathematics

This anthology fosters an interdisciplinary dialogue between the mathematical and artistic approaches in the field where mathematical and artistic thinking and practice merge. The articles included highlight the most significant current ideas and phenomena, providing a multifaceted and extensive snapshot of the field and indicating how interdisciplinary approaches are applied in the research of various cultural and artistic phenomena. The discussions are related, for example, to the fields of aesthetics, anthropology, art history, art theory, artistic practice, cultural studies, ethno-mathematics, geometry, mathematics, new physics, philosophy, physics, study of visual illusions, and[...]

More on www.springer.com/978-3-319-57257-4

 **Birkhäuser**

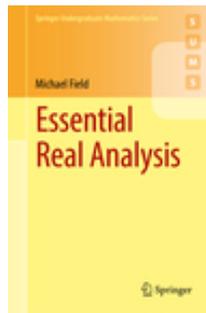
Hardcover

2017. IX, 284 p. 157 illus., 114 illus. in color.

► **94,99 €**

ISBN 978-3-319-57257-4

December 9, 2017



M. Field

Essential Real Analysis

This book provides a rigorous introduction to the techniques and results of real analysis, metric spaces and multivariate differentiation, suitable for undergraduate courses. Starting from the very foundations of analysis, it offers a complete first course in real analysis, including topics rarely found in such detail in an undergraduate textbook such as the construction of non-analytic smooth functions, applications of the Euler-Maclaurin formula to estimates, and fractal geometry. Drawing on the author's extensive teaching and research experience, the exposition is guided by carefully chosen examples and counter-examples, with the emphasis placed on the key ideas underlying the[...]

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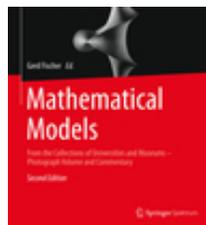
Softcover

 2017. XVII, 450 p. 30 illus., 1 illus. in color. (Springer Undergraduate Mathematics Series)

► **34,99 €**

ISBN 978-3-319-67545-9

November 20, 2017



G. Fischer (Ed.)

Mathematical Models

From the Collections of Universities and Museums – Photograph Volume and Commentary

This book presents beautiful photos of mathematical models of geometric surfaces made from a variety of materials including plaster, metal, paper, wood, and string. The construction of these models at the time (of Felix Klein and others) was not an end in itself, but was accompanied by mathematical research especially in the field of algebraic geometry. The models were used to illustrate the mathematical objects defined by abstract formulas, either as equations or parameterizations. In the second part of the book, the models are explained by experts in the field of geometry. This book is a reprint thirty years after the original publication in 1986 with a new preface by Gert-Martin[...]

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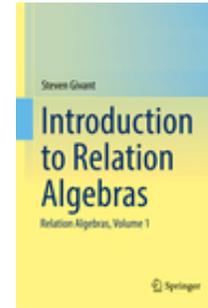
Softcover

2017. XIX, 216 p. 220 illus., 9 illus. in color.

► **94,99 €**

ISBN 978-3-658-18864-1

#####**#2#3#####**



S. Givant

Introduction to Relation Algebras Relation Algebras, Volume 1

The first volume of a pair that charts relation algebras from novice to expert level, this text offers a comprehensive grounding for readers new to the topic. Upon completing this introduction, mathematics students may delve into areas of active research by progressing to the second volume, Advanced Topics in Relation Algebras; computer scientists, philosophers, and beyond will be equipped to apply these tools in their own field. The careful presentation establishes first the arithmetic of relation algebras, providing ample motivation and examples, then proceeds primarily on the basis of algebraic constructions: subalgebras, homomorphisms, quotient algebras, and direct products. Each[...]

More on www.springer.com/978-3-319-65234-4

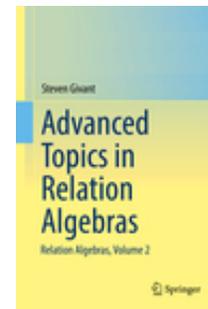
Hardcover

 2017. XXXII, 572 p. 25 illus.

► **79,99 €**

ISBN 978-3-319-65234-4

Usually dispatched within 3 to 5 business days.



