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Geometry I

Translated from the French by M. Cole, S. Levy

The first part of a two-volume text providing a readable and lively presentation of large parts of geometry in the classical sense, this book appears systematically to the reader's intuition and vision, and illustrates the mathematical text with many figures.

1st ed. 1987. Corr. 4th printing 2009. XIV, 430 p. (Universitext) Softcover
ISBN ▶ 978-3-540-11658-5

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▶ * € (D) 53,45 | € (A) 54,95 | sFr 77,50

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9 783540 116585

M. Berger, Institute des Hautes Etudes Scientifiques, Bures-sur-Yvette, France

Geometry II

Translated from the French by M. Cole, S. Levy

This is the second of a two-volume textbook that provides a very readable and lively presentation of large parts of geometry in the classical sense. For each topic the author presents a theorem that is esthetically pleasing and easily stated, although the proof may be quite hard and concealed. Yet another strong trait of the book is that it provides a comprehensive and unified reference source for the field of geometry in the full breadth of its subfields and ramifications.

1st ed. 1987. Corr. 4th printing 2009. X, 406 p. 364 illus. (Universitext) Softcover
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9 783540 170150

N. Berline, École Polytechnique, Palaiseau, France; E. Getzler, Northwestern University, Evanston, IL, USA; M. Vergne, École Polytechnique, Palaiseau, France

Heat Kernels and Dirac Operators

This compact soft-cover edition presents simple proofs of the Atiyah-Singer Index Theorem for Dirac operators on compact Riemannian manifolds and its generalizations. The book discusses the applications of linear elliptic operators in differential geometry, the equivariant index theorem, and provides a proof of Bismut's Local Family Index Theorem for Dirac operators.

2004. X, 363 p. (Grundlehren Text Editions) Softcover
ISBN ▶ 978-3-540-20062-8

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9 783540 200628

P. Biane, L. Bouten, F. Cipriani, N. Konno, N. Privault, Q. Xu,

Quantum Potential Theory

This book offers the revised and completed notes of lectures given at the 2007 conference, "Quantum Potential Theory: Structures and Applications to Physics." These lectures provide an introduction to the theory and discuss various applications.

2008. XII, 464 p. 18 illus. (Lecture Notes in Mathematics, Volume 1954) Softcover
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9 783540 693642

C. Birkenhake, H. Lange, Universität Erlangen-Nürnberg, Erlangen, Germany

Complex Abelian Varieties

This book explores the theory of abelian varieties over the field of complex numbers, explaining both classic and recent results in modern language. The second edition adds five chapters on recent results including automorphisms and vector bundles on abelian varieties, algebraic cycles and the Hodge conjecture.

From the reviews ▶ ... far more readable than most ... it is also much more complete.

▶ Olivier Debarre, Mathematical Reviews, 1994

2nd augmented ed. 2004. XII, 638 p. (Grundlehren der mathematischen Wissenschaften, Volume 302) Hardcover
ISBN ▶ 978-3-540-20488-6

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9 783540 204886

B. Blackadar, University of Nevada, Reno, NV, USA

Operator Algebras

Theory of C*-Algebras and von Neumann Algebras

This book offers a comprehensive introduction to the general theory of C*-algebras and von Neumann algebras. Beginning with the basics, the theory is developed through such topics as tensor products, nuclearity and exactness, crossed products, K-theory, and quasidiagonality. The presentation carefully and precisely explains the main features of each part of the theory of operator algebras; most important arguments are at least outlined and many are presented in full detail.

2006. XX, 517 p. (Encyclopaedia of Mathematical Sciences, Volume 122) Hardcover
ISBN ▶ 978-3-540-28486-4

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9 783540 284864

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Nonholonomic Mechanics and Control

This book explores connections between control theory and geometric mechanics. The author links control theory with a geometric view of classical mechanics in both its Lagrangian and Hamiltonian formulations, and in particular with the theory of mechanical systems subject to motion constraints.

1st ed. 2003. Corr. 2nd printing 2007. XIX, 483 p. 49 illus. (Interdisciplinary Applied Mathematics, Volume 24) Hardcover
ISBN ▶ 978-0-387-95535-3

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9 780387 955353

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Lattices and Ordered Algebraic Structures

From the reviews ▶ *The text can serve as an introduction to fundamentals in the respective areas from a residuated-maps perspective and with an eye on coordinatization. The historical notes that are interspersed are also worth mentioning....The exposition is thorough and all proofs that the reviewer checked were highly polished....Overall, the book is a well-done introduction from a distinct point of view and with exposure to the author's research expertise.*

▶ Mathematical Reviews

2005. X, 310 p. (Universitext) Hardcover
ISBN ▶ 978-1-85233-905-0

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9 781852 339050

J. Bochnak, Vrije Universiteit, Amsterdam, The Netherlands; M. Coste, M. Roy, Université de Rennes 1, France

Real Algebraic Geometry

This book is a systematic treatment of real algebraic geometry. It is carefully and clearly written; it starts with the basic concepts and leads to up-to-date research topics. The present volume is a translation, revision and updating of 'Ergebnisse' Vol.12, published in French in 1987. Many new developments in this field have been included in this book.

1998. IX, 430 p. (Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge / A Series of Modern Surveys in Mathematics, Volume 36) Hardcover
ISBN ▶ 978-3-540-64663-1

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9 783540 646631

A. Bondeson, T. Rylander, P. Ingelström, Chalmers University of Technology, Göteborg, Sweden

Computational Electromagnetics

Computational electromagnetics is a growing discipline, expanding as a result of the steadily increasing demand for software for the design and analysis of electrical devices. This book introduces three of the most popular numerical methods for simulating electromagnetic fields: the finite difference method, the finite element method and the method of moments. It contains several MATLAB programs and details practical issues to help students write their own programs.

2005. XXII, 222 p. 74 illus. (Texts in Applied Mathematics, Volume 51) Hardcover
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9 780387 261584

A. Bondy, Université Claude Bernard, Lyon, France; U. S. Murty, University of Waterloo, ON, Canada

Graph Theory

The primary aim of this book is to present a coherent introduction to graph theory, suitable as a textbook for advanced undergraduate and beginning graduate students in mathematics and computer science. It provides a systematic treatment of the theory of graphs without sacrificing its intuitive and aesthetic appeal. Commonly used proof techniques are described and illustrated. The book also serves as an introduction to research in graph theory.

2008. XII, 654 p. 235 illus. (Graduate Texts in Mathematics, Volume 244) Hardcover
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2nd ed. 2006. XII, 310 p. (CMS Books in Mathematics) Hardcover
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Néron Models

Néron models were invented by A. Néron in the early 1960s in order to study the integral structure of abelian varieties over number fields. Since then, arithmeticians and algebraic geometers have applied the theory of Néron models with great success.

1990. X, 325 p. 4 illus. (Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge / A Series of Modern Surveys in Mathematics, Volume 21) Hardcover
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R. Bott, Harvard University, Cambridge, MA, USA; L. W. Tu, Tufts University, Medford, MA, USA

Differential Forms in Algebraic Topology

Here is an informal introduction to some of the main ideas of contemporary homotopy and cohomology theory. The materials are structured around four core areas: de Rham theory, the Čech-de Rham complex, spectral sequences, and characteristic classes. By using the de Rham theory of differential forms as a prototype of cohomology, the machineries of algebraic topology are made easier to assimilate. This book is equally suitable for self-study and as a one-semester course in topology.

1st ed. 1982. Corr. 3rd printing 1995. XIV, 331 p. 92 illus. (Graduate Texts in Mathematics, Volume 82) Hardcover
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Chapters 1–7

This is the softcover reprint of the English translation of 1972 (available from Springer since 1989) of the first 7 chapters of Bourbaki's 'Algèbre commutative'. It provides a very complete treatment of commutative algebra, enabling the reader to go further and study algebraic or arithmetic geometry. Useful exercises appear at the ends of the chapters.

1st ed. 1989. 2nd printing 1998. XXIV, 656 p. Softcover
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N. Bourbaki, Paris, France

Lie Groups and Lie Algebras

Chapters 4–6

This is the soft cover reprint of the English translation of Bourbaki's text Groupes et Algèbres de Lie, Chapters 4 to 6.

1st ed. 2002. 2nd printing 2008. XII, 300 p. Softcover
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Chapters 7–9

This is the soft cover reprint of the English translation of Bourbaki's text Groupes et Algèbres de Lie, Chapters 7 to 9. It covers the structure and representation theory of semi-simple Lie algebras and compact Lie groups.

1st ed. 2005. 2nd printing 2008. XII, 434 p. Softcover
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F. Brauer, University of British Columbia, Vancouver, BC, Canada; P. van den Driessche, University of Victoria, BC, Canada; J. Wu, York University, Toronto, ON, Canada (Eds.)