S. Givant

Advanced Topics in Relation Algebras Relation Algebras, Volume 2

The second volume of a pair that charts relation algebras from novice to expert level, this text brings the well-grounded reader to the frontiers of research. Building on the foundations established in the preceding Introduction to Relation Algebras, this volume



advances the reader into the deeper mathematical results of the past few decades. Such material offers an ideal preparation for research in relation algebras and Boolean algebras with operators. Arranged in a modular fashion, this text offers the opportunity to explore any of several areas in detail; topics include canonical extensions, completions, representations, varieties, and atom structures. Each chapter offers a complete[...]

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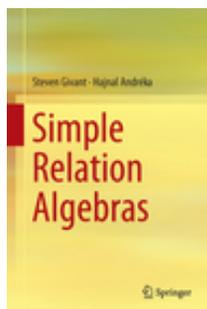
Hardcover

 2017. XIX, 605 p.

► **79,99 €**

ISBN 978-3-319-65944-2

Usually dispatched within 3 to 5 business days.



S. Givant, H. Andréka

Simple Relation Algebras

This monograph details several different methods for constructing simple relation algebras, many of which are new with this book. By drawing these seemingly different methods together, all are shown to be aspects of one general approach, for which several applications are given. These tools for constructing and analyzing relation algebras are of particular interest to mathematicians working in logic, algebraic logic, or universal algebra, but will also appeal to philosophers and theoretical computer scientists working in fields that use mathematics. The book is written with a broad audience in mind and features a careful, pedagogical approach; an appendix contains the requisite[...]

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Hardcover

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ISBN 978-3-319-67695-1

November 27, 2017

Forthcoming

S. Givant

Relation Algebras

Collecting, curating, and illuminating over 75 years of progress since Tarski's seminal work in 1941, this textbook in two volumes offers a landmark, unified treatment of the increasingly relevant field of relation algebras. Clear and insightful prose guides the reader through material previously only available in scattered, highly-technical journal articles. Students and experts alike will appreciate the work

as both a textbook and invaluable reference for the community. This set charts relation algebras from novice to expert level. The first volume, Introduction to Relation Algebras, offers a comprehensive grounding for readers new to the topic. The second, Advanced Topics in[...]

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Hardcover

  2017. Approx. 1230 p. 2 volume-set.

► **134,99 €**

ISBN 978-3-319-68580-9

#####2#3#####

Forthcoming

Z. Huang, M. Stynes, Z. Zhang (Eds.)

Boundary and Interior Layers, Computational and Asymptotic Methods BAIL 2016

This volume collects papers associated with lectures that were presented at the BAIL 2016 conference, which was held from 14 to 19 August 2016 at Beijing Computational Science Research Center and Tsinghua University in Beijing, China. It showcases the variety and quality of current research into numerical and asymptotic methods for theoretical and practical problems whose solutions involve layer phenomena. The BAIL (Boundary And Interior Layers) conferences, held usually in even-numbered years, bring together mathematicians and engineers/physicists whose research involves layer phenomena, with the aim of promoting interaction between these often-separate disciplines. These layers[...]

More on www.springer.com/978-3-319-67201-4

Hardcover

2017. VIII, 211 p. 61 illus., 52 illus. in color. (Lecture Notes in Computational Science and Engineering, Vol. 120)

► **119,99 €**

ISBN 978-3-319-67201-4

December 10, 2017

Forthcoming

A. Isaev

Twenty-One Lectures on Complex Analysis

A First Course

At its core, this concise textbook presents standard material for a first course in complex analysis at the advanced undergraduate level. This distinctive text will prove most rewarding for students who have a genuine passion for mathematics as well as certain mathematical maturity. Primarily aimed at undergraduates with working knowledge of real analysis and metric spaces, this book can also be used to instruct a graduate course. The text uses a conversational style with topics purposefully apportioned into 21 lectures, providing a suitable format for either independent study or lecture-based teaching.