Mathematical Epidemiology

Based on lecture notes, this volume offers a comprehensive introduction to ideas and techniques in modeling infectious diseases, for the comparison of strategies to plan for an anticipated epidemic or pandemic, and to deal with a disease outbreak in real time.

2008. XVIII, 408 p. 71 illus., 27 in color. (Lecture Notes in Mathematics / Mathematical Biosciences Subseries, Volume 1945) Softcover
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4th ed. 1993. XVI, 578 p. 68 illus. (Texts in Applied Mathematics, Volume 11) Hardcover
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This book offers an introductory course in algebraic topology. Starting with general topology, it discusses differentiable manifolds, cohomology, products and duality, the fundamental group, homology theory, and homotopy theory.

From the reviews ▶ *An interesting and original graduate text in topology and geometry...a good lecturer can use this text to create a fine course....A beginning graduate student can use this text to learn a great deal of mathematics.*

▶ Mathematical Reviews

1st ed. 1993. Corr. 3rd printing 1997. XIV, 557 p. 85 illus. (Graduate Texts in Mathematics, Volume 139) Hardcover
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1st ed. 1999. Corr. 2nd printing 2001. XVIII, 444 p. 64 illus. (Texts in Applied Mathematics, Volume 31) Hardcover
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With Smile, Inflation and Credit

This book explains how Interest-rate models work and shows how to implement them for concrete pricing. The revised 2nd edition of this book incorporates considerable new material, including sections on local-volatility dynamics, and on stochastic volatility models.

2nd ed. 2006. Corr. 3rd printing 2007. LVI, 981 p. 124 illus. (Springer Finance) Hardcover
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Introduction to Cryptography

Cryptography is a key technology in electronic key systems. It is used to keep data secret, digitally sign documents, access control, and so forth. Users therefore should not only know how its techniques work, but they must also be able to estimate their efficiency and security. Based on courses taught by the author, this book explains the basic methods of modern cryptography. It is written for readers with only basic mathematical knowledge who are interested in modern cryptographic algorithms and their mathematical foundation. Several exercises are included following each chapter.

2nd ed. 2004. XVI, 335 p. 27 illus. (Undergraduate Texts in Mathematics) Softcover
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H. Bühlmann, ETH, Zürich, Switzerland; A. Gisler, Winterthur Insurance Company, Winterthur, Switzerland

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2005. XVIII, 336 p. 31 illus., 22 in color. (Universitext) Softcover
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S. L. Campbell, North Carolina State University, NC, USA; J. Chancelier, CERMICS ENPC, France; R. Nikoukhah, INRIA, France

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2006. XI, 313 p. 103 illus. Hardcover
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C. Canuto, Politecnico di Torino, Italy; **M. Y. Hussaini**, Florida State University, Tallahassee, FL, USA;
A. Quarteroni, EPFL, Lausanne, Switzerland and Politecnico di Milano, Italy; **T. Zang**, NASA Langley Research Center, Hampton, VA, USA

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2007. XXX, 598 p. 183 illus., 20 in color. (Scientific Computation) Hardcover
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9 783540 307273

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This book provides an introduction to probability theory and its applications. The emphasis is on essential probabilistic reasoning, which is illustrated with a large number of samples. The fourth edition adds material related to mathematical finance as well as expansions on stable laws and martingales.

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9 780387 955780

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Nonsmooth Analysis and Control Theory

This volume presents the essentials of the subject clearly and succinctly, together with some of its applications and a generous supply of interesting exercises. The authors' goal is to make nonsmooth analysis accessible to a wider audience. In this spirit, the book is written so as to be used by anyone who has taken a course in functional analysis.

1998. XIV, 276 p. 8 illus. (Graduate Texts in Mathematics, Volume 178) Hardcover
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9 780387 983363

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This book describes 148 algorithms which are essential for serious number-theoretic computations, in particular for computations related to lattices, algebraic number theory, elliptic curves, primality testing and factoring.

From the reviews ► *Algorithmic number theory has become an important subject. Undoubtedly, this book, written by one of the leading authorities in the field, is one of the most beautiful books available on the market.* ► Acta Scientiarum Mathematicarum

1st ed. 1993. 4th printing 2000. XIX, 545 p. 1 illus. (Graduate Texts in Mathematics, Volume 138) Hardcover
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9 783540 556404

H. Cohen, Université Bordeaux I, Talence, France

Number Theory

Volume I: Tools and Diophantine Equations

The central theme of this book is the solution of Diophantine equations, i.e., equations or systems of polynomial equations which must be solved in integers, rational numbers or more generally in algebraic numbers.

2007. XXIII, 650 p. (Graduate Texts in Mathematics, Volume 239) Hardcover
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Number Theory

Volume II: Analytic and Modern Tools

This book deals with several aspects of what is now called "explicit number theory." The central theme is the solution of Diophantine equations. This unique collection of topics contains more than 350 exercises and its text is largely self-contained.

2007. XXIII, 596 p. (Graduate Texts in Mathematics, Volume 240) Hardcover
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J. B. Conway, University of Tennessee, Knoxville, TN, USA

A Course in Functional Analysis

This book is an introductory text in functional analysis. Unlike many modern treatments, it begins with the particular and works its way to the more general.

From the reviews ▶ *This book is an excellent text for a first graduate course in functional analysis....Many interesting and important applications are included....It includes an abundance of exercises, and is written in the engaging and lucid style which we have come to expect from the author.* ▶ Mathematical Reviews

2nd ed. 1990. Corr. 4th printing 1997. XVI, 399 p. 1 illus. (Graduate Texts in Mathematics, Volume 96) Hardcover

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From the reviews ▶ *This book presents a basic introduction to complex analysis in both an interesting and a rigorous manner. It contains enough material for a full year's course, and the choice of material treated is reasonably standard and should be satisfactory for most first courses in complex analysis. The approach to each topic appears to be carefully thought out both as to mathematical treatment and pedagogical presentation, and the end result is a very satisfactory book.* ▶ MathSciNet

2nd ed. 1978. Corr. 7th printing 1995. XIII, 317 p. 30 illus. (Graduate Texts in Mathematics, Volume 11) Hardcover
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This volume contains the expanded lectures given at a conference on number theory and arithmetic geometry. It introduces the many ideas and techniques used by Wiles, and explains how his result can be combined with Ribet's theorem and ideas of Frey and Serre to prove Fermat's Last Theorem.

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Prime Numbers

A Computational Perspective

In the new edition of this highly successful book, Richard Crandall and Carl Pomerance provide updated material on theoretical, computational, and algorithmic fronts. The authors also list many new computational records and survey new developments in the theory of prime numbers.

2nd ed. 2005. XVI, 597 p. 4 illus. Hardcover
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Matrix Groups

These notes were developed from a course taught at Rice University in the spring of 1976 and again at the University of Hawaii in the spring of 1977. It is assumed that the students know some linear algebra and a little about differentiation of vector-valued functions. The idea is to introduce some students to some of the concepts of Lie group theory – all done at the concrete level of matrix groups.

2nd ed. 1979. XIV, 228 p. 10 illus. (Universitext)
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This handbook is devoted to a systematic study of continued fraction representations for special functions. Only 10% of the continued fractions contained in this book can also be found in the Abramowitz and Stegun project or at the Wolfram website!

2008. XVI, 431 p. Hardcover
ISBN ▶ 978-1-4020-6948-2

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Direct Methods in the Calculus of Variations

This book is developed for the study of vectorial problems in the calculus of variations. It is a new edition of the earlier book published in 1989. Almost half of the book consists of new material and there are added examples.

2nd ed. 2008. XII, 622 p. (Applied Mathematical Sciences, Volume 78) Hardcover
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France; M. Jeanblanc, Université d'Evry, France

Financial Markets in Continuous Time

Translated from the French by A. Kennedy

This book explains key financial concepts, mathematical tools and theories of mathematical finance. The range of topics covered is very broad for an introductory text. The book contains two separate appendices on Brownian motion and on numerical methods.

1st ed. 2003. Corr. 2nd printing 2007. XII, 326 p.
(Springer Finance) Softcover
ISBN ▶ 978-3-540-71149-0

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From the reviews ▶ *Will be of invaluable help to new researchers in the area of incomplete markets.* ▶ Mathematical Reviews

1st ed. 2006. 2nd printing 2008. XVI, 373 p. 1 illus.
(Springer Finance) Hardcover
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1st ed. 2005. Corr. 3rd printing 2007. XV, 436 p. 29 illus. (Graduate Texts in Mathematics, Volume 228) Hardcover
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3rd ed. 2005. XVI, 415 p. 146 illus. (Graduate Texts in Mathematics, Volume 173) Hardcover
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Tensor Geometry

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2nd ed. 1991. Corr. 3rd printing 2010. XIV, 432 p. 177 illus. (Graduate Texts in Mathematics, Volume 130) Hardcover
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Stochastic processes are as usual the main subject of the Séminaire, with contributions on Brownian motion (fractional or other), Lévy processes, martingales and probabilistic finance. Other probabilistic themes are also present: large random matrices, statistical mechanics. The contributions in this volume provide a sampling of recent results on these topics.

2008. X, 462 p. (Lecture Notes in Mathematics / Séminaire de Probabilités, Volume 1934) Softcover
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Parameterized Complexity

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Translated from the Russian by R. Burns

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1990. IX, 432 p. 120 illus. (Graduate Texts in Mathematics, Volume 124) Hardcover
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1st ed. 2000. Corr. 2nd printing 2000. XII, 250 p. (Springer Undergraduate Mathematics Series)

Softcover

ISBN ▶ 978-1-85233-015-6

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Ernst Zermelo

An Approach to His Life and Work

This biography attempts to shed light on all facets of Zermelo's life and achievements. Personal and scientific aspects are kept separate as far as coherence allows, in order to enable the reader to follow the one or the other of these threads. The presentation of his work explores motivations, aims, acceptance, and influence. Selected proofs and information gleaned from unpublished notes and letters add to the analysis.

2007. XIV, 356 p. 42 illus. Hardcover

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2008. IX, 261 p. 17 illus. (Topological Fixed Point Theory and Its Applications, Volume 5) Hardcover

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Pseudo-Differential Operators

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Functions of Several Variables

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2nd ed. 1977. Corr. 3rd printing 1987. XI, 411 p.

96 illus. (Undergraduate Texts in Mathematics)

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I. Fonseca, G. Leoni, Carnegie Mellon University, Pittsburgh, PA, USA

Modern Methods in the Calculus of Variations

L^p Spaces

This book presents in a unified way both classical and contemporary results in the Calculus of Variations. It brings together in one place the contemporary developments in the calculus of variations based on a series of lectures at Carnegie Mellon University.

2007. XIV, 600 p. (Springer Monographs in Mathematics) Hardcover

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Translated from the German by B. Gilligan

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Lectures at a Summer School in Nordfjordeid, Norway, June, 2001

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▶ Mathematical Reviews

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From the reviews ▶ *Enables the reader to make the drastic transition between the basic, intuitive questions about affine and projective varieties with which the subject begins, and the elaborate general methodology of schemes and cohomology employed currently to answer these questions.*
▶ Mathematical Reviews

1st ed. 1977. Corr. 8th printing 1997. XVI, 496 p. 25 illus. (Graduate Texts in Mathematics, Volume 52) Hardcover
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9 780387 902449

R. Hartshorne, University of California, Berkeley, CA, USA

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This book offers a unique opportunity to understand the essence of one of the great thinkers of western civilization. A guided reading of Euclid's Elements leads to a critical discussion and rigorous modern treatment of Euclid's geometry and its more recent descendants, with complete proofs. Topics include the introduction of coordinates, the theory of area, history of the parallel postulate, the various non-Euclidean geometries, and the regular and semi-regular polyhedra.

1st ed. 2000. Corr. 4th printing 2005. XII, 532 p. 550 illus. (Undergraduate Texts in Mathematics) Hardcover
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1st ed. 1965. 3rd printing 1975. 492 p. (Graduate Texts in Mathematics, Volume 25) Hardcover
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9 780387 901381

M. W. Hirsch, University of California, Berkeley, CA, USA

Differential Topology

From the reviews ▶ *A very valuable book. In little over 200 pages, it presents a well-organized and surprisingly comprehensive treatment of most of the basic material in differential topology, as far as is accessible without the methods of algebraic topology... There is an abundance of exercises, which supply many beautiful examples and much interesting additional information, and help the reader to become thoroughly familiar with the material of the main text* ▶ Mathematical Reviews

1st ed. 1976. Corr. 6th printing 1997. X, 222 p.
40 illus. (Graduate Texts in Mathematics, Volume 33)
Hardcover
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9 780387 901480

Ø. Hjelle, Simula Research Laboratory, Lysaker, Norway; M. Dæhlen, University of Oslo, Norway

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This book will serve as a valuable source of information about triangulations for the graduate student and researcher. With emphasis on computational issues, it presents the basic theory necessary to construct and manipulate triangulations. In particular, the book gives a tour through the theory behind the Delaunay triangulation, including algorithms and software issues. It also discusses various data structures used for the representation of triangulations.

2006. XI, 234 p. 126 illus., 5 in color. (Mathematics and Visualization) Hardcover
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Introduction to Numerical Methods in Differential Equations

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Boundary Integral Equations

This book examines the basic mathematical properties of solutions to boundary integral equations and details the variational methods for the boundary integral equations arising in elasticity, fluid mechanics and acoustic scattering theory.

2008. XX, 620 p. (Applied Mathematical Sciences, Volume 164) Hardcover
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This book introduces the theory of semisimple Lie algebras over an algebraically closed field of characteristic 0, with emphasis on representations. This text grew out of lectures which the author gave at the N.S.F. Advanced Science Seminar on Algebraic Groups at Bowdoin College in 1968.

From the reviews ▶ *Exceptionally well written and ideally suited either for independent reading or as a text for an introduction to Lie algebras and their representations.* ▶ Mathematical Reviews

1st ed. 1972. Corr. 7th printing 1997. XII, 173 p.
7 illus. (Graduate Texts in Mathematics, Volume 9)
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ISBN ▶ 978-0-387-90053-7

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J. Jahn, Universität Erlangen-Nürnberg, Erlangen, Germany

Introduction to the Theory of Nonlinear Optimization

This book serves as an introductory text to optimization theory in normed spaces and covers all areas of nonlinear optimization. It presents fundamentals with particular emphasis on the application to problems in the calculus of variations, approximation and optimal control theory. The reader is expected to have a basic knowledge of linear functional analysis.

3rd ed. 2007. X, 292 p. 31 illus. Hardcover
ISBN ▶ 978-3-540-49378-5

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▶ € 52,95 | £ 47,99
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9 783540 493785

K. Jänich, Universität Regensburg, Germany

Topology

Translated from the German by S. Levy

Contents ▶ Introduction ▶ Fundamental Concepts ▶ Topological Vector Spaces ▶ The Quotient Topology ▶ Completion of Metric Spaces ▶ Homotopy ▶ The Two Countability Axioms ▶ CW-Complexes ▶ Construction of Continuous Functions on Topological Spaces ▶ Covering Space ▶ The Theorem of Tychonoff ▶ Set Theory (by T. Bröcker) ▶ References ▶ Table of Symbols ▶ Index.

1st ed. 1984. 2nd Corr. printing 1995. IX, 192 p. 181 illus. (Undergraduate Texts in Mathematics) Hardcover
ISBN ▶ 978-0-387-90892-2

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Vector Analysis

Translated from the German by L. Kay

This book presents modern vector analysis and carefully describes the classical notation and understanding of the theory. It covers all of the classical vector analysis in Euclidean space, as well as on manifolds, and goes on to introduce de Rham Cohomology, Hodge theory, elementary differential geometry, and basic duality. The material is accessible to readers and students with only calculus and linear algebra as prerequisites. A large number of illustrations, exercises, and tests with answers make this book an invaluable self-study source.

2001. XIV, 281 p. 114 illus. (Undergraduate Texts in Mathematics) Hardcover
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▶ Mathematical Reviews

3rd rev. ed. Corr. 4th printing 2006. XIV, 772 p. (Springer Monographs in Mathematics) Hardcover
ISBN ▶ 978-3-540-44085-7

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S. Poon, University of Manchester, UK;
M. Rockinger, University of Lausanne, Switzerland

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This book examines non-Gaussian distributions. It addresses the causes and consequences of non-normality and time dependency in both asset returns and option prices. The book is written for non-mathematicians who want to model financial market prices so the emphasis throughout is on practice. There are abundant empirical illustrations of the models and techniques described, many of which could be equally applied to other financial time series.

2007. XVIII, 542 p. 129 illus. (Springer Finance) Hardcover
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A graph complex is a finite family of graphs closed under deletion of edges. Graph complexes show up naturally in many different areas of mathematics. Identifying each graph with its edge set, one may view a graph complex as a simplicial complex and hence interpret it as a geometric object. This volume examines topological properties of graph complexes, focusing on homotopy type and homology. Many of the proofs are based on Robin Forman's discrete version of Morse theory.

2008. XIV, 382 p. 34 illus. (Lecture Notes in Mathematics, Volume 1928) Softcover
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J. Jost, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany

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Postmodern Analysis

Translated from the German by H. Azad

This is an introduction to advanced analysis that supports a modern presentation with concrete examples and applications, in particular in the areas of calculus of variations and partial differential equations. The book aims to impart a working knowledge of the key methods of contemporary analysis, in particular those that are also relevant for application in physics.

3rd ed. 2005. XV, 371 p. 14 illus. (Universitext) Softcover
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Computational Homology

This interdisciplinary book uses the computer to take a combinatorial computational approach to homological problems. It will appeal especially to researchers and students in mathematics, computer science, nonlinear dynamics, and engineering.