Instructors are invited to rearrange the order of topics according to their own[...]

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Softcover

 2017. X, 194 p. 30 illus. (Springer Undergraduate Mathematics Series)

► **34,99 €**

ISBN 978-3-319-68169-6

December 4, 2017

Forthcoming

T.S. Kalmenov, E.D. Nursultanov, M.V. Ruzhansky, M.A. Sadybekov (Eds.)

Functional Analysis in Interdisciplinary Applications

Astana, Kazakhstan, October 2017

This volume presents current research in functional analysis and its applications to a variety of problems in mathematics and mathematical physics. The book contains over forty carefully refereed contributions to the conference "Functional Analysis in Interdisciplinary Applications" (Astana, Kazakhstan, October 2017). Topics covered include the theory of functions and functional spaces; differential equations and boundary value problems; the relationship between differential equations, integral operators and spectral theory; and mathematical methods in physical sciences. Presenting a wide range of topics and results, this book will appeal to anyone working in the subject area.[...]

More on www.springer.com/978-3-319-67052-2

Hardcover

2017. XXIX, 488 p. 11 illus. (Springer Proceedings in Mathematics & Statistics, Vol. 216)

► **109,99 €**

ISBN 978-3-319-67052-2

November 29, 2017

Forthcoming

A. Knauf

Mathematical Physics: Classical Mechanics

As a limit theory of quantum mechanics, classical dynamics comprises a large variety of phenomena, from computable (integrable) to chaotic (mixing) behavior. This book presents the KAM (Kolmogorov-Arnold-Moser) theory and asymptotic completeness in classical scattering. Including a wealth of fascinating examples in physics, it offers not only an excellent selection of basic topics, but also an introduction to a number of current areas of research in the field of classical mechanics. Thanks to the didactic structure and concise appendices, the presentation is self-contained and requires only knowledge of the basic courses in mathematics.

More on www.springer.com/978-3-662-55772-3

Softcover

 2017. XVII, 653 p. 92 illus., 53 illus. in color. (La Matematica per il 3+2, Vol. 109)

► **79,99 €**

ISBN 978-3-662-55772-3

November 12, 2017

Forthcoming

S. Lambropoulou, D. Theodorou, P. Stefaneas, L.H. Kauffman (Eds.)

Algebraic Modeling of Topological and Computational Structures and Applications

THALES, Athens, Greece, July 1-3, 2015

This interdisciplinary book covers a wide range of subjects, from pure mathematics (knots, braids, homotopy theory, number theory) to more applied mathematics (cryptography, algebraic specification of algorithms, dynamical systems) and concrete applications (modeling of polymers and ionic liquids, video, music and medical imaging). The main mathematical focus throughout the book is on algebraic modeling with particular emphasis on braid groups. The research methods include algebraic modeling using topological structures, such as knots, 3-manifolds, classical homotopy groups, and braid groups. The applications address the simulation of polymer chains and ionic liquids, as well as the[...]

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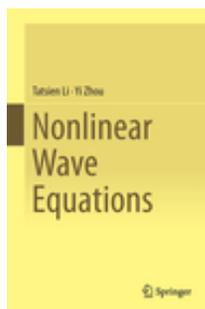
Hardcover

2017. XIII, 460 p. 151 illus., 61 illus. in color. (Springer Proceedings in Mathematics & Statistics, Vol. 219)

► **109,99 €**

ISBN 978-3-319-68102-3

December 25, 2017



T. Li, Y. Zhou

Nonlinear Wave Equations

This book focuses on nonlinear wave equations, which are of considerable significance from both physical and theoretical perspectives. It also presents complete results on the lower bound estimates of lifespan (including the global existence), which are established for classical solutions to the Cauchy problem of nonlinear wave equations with small initial data in all possible space dimensions and with all possible integer powers of nonlinear terms. Further, the book proposes the global iteration method, which offers a unified and straightforward approach for treating these kinds of problems. Purely based on the

properties of solutions to the corresponding linear problems, the method[...]