2004. XVII, 480 p. 78 illus. (Applied Mathematical Sciences, Volume 157) Hardcover
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I. Karatzas, Columbia University, New York, NY, USA; S. E. Shreve, Carnegie Mellon University, Pittsburgh, PA, USA

Brownian Motion and Stochastic Calculus

This book contains a detailed discussion of weak and strong solutions of stochastic differential equations and a study of local time for semimartingales, with special emphasis on the theory of Brownian local time. Includes a large number of problems and exercises.

From the reviews ▶ *A valuable book for every graduate student studying stochastic process, and for those who are interested in pure and applied probability. The authors have done a good job.*
▶ Mathematical Reviews

2nd ed. 1991. Corr. 8th printing 2005. XXIII, 470 p. 10 illus. (Graduate Texts in Mathematics, Volume 113) Softcover
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9 780387 976556

I. Karatzas, S. E. Shreve

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From the reviews ▶ *Constitutes a valuable research-level text which should be consulted by anyone interested in the area.* ▶ Mathematical Reviews

1st ed. 1998. Corr. 3rd printing 2001. XV, 415 p. (Stochastic Modelling and Applied Probability, Volume 39) Hardcover
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M. Kashiwara, P. Schapira

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From the reviews ▶ *Clearly and precisely written, and contains many interesting ideas: it describes a whole, largely new branch of mathematics.*

▶ Bulletin of the L.M.S.

1st ed. 1990. 3rd printing 2002. X, 512 p. (Grundlehren der mathematischen Wissenschaften, Volume 292) Hardcover
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2001. XII, 375 p. (Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge / A Series of Modern Surveys in Mathematics, Volume 42) Hardcover
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2nd ed. 1994. X, 235 p. 6 illus. (Graduate Texts in Mathematics, Volume 114) Hardcover
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2nd ed. 1993. 268 p. 25 illus. (Graduate Texts in Mathematics, Volume 97) Hardcover
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List price

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9 780387 979663

U. Kohlenbach, Technische Universität Darmstadt, Germany

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9 783540 775324

P. Kotelenetz, Case Western Reserve University, Cleveland, OH, USA

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9 780387 743165

A. Kox, University of Amsterdam, The Netherlands (Ed.)

The Scientific Correspondence of H.A. Lorentz

Volume I

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2008. XXIV, 780 p. 35 illus. (Sources and Studies in the History of Mathematics and Physical Sciences) Hardcover
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R. Kress, University of Göttingen, Germany

Numerical Analysis

This introduction to numerical analysis guides readers towards the basic ideas and general principles by way of the main and important numerical methods. The book includes the necessary basic functional analytic tools for the solid mathematical foundation of numerical analysis – indispensable for any deeper study and understanding of numerical methods, in particular, for differential equations and integral equations.

1998. XII, 344 p. 11 illus. (Graduate Texts in Mathematics, Volume 181) Hardcover
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9 780387 984087

M. Kreuzer, University of Passau, Germany;
L. Robbiano, University of Genova, Italy

Computational Commutative Algebra 1

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1st ed. 2000. Corr. 2nd printing 2008. X, 322 p. Hardcover
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9 783540 677338

M. Kreuzer, University of Dortmund, Germany;
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Computational Commutative Algebra 2

From the reviews ▶ *The second volume of the authors' 'Computational commutative algebra'... covers on its 586 pages a wealth of interesting material with several unexpected applications. ... an encyclopedia on computational commutative algebra, a source for lectures on the subject as well as an inspiration for seminars. The text is recommended for all those who want to learn and enjoy an algebraic tool that becomes more and more relevant to different fields of applications.*
▶ Zentralblatt MATH

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▶ * € (D) 39,54 | € (A) 40,65 | sFr 57,50



9 783540 255277

T. Kugler, J. C. Smith, T. Connolly, Y. Son, (Eds.)

Decision Modeling and Behavior in Complex and Uncertain Environments

This text examines new research at the interface of operations research, behavioral and cognitive sciences, and decision analysis. From the cognitive behaviorist who collects empirical evidence as to how people make decisions to the engineer and economist who are the consumers of such understanding, the reader encounters the familiar Traveling Salesman Problem and Prisoner's dilemma, how agricultural decisions are made in Argentina's Pampas region, and some social goals that come into play as an element of rational decision-making.

2008. XII, 364 p. 55 illus. (Springer Optimization and Its Applications, Volume 21) Hardcover
ISBN ▶ 978-0-387-77130-4

List price

▶ € 72,95 | £ 65,99
▶ * € (D) 78,06 | € (A) 80,25 | sFr 113,50

Sale price

▶ € 44,95 | £ 40,99
▶ * € (D) 48,10 | € (A) 49,45 | sFr 70,00



9 780387 771304

H. Kuo, Louisiana State University, Baton Rouge, LA, USA

Introduction to Stochastic Integration

Also called Ito calculus, the theory of stochastic integration has applications in virtually every scientific area involving random functions. This introductory textbook provides a concise introduction to the Ito calculus.

From the reviews ▶ *Introduction to Stochastic Integration is exactly what the title says. I would maybe just add a 'friendly' introduction because of the clear presentation and flow of the contents.*
▶ The Mathematical Sciences Digital Library

2006. XIII, 279 p. 2 illus. (Universitext) Softcover
ISBN ▶ 978-0-387-28720-1

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9 780387 287201

Y. A. Kuznetsov, Rijksuniversiteit Utrecht, The Netherlands

Elements of Applied Bifurcation Theory

This book presents nonlinear dynamical systems and their bifurcations, providing explicit procedures and examples for the application of general mathematical results to particular problems. This new edition incorporates many recent theoretical developments, in particular, new and improved numerical methods for bifurcation analysis.

From the reviews of the First Edition ▶ *I know of no other book that so clearly explains the basic phenomena of bifurcation theory.* ▶ Mathematical Reviews

3rd ed. 2004. XXII, 631 p. 251 illus. (Applied Mathematical Sciences, Volume 112) Hardcover
ISBN ▶ 978-0-387-21906-6

List price

▶ € 76,95 | £ 60,99
▶ * € (D) 82,34 | € (A) 84,65 | sFr 128,00

Sale price

▶ € 46,95 | £ 42,99
▶ * € (D) 50,24 | € (A) 51,65 | sFr 73,00



9 780387 219066

A. E. Kyprianou, University of Bath, UK

Introductory Lectures on Fluctuations of Lévy Processes with Applications

This textbook forms the basis of a graduate course on the theory and applications of Lévy processes, from the perspective of their path fluctuations. The book aims to be mathematically rigorous while still providing an intuitive feel for underlying principles. The results and applications often focus on the case of Lévy processes with jumps in only one direction, for which recent theoretical advances have yielded a higher degree of mathematical transparency and explicitness.

2006. XIII, 378 p. 22 illus. (Universitext) Softcover
ISBN ▶ 978-3-540-31342-7

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9 783540 313427

S. Lang, Yale University, New Haven, CT, USA

Algebra

This book is intended as a basic text for a one year course in algebra at the graduate level or as a useful reference for mathematicians and professionals who use higher-level algebra. This book successfully addresses all of the basic concepts of algebra.

From the reviews of the First Edition ▶ *The author has an impressive knack for presenting the important and interesting ideas of algebra in just the "right" way, and he never gets bogged down in the dry formalism which pervades some parts of algebra.* ▶ MathSciNet

3rd rev. ed. 2002. Corr. 4th printing 2004. XV, 914 p. (Graduate Texts in Mathematics, Volume 211) Hardcover
ISBN ▶ 978-0-387-95385-4

List price

▶ € 59,95 | £ 53,99
▶ * € (D) 64,15 | € (A) 65,95 | sFr 92,00

Sale price

▶ € 34,95 | £ 31,99
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9 780387 953854

S. Lang, Yale University, New Haven, CT, USA

Algebraic Number Theory

This is a second edition of Lang's well-known textbook. It covers all of the basic material of classical algebraic number theory, giving the student the background necessary for the study of further topics in algebraic number theory, such as cyclotomic fields, or modular forms.

From the reviews ▶ *Lang's books are always of great value for the graduate student and the research mathematician. This updated edition of Algebraic number theory is no exception.*
▶ Mathematical Reviews

2nd ed. 1994. Corr. 3rd printing 2000. XIII, 357 p. 7 illus. (Graduate Texts in Mathematics, Volume 110) Hardcover
ISBN ▶ 978-0-387-94225-4

List price

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▶ * € (D) 58,80 | € (A) 60,45 | sFr 80,50

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9 780387 942254

S. Lang, Yale University, New Haven, CT, USA

Fundamentals of Differential Geometry

This book provides an introduction to the basic concepts in differential topology, differential geometry, and differential equations, and some of the main basic theorems in all three areas. This new edition includes new chapters, sections, examples, and exercises.

From the reviews ▶ *There are many books on the fundamentals of differential geometry, but this one is quite exceptional; this is not surprising for those who know Serge Lang's books.*

▶ EMS Newsletter

1st ed. 1999. Corr. 2nd printing 2001. XVII, 535 p. 22 illus. (Graduate Texts in Mathematics, Volume 191) Hardcover
ISBN ▶ 978-0-387-98593-0

List price

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▶ * € (D) 64,15 | € (A) 65,95 | sFr 86,50

Sale price

▶ € 34,95 | £31.99
▶ * € (D) 37,40 | € (A) 38,45 | sFr 54,50



9 780387 985930

S. Lang, Yale University, New Haven, CT, USA

Introduction to Differentiable Manifolds

Since this book is intended as a text to follow advanced calculus, manifolds are assumed finite dimensional. The author has made numerous corrections to this new edition, and he has also added a chapter on applications of Stokes' Theorem.

2002. XI, 250 p. 12 illus. (Universitext) Hardcover
ISBN ▶ 978-0-387-95477-6

List price

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9 780387 954776

S. Lang, Yale University, New Haven, CT, USA

Real and Functional Analysis

This book is meant as a text for a first-year graduate course in analysis. In a sense, it covers the same topics as elementary calculus but treats them in a manner suitable for people who will be using it in further mathematical investigations. The organization avoids long chains of logical interdependence, so that chapters are mostly independent. This allows a course to omit material from some chapters without compromising the exposition of material from later chapters.

3rd ed. 1993. 600 p. 37 illus. (Graduate Texts in Mathematics, Volume 142) Hardcover
ISBN ▶ 978-0-387-94001-4

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▶ * € (D) 58,80 | € (A) 60,45 | sFr 86,50

Sale price

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9 780387 940014

S. Lang, Yale University, New Haven, CT, USA

Short Calculus

The Original Edition of "A First Course in Calculus"

From the reviews ▶ *This is a reprint of the original edition of Lang's 'A First Course in Calculus', which was first published in 1964....The treatment is 'as rigorous as any mathematician would wish it'....[The exercises] are refreshingly simply stated, without any extraneous verbiage, and at times quite challenging....There are answers to all the exercises set and some supplementary problems on each topic to tax even the most able.* ▶ Mathematical Gazette

Reprint of the 1st ed. Addison-Wesley, 1964.

2002. XII, 260 p. 30 illus. (Undergraduate Texts in Mathematics) Softcover
ISBN ▶ 978-0-387-95327-4

List price

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Sale price

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▶ * € (D) 21,35 | € (A) 21,95 | sFr 31,00



9 780387 953274

R. Lazarsfeld, University of Michigan, Ann Arbor, MI, USA

Positivity in Algebraic Geometry I

Classical Setting: Line Bundles and Linear Series
Here is the first part of a two volume work that contains a contemporary account of positivity in complex algebraic geometry. Topics in this volume include ample line bundles and linear series on a projective variety, the classical theorems of Lefschetz and Bertini and their modern outgrowths, vanishing theorems, and local positivity.

1st ed. 2004. 2nd printing 2007. XVIII, 387 p. 25 illus. Softcover
ISBN ▶ 978-3-540-22528-7

List price

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Sale price

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▶ * € (D) 21,35 | € (A) 21,95 | sFr 31,00



9 783540 225287

R. Lazarsfeld, University of Michigan, Ann Arbor, MI, USA

Positivity in Algebraic Geometry II

Positivity for Vector Bundles, and Multiplier Ideals
Here is the second part of a two-volume work that contains a contemporary account of positivity in complex algebraic geometry. This volume begins with a survey of positivity for vector bundles and moves on to a systematic development of the theory of multiplier ideals and their applications. At least a third of the book is devoted to concrete examples, applications, and pointers to further developments.

2004. XVIII, 385 p. 20 illus. Softcover
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List price

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Sale price

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9 783540 225317

J. M. Lee, University of Washington, Seattle, WA, USA

Introduction to Smooth Manifolds

This introductory graduate-level textbook familiarizes students with the tools they will need to use manifolds in research. The approach is as concrete as possible, with pictures and intuitive discussions of how one should think geometrically about the abstract concepts, while making full use of the powerful tools that modern mathematics has to offer. Along the way, the book introduces some of the most important examples of geometric structures that manifolds can carry.

2003. XVIII, 638 p. 157 illus. (Graduate Texts in Mathematics, Volume 218) Softcover
ISBN ▶ 978-0-387-95448-6

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▶ * € (D) 53,45 | € (A) 54,95 | sFr 77,50

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J. M. Lee, University of Washington, Seattle, WA, USA

Introduction to Topological Manifolds

Manifolds play an important role in topology, geometry, complex analysis, algebra, and classical mechanics. Learning manifolds differs from most other introductory mathematics in that the subject matter is often completely unfamiliar. This introduction guides readers by explaining the roles manifolds play in diverse branches of mathematics and physics. The book begins with the basics of general topology and gently moves to manifolds, the fundamental group, and covering spaces.

2000. XVII, 385 p. 194 illus. (Graduate Texts in Mathematics, Volume 202) Softcover
ISBN ▶ 978-0-387-95026-6

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M. Loeve

Probability Theory I

This book is intended as a text for graduate students and as a reference for workers in probability and statistics. The prerequisite is honest calculus.

4th ed. 1977. 452 p. (Graduate Texts in Mathematics, Volume 45) Hardcover
ISBN ▶ 978-0-387-90210-4

List price

▶ € 62,95 | £49.99
▶ * € (D) 67,36 | € (A) 69,25 | sFr 104,50

Sale price

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▶ * € (D) 37,40 | € (A) 38,45 | sFr 54,50



M. Loeve

Probability Theory II

Parts Two to Five inclusive require about three to four semesters of graduate study. Numerous historical marks about results, methods, and the evolution of various fields are an intrinsic part of the text. About a third of the second volume is devoted to conditioning and properties of sequences of various types of dependence.

4th ed. 1978. 3rd printing 1994. XVI, 431 p. (Graduate Texts in Mathematics, Volume 46) Hardcover
ISBN ▶ 978-0-387-90262-3

List price

▶ € 62,95 | £49.99
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Sale price

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W. Lück, University of Münster, Germany

L2-Invariants: Theory and Applications to Geometry and K-Theory

In algebraic topology some classical invariants – such as Betti numbers and Reidemeister torsion – are defined for compact spaces and finite group actions. They can be generalized using von Neumann algebras and their traces, and applied also to non-compact spaces and infinite groups. These new L2-invariants contain very interesting and novel information and can be applied to problems arising in topology, K-Theory, differential geometry, non-commutative geometry and spectral theory.

2002. XV, 595 p. (Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge / A Series of Modern Surveys in Mathematics, Volume 44) Hardcover
ISBN ▶ 978-3-540-43566-2

List price

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▶ * € (D) 90,90 | € (A) 93,45 | sFr 13,20



J. Ma, J. Yong

Forward-Backward Stochastic Differential Equations and their Applications

This volume is a survey/monograph on the recently developed theory of forward-backward stochastic differential equations (FBSDEs). Basic techniques such as the method of optimal control, the "Four Step Scheme", and the method of continuation are presented in full. Related topics such as backward stochastic PDEs and many applications of FBSDEs are also discussed in detail.

1st ed. 1999. Corr. 3rd printing 2007. XIV, 274 p. (Lecture Notes in Mathematics, Volume 1702) Softcover
ISBN ▶ 978-3-540-65960-0

List price

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▶ * € (D) 45,96 | € (A) 47,25 | sFr 71,50

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▶ * € (D) 24,56 | € (A) 25,25 | sFr 36,00



S. MacLane, University of Chicago, IL, USA;
I. Moerdijk, University of Utrecht, The Netherlands

Sheaves in Geometry and Logic

A First Introduction to Topos Theory

Sheaves arose in geometry as coefficients for cohomology and as descriptions of the functions appropriate to various kinds of manifolds. Sheaves also appear in logic as carriers for models of set theory. This text presents topos theory as it has developed from the study of sheaves. Beginning with several examples, it explains the underlying ideas of topology and sheaf theory as well as the general theory of elementary toposes and geometric morphisms and their relation to logic.

1st ed. 1992. Corr. 2nd printing 1994. XII, 629 p.
(Universitext) Softcover
ISBN ▶ 978-0-387-97710-2

List price

▶ € 66,95 | £59.99
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9 780387 977102

P. Magal, University of Le Havre, France; S. Ruan,
University of Miami, Coral Gables, FL, USA (Eds.)

Structured Population Models in Biology and Epidemiology

Topics include population models structured by age, size, and spatial position; size-structured models for metapopulations, macroparasitic diseases, and prion proliferation; models for transmission of microparasites between host populations living on non-coincident spatial domains; spatiotemporal patterns of disease spread; method of aggregation of variables in population dynamics; and biofilm models.