More on www.springer.com/978-3-662-55723-5

Hardcover

2017. XIV, 391 p. 2 illus.

► **109,99 €**

ISBN 978-3-662-55723-5

November 30, 2017

Forthcoming

W.E. Nagel, D.H. Kröner, M.M. Resch (Eds.)

High Performance Computing in Science and Engineering ' 17

Transactions of the High Performance Computing Center, Stuttgart (HLRS) 2017

This book presents the state-of-the-art in supercomputer simulation. It includes the latest findings from leading researchers using systems from the High Performance Computing Center Stuttgart (HLRS) in 2017. The reports cover all fields of computational science and engineering ranging from CFD to computational physics and from chemistry to computer science with a special emphasis on industrially relevant applications. Presenting findings of one of Europe's leading systems, this volume covers a wide variety of applications that deliver a high level of sustained performance. The book covers the main methods in high-performance computing. Its outstanding results in achieving the best[...]

More on www.springer.com/978-3-319-68393-5

Hardcover

2017. X, 548 p. 295 illus., 269 illus. in color.

► **164,99 €**

ISBN 978-3-319-68393-5

December 13, 2017

Forthcoming

T. Nishitani

Cauchy Problem for Differential Operators with Double Characteristics

Non-Effectively Hyperbolic Characteristics

Combining geometrical and microlocal tools, this monograph gives detailed proofs of many well/ill-posed results related to the Cauchy problem for differential operators with non-effectively hyperbolic double characteristics. Previously scattered over numerous different publications, the results are presented from the viewpoint that the Hamilton map and the geometry of bicharacteristics completely characterizes the well/ill-posedness of the Cauchy problem. A doubly characteristic point of a differential operator P of order m (i.e. one where $Pm = dPm = 0$) is effectively hyperbolic if the Hamilton map FPm has real non-zero eigen values. When the characteristics are at most double and every[...]

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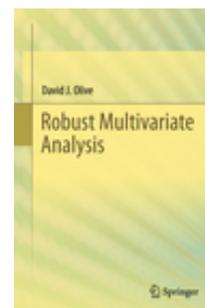
Softcover

2017. VIII, 213 p. 7 illus. (Lecture Notes in Mathematics, Vol. 2202)

► **34,99 €**

ISBN 978-3-319-67611-1

November 13, 2017



D. Olive

Robust Multivariate Analysis

This text presents methods that are robust to the assumption of a multivariate normal distribution or methods that are robust to certain types of outliers. Instead of using exact theory based on the multivariate normal distribution, the simpler and more applicable large sample theory is given. The text develops among the first practical robust regression and robust multivariate location and dispersion estimators backed by theory. The robust techniques are illustrated for methods such as principal component analysis, canonical correlation analysis, and factor analysis. A simple way to bootstrap confidence regions is also provided. Much of the research on robust multivariate[...]

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Hardcover

 2017. XIX, 488 p. 76 illus., 6 illus. in color.

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November 30, 2017

Forthcoming

M. Resch, W. Bez, E. Focht, M. Gienger, H. Kobayashi (Eds.)

Sustained Simulation Performance 2017

Proceedings of the Joint Workshop on Sustained Simulation Performance, University of Stuttgart (HLRS) and Tohoku University, 2017

This book presents the state of the art in High Performance Computing on modern supercomputer architectures. It addresses trends in hardware and software development in general, as well as the future of High Performance Computing systems and heterogeneous architectures. The contributions cover a broad range of topics, from improved system management to Computational Fluid Dynamics, High Performance Data Analytics, and novel mathematical approaches for large-scale systems. In addition, they explore innovative fields like coupled multi-physics and multi-scale simulations. All contributions are



based on selected papers presented at the 24th Workshop on Sustained Simulation Performance,[...]