2008. XII, 302 p. 63 illus., 32 in color. (Lecture Notes in Mathematics / Mathematical Biosciences Subseries, Volume 1936) Softcover
ISBN ▶ 978-3-540-78272-8

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9 783540 782728

Y. Malevergne, CNRS and University of Nice-Sophia
Antipolis, France; D. Sornette, ETH Zürich, Zürich,
Switzerland

Extreme Financial Risks

From Dependence to Risk Management

From the reviews ▶ *Clearly elucidates extreme financial risks associated with rare events such as financial crashes. The highlight of the book is the delineation of various copulas in conjunction with financial dependences among different assets of a portfolio. In particular, the insightful discussion on quadrant and orthant dependences casts new light on the connection between marginal models and financial dependence... brings a vivid portrayal of the subject.*

▶ Mathematical Reviews

2006. XVI, 312 p. 62 illus. Softcover
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▶ * € (D) 58,80 | € (A) 60,45 | sFr 85,50

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9 783540 272649

R. Mansuy, Bourg-la-Reine, France;
M. Yor, Université Paris VI, Paris, France

Aspects of Brownian Motion

Stochastic calculus and excursion theory are very efficient tools for obtaining either exact or asymptotic results about Brownian motion and related processes. This book focuses on special classes of Brownian functionals, including Gaussian subspaces of the Gaussian space of Brownian motion; Brownian quadratic functionals; Brownian local times; Exponential functionals of Brownian motion with drift; Time spent by Brownian motion below a multiple of its one-sided supremum.

2008. XIV, 200 p. (Universitext) Softcover
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9 783540 223474

D. Marker, University of Illinois, Chicago, IL, USA

Model Theory: An Introduction

From the reviews ▶ *Model theory is the branch of mathematical logic that examines what it means for a first-order sentence... to be true in a particular structure.... This is a text for graduate students, mainly aimed at those specializing in logic, but also of interest for mathematicians outside logic who want to know what model theory can offer them... it is one which makes a good case for model theory as much more than a tool for specialist logicians.* ▶ The Mathematical Gazette

2002. VIII, 342 p. 2 illus. (Graduate Texts in Mathematics, Volume 217) Hardcover
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9 780387 987606

J. Marsden, A. Weinstein

Calculus I

The third of a three-volume work, this book is the outgrowth of the authors' experience teaching calculus at Berkeley. It covers multivariable calculus and begins with the necessary material from analytical geometry. It goes on to cover partial differentiation, the gradient and its applications, multiple integration, and the theorems of Green, Gauss and Stokes. Features many solved problems and extensive exercises.

2nd ed. 1985. XV, 397 p. 528 illus.
(Undergraduate Texts in Mathematics) Softcover
ISBN ▶ 978-0-387-90974-5

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9 780387 909745

J. Marsden, California Institute of Technology, Pasadena, CA, USA; A. Weinstein, University of California, Berkeley, CA, USA

Calculus II

The second of a three-volume work, this book is the outgrowth of the authors' experience teaching calculus at Berkeley. It covers the techniques and applications of integration, infinite series, and differential equations. Throughout the book, the authors motivate the study of calculus using its applications. Many solved problems are included and extensive exercises are given at the end of each section. In addition, a separate student guide has been prepared.

2nd ed. 1985. Corr. 4th printing 1998. XV, 345 p. 297 illus. (Undergraduate Texts in Mathematics) Softcover
ISBN ▶ 978-0-387-90975-2

List price

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9 780387 909752

J. Marsden, A. Weinstein, University of California, Berkeley, CA, USA

Calculus III

The third of a three-volume work, this book is the outgrowth of the authors' experience teaching calculus at Berkeley. It covers multivariable calculus and begins with the necessary material from analytical geometry. It goes on to cover partial differentiation, the gradient and its applications, multiple integration, and the theorems of Green, Gauss and Stokes. The authors motivate the study of calculus using its applications. Features many solved problems and extensive exercises.

2nd ed. 1985. Corr. 4th printing 1998. XV, 341 p. 431 illus. (Undergraduate Texts in Mathematics) Softcover
ISBN ▶ 978-0-387-90985-1

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9 780387 909851

D. Marsh

Applied Geometry for Computer Graphics and CAD

Focusing on the manipulation and representation of geometrical objects, this book explores the application of geometry to computer graphics and computer-aided design (CAD). Over 300 exercises are included, some new to this edition, and many of which encourage the reader to implement the techniques and algorithms discussed through the use of a computer package with graphing and computer algebra capabilities. A dedicated website also offers further resources and useful links.

2nd ed. 2005. XVI, 352 p. 127 illus. (Springer Undergraduate Mathematics Series) Softcover
ISBN ▶ 978-1-85233-801-5

List price

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9 781852 338015

T. P. Mathew

Domain Decomposition Methods for the Numerical Solution of Partial Differential Equations

This book serves as a matrix oriented introduction to domain decomposition methodology. Among the topics discussed are hybrid formulations, Schwarz, substructuring and Lagrange multiplier methods for elliptic equations, computational issues, least squares-control methods, multilevel methods, non-self adjoint problems, parabolic equations, saddle point applications (Stokes, porous media and optimal control), and more.

2008. XIII, 764 p. 40 illus. (Lecture Notes in Computational Science and Engineering, Volume 61) Softcover
ISBN ▶ 978-3-540-77205-7

List price

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▶ * € (D) 96,25 | € (A) 98,95 | sFr 140,00

Sale price

▶ € 52,95 | £47.99
▶ * € (D) 56,66 | € (A) 58,25 | sFr 82,50



9 783540 772057

J. Matousek, Charles University, Prague, Czech Republic; B. Gärtner, ETH Zurich, Switzerland

Understanding and Using Linear Programming

The book is an introductory textbook mainly for students of computer science and mathematics. Its guiding phrase is "what every theoretical computer scientist should know about linear programming". A major focus is on applications of linear programming.

2007. VIII, 226 p. 62 illus. (Universitext) Softcover
ISBN ▶ 978-3-540-30697-9

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Sale price

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▶ * € (D) 24,56 | € (A) 25,25 | sFr 36,00



9 783540 306979

J. Matousek, Charles University, Prague, Czech Republic.

Using the Borsuk-Ulam Theorem

Lectures on Topological Methods in Combinatorics and Geometry

To the uninitiated, algebraic topology might seem fiendishly complex, but its utility is beyond doubt. This brilliant exposition goes back to basics to explain how the subject has been used to further our understanding in some key areas.

1st ed. 2003. Corr. 2nd printing 2008. XII, 214 p. (Universitext) Softcover
ISBN ▶ 978-3-540-00362-5

List price

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▶ * € (D) 48,10 | € (A) 49,45 | sFr 70,00

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9 783540 003625

A. Meucci

Risk and Asset Allocation

A comprehensive treatment of all the steps of asset allocation, including market modeling, invariants estimation, portfolio evaluation, etc. Almost all results are proved explicitly in technical appendices that can be downloaded freely from the book's web-site. Each chapter ends with a set of exercises. Many of the exercises simulate – in Matlab – the solution to practical problems and can be downloaded.

1st ed. 2005. Corr. 3rd printing 2007. XXVI, 532 p. (Springer Finance) Hardcover
ISBN ► 978-3-540-22213-2

List price

► € 69,95 | £55.99
► * € (D) 74,85 | € (A) 76,95 | sFr 116,50

Sale price

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9 783540 222132

Y. S. Mishura, Kyiv National Taras Shevchenko University, Kyiv, Ukraine

Stochastic Calculus for Fractional Brownian Motion and Related Processes

This volume examines the theory of fractional Brownian motion and other long-memory processes. Interesting topics for PhD students and specialists in probability theory, stochastic analysis and financial mathematics demonstrate the modern level of this field. It proves that the market with stock guided by the mixed model is arbitrage-free without any restriction on the dependence of the components and deduces different forms of the Black-Scholes equation for fractional market.

2008. XVIII, 398 p. (Lecture Notes in Mathematics, Volume 1929) Softcover
ISBN ► 978-3-540-75872-3

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Sale price

► € 32,95 | £29.99
► * € (D) 35,26 | € (A) 36,25 | sFr 51,50



9 783540 758723

P. Morandi, New Mexico State University, Las Cruces, NM, USA

Field and Galois Theory

The book is written at the level of students who have familiarity with the basic concepts of group, ring, vector space theory, including the Sylow theorems, factorization in polynomial rings, and theorems about bases of vector spaces. It contains a large number of examples and exercises, a large number of topics covered, and complete proofs given for the stated results to help readers grasp field.

1996. XVI, 281 p. 18 illus. (Graduate Texts in Mathematics, Volume 167) Hardcover
ISBN ► 978-0-387-94753-2

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1st ed. 2000. Corr. 2nd printing 2004. XVI, 161 p.
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1st ed. 2001. Corr. 3rd printing 2003. IX, 300 p.
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9 783540 337072

C. Chevalley

Classification des Groupes Algébriques Semi-simples

The Classification of Semi-simple Algebraic Groups

Révision par P. Cartier

Le texte de cet ouvrage correspond au Séminaire dirigé par Claude Chevalley, à l'École Normale Supérieure de Paris, pendant les années universitaires 1956/57 et 1957/58.

2005. XIII, 276 p. (Collected Works of Claude Chevalley, Volume 3) Relié
ISBN ► 978-3-540-23031-1

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► € 69,95 | £55,99
► * € (D) 74,85 | € (A) 76,95 | sFr 116,50

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9 783540 230311

C. Coccozza-Thivent, Université de Marne-la-Vallée, Noisy-le-Grand, France

Processus stochastiques et fiabilité des systèmes

Le fil directeur de ce livre, construit à partir des cours de DESS et de DEA de l'auteur, est la fiabilité. Son but est de montrer concrètement ce que peut apporter l'étude des processus stochastiques dans ce domaine. Chemin faisant, cela permet d'aborder, dans des cas relativement simples, des techniques variées utilisées dans l'étude des processus stochastiques, tout en conservant l'esprit des démonstrations générales.

1997. XIV, 436 p. (Mathématiques et Applications, Volume 28) Broché
ISBN ► 978-3-540-63390-7

List price

► € 75,83 | £59,99
► * € (D) 81,14 | € (A) 83,41 | sFr 126,00

Sale price

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9 783540 633907

L. Decreusefond, A. Maruani, École Nationale Supérieure des Télécommunications, Paris, France

Mathématiques, Informatique, Physique. Au fil des TIPE

Responsables pédagogiques de l'épreuve pour les mathématiques, l'informatique et la physique, L. Decreusefond et A. Maruani ont contribué de manière significative à la conception et à la mise en œuvre des TIPE. Cet ouvrage présente neuf dossiers de mathématiques, de physique ou d'informatique proposés au concours. Chaque sujet est accompagné de remarques générales, d'un commentaire, d'une suggestion de plan, de questions qu'un jury aurait pu poser et d'un développement remplaçant le thème du dossier dans son contexte scientifique.

2005. XIII, 268 p. (SCOPOS, Volume 19) Broché
ISBN ► 978-2-287-22305-1

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9 782287 223051

Y. Dodge, Université de Neuchâtel, Suisses

Optimisation appliquée

Cet ouvrage présente les concepts fondamentaux d'optimisation classique et de programmation linéaire. Il comporte une partie de théorie mathématique sur le calcul matriciel et les systèmes d'équations et d'inéquations linéaires. L'ouvrage traite ensuite d'optimisation classique avec et sans contraintes, de programmation linéaire, de la méthode du simplexe et du simplexe révisé. Les derniers chapitres sont consacrés à la dualité, à la post-optimisation et analyse de sensibilité ainsi qu'aux problèmes de transport.

2005. X, 334 p. Broché
ISBN ► 978-2-287-21335-9

List price

► € 42,65 | £33,99
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► * € (D) 21,35 | € (A) 21,95 | sFr 31,00



9 782287 213359

M. Duflo, Université de Marne-la-Vallée, Noisy-Le-Grand, France

Algorithmes stochastiques

Au cours des dernières années, les algorithmes stochastiques se sont beaucoup développés tant sur le plan de l'analyse mathématique que vers diverses applications: automatique, images, neurones, statistique... Ce livre présente les divers types d'algorithmes stochastiques, illustrés par des exemples: algorithmes à pas décroissants, algorithmes markoviens, recuit simulé.

1996. XIII, 319 p. (Mathématiques et Applications, Volume 23) Broché
ISBN ► 978-3-540-60699-4

List price

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9 783540 606994

A. Ern, CERMICS, ENPC, Marne la Vallée, France;
J. Guermont, LIMSI, CNRS, Orsay, France

Éléments finis: théorie, applications, mise en oeuvre

Ces notes de cours (Ecole Nationale des Ponts et Chaussées, DEA de Mécanique de Paris VI) présentent la méthode des éléments finis dans un cadre mathématique rigoureux. En accordant une place fondamentale aux conditions inf-sup, elles s'affranchissent du cadre réducteur Lax-Milgram/Galerkin standard.

2002. CDXXX, 9 p. (Mathématiques et Applications, Volume 36) Broché
ISBN ► 978-3-540-42615-8

List price

► € 71,09 | £56,99
► * € (D) 76,07 | € (A) 78,21 | sFr 118,00

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► € 36,95 | £33,99
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9 783540 426158

L. Fargues, A. Genestier, Laboratoire de Mathématiques, Orsay, France; V. Laffogues, Université Paris VI, France

L'isomorphisme entre les tours de Lubin-Tate et de Drinfeld

Ce livre contient une démonstration détaillée et complète de l'existence d'un isomorphisme équivariant entre les tours p-adiques de Lubin-Tate et de Drinfeld. Le résultat est établi en égales et inégales caractéristiques.

2008. XIII, 406 p. (Progress in Mathematics, Volume 262) Relié
ISBN ► 978-3-7643-8455-5

List price

► € 59,90 | £53,99
► * € (D) 64,09 | € (A) 65,89 | sFr 105,00

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9 783764 384555

R. Godement, Université Paris VII, France

Analyse mathématique I

Convergence, fonctions élémentaires

Les deux premiers volumes de cet ouvrage sont consacrés aux fonctions dans \mathbb{R} ou \mathbb{C} , y compris la théorie élémentaire des séries et intégrales de Fourier et une partie de celle des fonctions holomorphes. L'exposé, non strictement linéaire, combine indications historiques et raisonnements rigoureux.

2ème éd. corr. 2001. XX, 458 p. Broché
ISBN ► 978-3-540-42057-6

List price

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9 783540 420576

R. Godement, Université Paris VII, France

Analyse mathématique II

Calcul différentiel et intégral, séries de Fourier, fonctions holomorphes

Les volumes 3 et 4 traiteront principalement des fonctions analytiques (théorie de Cauchy, théorie analytique des nombres et fonctions modulaires), ainsi que du calcul différentiel sur les variétés, avec un court exposé de l'intégrale de Lebesgue, en suivant d'assez près le célèbre cours donné longtemps par l'auteur à l'Université Paris VII.

2ème éd. corrigée 2003. VIII, 490 p. 19 ill. Broché
ISBN ► 978-3-540-00655-8

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9 783540 006558

R. Godement, Université Paris VII, France

Analyse mathématique III

Fonctions analytiques, différentielles et variétés, surfaces de Riemann

Les deux premiers volumes de cet ouvrage sont consacrés aux fonctions dans \mathbb{R} ou \mathbb{C} , y compris la théorie élémentaire des séries et intégrales de Fourier et une partie de celle des fonctions holomorphes. L'exposé, non strictement linéaire, combine indications historiques et raisonnements rigoureux.

2002. IX, 338 p. 27 ill. Broché
ISBN ► 978-3-540-66142-9

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R. Godement, Université de Paris VII, Paris, France

Analyse mathématique IV

Intégration et théorie spectrale, analyse harmonique, le jardin des délices modulaires

Ce 4ème volume initiera le lecteur à l'analyse fonctionnelle et aux méthodes de la théorie des fonctions modulaires. Tout comme pour les volumes 1 à 3, on reconnaîtra ici encore, le style inimitable de l'auteur et pas seulement par son refus de l'écriture condensée en usage dans de nombreux manuels. Mariant judicieusement les mathématiques dites 'modernes' et 'classiques', la première partie (Intégration) est d'utilité universelle tandis que la seconde oriente le lecteur vers un domaine de recherche spécialisé et très actif.

2003. XII, 599 p. 4 ill. Broché
ISBN ► 978-3-540-43841-0

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A. Henrot, Université Henri Poincaré, Vandoeuvre-les-Nancy, France; M. Pierre, Antenne de Bretagne de l'ENS Cachan, Bruz, France

Variation et optimisation de formes

Une analyse géométrique

Ce livre est une initiation aux approches modernes de l'optimisation mathématique de formes. Il s'appuie sur les seules connaissances de première année de Master de mathématiques, mais permet déjà d'aborder les questions ouvertes dans ce domaine en pleine effervescence. On y développe la méthodologie ainsi que les outils d'analyse mathématique et de géométrie nécessaires à l'étude des variations de domaines.

2005. XII, 334 p. (Mathématiques et Applications, Volume 48) Broché
ISBN ► 978-3-540-26211-4

List price

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► * € (D) 63,90 | € (A) 65,69 | sFr 99,50

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O. Kavian, Université de Nancy, France

Introduction à la théorie des points critiques

et applications aux problèmes elliptiques

Ce livre est conçu comme un manuel auto-suffisant pour tous ceux qui ont à résoudre ou étudier des problèmes elliptiques semi-linéaires. On y présente l'approche variationnelle mais les outils de base et le degré topologique peuvent être employés dans d'autres approches. Les problèmes sans compacité ainsi que les problèmes sans symétrie y sont étudiés. Avec plus de 150 exercices ou problèmes.