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Hardcover

2017. VIII, 192 p. 89 illus., 54 illus. in color.

► **119,99 €**

ISBN 978-3-319-66895-6

November 10, 2017

Forthcoming

T. Sakurai, S.-L. Zhang, T. Imamura, Y. Yamamoto, Y. Kuramashi, T. Hoshi (Eds.)

Eigenvalue Problems: Algorithms, Software and Applications, in Petascale Computing

EPASA 2015, Tsukuba, Japan, September 2015

This book provides state-of-the-art and interdisciplinary topics on solving matrix eigenvalue problems, particularly by using recent petascale and upcoming post-petascale supercomputers. It gathers selected topics presented at the International Workshops on Eigenvalue Problems: Algorithms; Software and Applications, in Petascale Computing (EPASA2014 and EPASA2015), which brought together leading researchers working on the numerical solution of matrix eigenvalue problems to discuss and exchange ideas – and in so doing helped to create a community for researchers in eigenvalue problems. The topics presented in the book, including novel numerical algorithms, high-performance[...]

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Hardcover

2017. XIII, 255 p. 95 illus., 43 illus. in color. (Lecture Notes in Computational Science and Engineering, Vol. 117)

► **119,99 €**

ISBN 978-3-319-62424-2

December 6, 2017

Forthcoming

A. Sforza, C. Sterle (Eds.)

Optimization and Decision Science: Methodologies and Applications

ODS, Sorrento, Italy, September 4-7, 2017

This proceedings volume highlights the state-of-the-art knowledge related to optimization, decisions science and problem solving methods, as well as their application in industrial and territorial systems. It includes contributions tackling these themes using models and methods based on continuous and discrete optimization, network optimization, simulation and system dynamics, heuristics, metaheuristics, artificial intelligence, analytics, and also multiple-criteria decision making. The number and the increasing size of the problems arising in real life require mathematical models and solution methods adequate to their

complexity. There has also been increasing research interest in[...]

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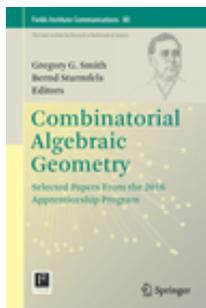
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2017. XIV, 542 p. 99 illus., 52 illus. in color. (Springer Proceedings in Mathematics & Statistics, Vol. 217)

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ISBN 978-3-319-67307-3

November 23, 2017



G.G. Smith, B. Sturmfels (Eds.)

Combinatorial Algebraic Geometry

Selected Papers From the 2016 Apprenticeship Program

This volume consolidates selected articles from the 2016 Apprenticeship Program at the Fields Institute, part of the larger program on Combinatorial Algebraic Geometry that ran from July through December of 2016. Written primarily by junior mathematicians, the articles cover a range of topics in combinatorial algebraic geometry including curves, surfaces, Grassmannians, convexity, abelian varieties, and moduli spaces. This book bridges the gap between graduate courses and cutting-edge research by connecting historical sources, computation, explicit examples, and new results.

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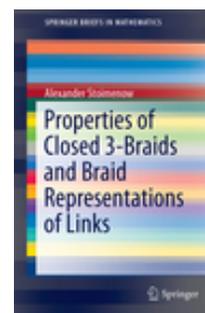
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2017. VII, 419 p. 94 illus., 53 illus. in color. (Fields Institute Communications, Vol. 80)

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ISBN 978-1-4939-7485-6

November 30, 2017



A. Stoimenov

Properties of Closed 3-Braids and Braid Representations of Links

This book studies diverse aspects of braid representations via knots and links. Complete classification results are illustrated for several properties through Xu's normal 3-braid form and the Hecke algebra representation theory of link polynomials developed by Jones. Topological link types are identified within closures of 3-braids which have a given Alexander or Jones polynomial. Further classifications of knots and links arising by the closure of 3-braids are given, and new results about 4-braids are part of the work. Written with knot theorists, topologists, and graduate students in mind, this book features the identification and analysis of effective techniques for diagrammatic[...]

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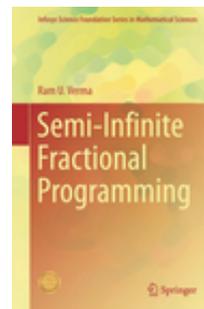
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2017. X, 112 p. 6 illus. (SpringerBriefs in Mathematics)

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ISBN 978-3-319-68148-1

December 7, 2017



R.U. Verma

Semi-Infinite Fractional Programming

This book presents a smooth and unified transitional framework from generalised fractional programming, with a finite number of variables and a finite number of constraints, to semi-infinite fractional programming, where a number of variables are finite but with infinite constraints. It focuses on empowering graduate students, faculty and other research enthusiasts to pursue more accelerated research advances with significant interdisciplinary applications without borders. In terms of developing general frameworks for theoretical foundations and real-world applications, it discusses a number of new classes of generalised sec-



ond-order invex functions and second-order univex functions, [...]

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November 19, 2017

Forthcoming

S. Zacks

Sample Path Analysis and Distributions of Boundary Crossing Times

This monograph is focused on the derivations of exact distributions of first boundary crossing times of Poisson processes, compound Poisson processes, and more general renewal processes. The content is limited to the distributions of first boundary crossing times and their applications to various stochastic models. This book provides the theory and techniques for exact computations of distributions and moments of level crossing times. In addition, these techniques could replace simulations in many cases, thus providing more insight about the phenomena studied. This book takes a general approach for studying telegraph processes and is based on nearly thirty published papers by the [...]

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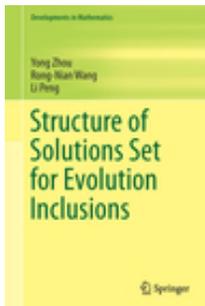
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November 12, 2017



Y. Zhou, R.-N. Wang, L. Peng

Topological Structure of the Solution Set for Evolution Inclusions

This book systematically presents the topological structure of solution sets and attractability for non-linear evolution inclusions, together with its relevant applications in control problems and partial differential equations. It provides readers the background material needed to delve deeper into the subject and explore the rich research literature. In addition, the

book addresses many of the basic techniques and results recently developed in connection with this theory, including the structure of solution sets for evolution inclusions with m -dissipative operators; quasi-autonomous and non-autonomous evolution inclusions and control systems; evolution inclusions with the [...]

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Statistics

Forthcoming

W. Beatty

Making Better Business Decisions With Statistics

This concise volume covers nonparametric statistics topics that most are most likely to be seen and used from a practical decision support perspective. While many degree programs require a course in parametric statistics, these methods are often inadequate for real-world decision making in business environments. Much of the data collected today by business executives (for example, customer satisfaction opinions) requires nonparametric statistics for valid analysis, and this book provides the reader with a set of tools that can be used to validly analyze all data, regardless of type. Through numerous examples and exercises, this book explains why nonparametric statistics will lead to [...]

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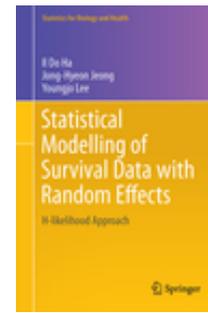
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December 22, 2017



I.D. Ha, J.-H. Jeong, Y. Lee

Statistical Modelling of Survival Data with Random Effects H-likelihood Approach

This book provides a groundbreaking introduction to the likelihood inference for correlated survival data via the hierarchical (or h -) likelihood in order to obtain the (marginal) likelihood and to address the computational difficulties in inferences and extensions. The approach presented in the book overcomes shortcomings in the traditional likelihood-based methods for clustered survival data such as intractable integration. The text includes technical materials such as derivations and proofs in each chapter, as well as recently developed software programs in R ("frailtyHL"), while the real-world data examples together with an R package, "frailtyHL" in CRAN, provide readers with [...]

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