1993. VIII, 325 p. (Mathématiques et Applications, Volume 13) Broché
ISBN ► 978-3-540-59619-6

List price

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B. Lapeyre, E. Pardoux, R. Sentis

Méthodes de Monte-Carlo pour les équations de transport et de diffusion

Le but de ce livre est de donner une introduction aux méthodes de Monte-Carlo orientée vers la résolution des équations aux dérivées partielles. Après des rappels sur les techniques de simulation, de réduction de variance et de suites à discrepance faible, les auteurs traitent en détail le cas des équations de transport, de l'équation de Boltzmann et des équations paraboliques de diffusion. Dans chaque cas ils introduisent les processus aléatoires associés et discutent les techniques d'implémentation.

1998. X, 178 p. (Mathématiques et Applications, Volume 29) Broché
ISBN ► 978-3-540-63393-8

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C. Le Bris, École Nationale des Ponts et Chaussées, Marne la Vallée, France

Systèmes multi-échelles

Modélisation et simulation

Systèmes multi-échelles est une introduction à la problématique des systèmes multi-échelles du point de vue du mathématicien appliqué. Il se compose d'une mosaïque d'exemples de problèmes issus de la physique au sens large qui présentent pour leur modélisation et leur simulation cette difficulté essentielle de comporter en leur sein des échelles de temps ou d'espace très différentes.

2005. XII, 214 p. 35 ill. (Mathématiques et Applications, Volume 47) Broché
ISBN ► 978-3-540-25313-6

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► € 22,95 | £20,99
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A. Lichnewsky, Université Paris Sud, Orsay, France (Ed.)

Modélisation mathématique: un autre regard

Cet ouvrage rassemble plusieurs textes qui ont été soumis aux candidats de l'épreuve de modélisation du concours d'agrégation de mathématiques. Les textes sont complétés par une présentation de l'auteur, et plusieurs propositions d'exploitation convenant soit à cette épreuve, soit au contexte des T.I.P.E. et T.P.E. Les connaissances mathématiques correspondant aux deux premiers cycles universitaires y sont appliquées dans des situations concrètes simples aux prolongements multiples.

2002. XV, 267 p. 35 ill. (SCOPOS, Volume 16) Broché
ISBN ► 978-3-540-43136-7

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O. Papini, Université d'Aix-Marseille 2, Marseille, France; J. Wolfmann, Université de Toulon, La Garde, France

Algèbre discrète et codes correcteurs

Cet ouvrage issu d'enseignements de 2ème et 3ème cycle se veut une initiation à la théorie algébrique des codes correcteurs d'erreurs. Il s'adresse aussi bien à un public d'étudiants que de chercheurs ou d'ingénieurs dans le domaine des mathématiques ou de l'informatique. Il aborde à la fois les aspects théoriques et pratiques. Il présente un aperçu historique de la Théorie des Codes.

1995. XIII, 259 p. (Mathématiques et Applications, Volume 20) Broché
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A. Quarteroni, Ecole Polytechnique Fédérale de Lausanne, Switzerland; R. Sacco, F. Saleri, Politecnico di Milano, Italy

Méthodes Numériques

Algorithmes, analyse et applications

Ce livre a pour but de présenter les fondements théoriques et méthodologiques de l'analyse numérique. Une attention toute particulière est portée sur les concepts de stabilité, précision et complexité des algorithmes. Les méthodes modernes relatives aux thèmes suivants sont présentées et analysées en détail.

2007. XIV, 538 p. Broché
ISBN ► 978-88-470-0495-5

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J. Rakotoson, Université de Poitiers, Futuroscope Chasseneuil, France

Réarrangement Relatif

Un instrument d'estimations dans les problèmes aux limites

L'objectif de ce livre est de présenter une méthode méconnue voire nouvelle basée sur le concept du réarrangement relatif qui est le sujet principal de ce livre. Pour ce faire, on a développé des propriétés du réarrangement monotone dont certaines ne se trouvent dans aucun autre ouvrage que dans ce livre (sauf dans des revues) comme les inégalités de Polyà-Szego ou les C_α -réarrangements.

2008. XVI, 294 p. 6 ill. (Mathématiques et Applications, Volume 64) Broché
ISBN ► 978-3-540-69117-4

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► * € (D) 64,91 | € (A) 66,73 | sFr 94,50

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► * € (D) 35,26 | € (A) 36,25 | sFr 51,50



E. Rio, Université Paris Sud, Orsay, France

Théorie asymptotique des processus aléatoires faiblement dépendants

Ces notes sont consacrées aux inégalités et aux théorèmes limites classiques pour les suites de variables aléatoires absolument régulières ou fortement mélangeantes au sens de Rosenblatt. Le but poursuivi est de donner des outils techniques pour l'étude des processus faiblement dépendants aux statisticiens ou aux probabilistes travaillant sur ces processus.

2000. XII, 170 p. (Mathématiques et Applications, Volume 31) Broché
ISBN ► 978-3-540-65979-2

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P. Robert, INRIA, Le Chesnay, France

Réseaux et files d'attente: méthodes probabilistes

Ce livre présente une catégorie de modèles probabilistes regroupés sous le nom de réseaux ou systèmes de files d'attente. Ces modèles interviennent dans de nombreuses applications, comme les réseaux de télécommunication ou les réseaux informatiques. Sur le plan théorique ils sont à la source d'une large classe de problèmes : marches aléatoires et diffusions réfléchies, processus ponctuels, etc. Ce livre présente les techniques probabilistes qui permettent d'étudier le comportement qualitatif de ces modèles.

2000. XII, 368 p. 32 ill. (Mathématiques et Applications, Volume 35) Broché
ISBN ► 978-3-540-67872-4

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M. Vigneras

Representations modulaires des groupes reductifs p-adiques. Representations cuspidales de $GL(n)$

Taking up the works of Harish-Chandra, Langlands, Borel, Casselman, Bernstein and Zelevinsky, among others, on the complex representation theory of a p-adic reductive group G, the author explores the representations of G over an algebraic closure \overline{F} of a finite field F with $l \neq p$ elements, which are called 'modular representations'. The main feature of the book is to develop the theory of types over \overline{F} , and to use this theory to prove fundamental results in the theory of modular representations.

1996. 260 p. (Progress in Mathematics, Volume 137)
Relié
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B. Ycart, Université de Paris V, France

Modèles et Algorithmes Markoviens

Ce livre est destiné à tous ceux, mathématiciens ou non, qui souhaitent acquérir une maîtrise pratique de l'outil probabiliste dans ses applications les plus courantes. L'élaboration d'un modèle probabiliste conduit, en dehors de cas particuliers de faible intérêt pratique, à des problèmes théoriques difficiles qui sont vite hors de portée de l'utilisateur (comme d'ailleurs souvent du probabiliste professionnel).

2002. XII, 272 p. (Mathématiques et Applications, Volume 39) Broché
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► * € (D) 48,69 | € (A) 50,05 | sFr 76,00

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► € 26,95 | £24,99
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Italian/Portuguese/ Spanish Titles

M. Aigner, Freie Universität Berlin, Germany;
G. Ziegler, Technische Universität Berlin, Germany

Proofs from the Book

Edizione italiana a cura di Alfio Quarteroni

Paul Erdos amava parlare del Libro in cui Dio conserva le dimostrazioni perfette per i teoremi matematici, seguendo il detto di G. H. Hardy secondo il quale non vi è posto perenne per la matematica brutta. Erdos disse anche che non è necessario credere in Dio, tuttavia in quanto matematici si deve credere nel Libro. Alcuni anni fa gli autori gli suggerirono di scrivere una prima (e assai modesta) approssimazione del Libro. Egli fu entusiasta e, come gli era peculiare, si mise immediatamente al lavoro, riempiendo pagine su pagine con i suoi suggerimenti. Essendo sfortunatamente morto nell'estate del 1996, Paul non compare come co-autore. Tuttavia questo libro è dedicato alla sua memoria.

2006. XX, 270 pagg. Cartonato
ISBN ► 978-88-470-0435-1

List price

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W. Baldoni, C. Ciliberto, G. Piacentini Cattaneo,
Università di Roma Tor Vergata, Roma, Italy

Aritmetica, crittografia e codici

Il libro potrà essere utile a studenti e/o a studiosi, sia di discipline teoriche, come i matematici puri, che applicative come fisici, informatici o ingegneri, che intendano avvicinarsi alla crittografia.

2006. XVI, 518 pagg. (UNITEXT / La Matematica per il 3+2) Brossura
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M. G. Bartolini Bussi, M. Maschietto, Università di
Modena e Reggio Emilia, Italia

Macchine matematiche

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L'esplorazione guidata delle macchine consente di ricostruire il significato geometrico-spaziale di concetti o procedure di solito affrontati solo nel quadro algebrico e di esplorare dinamicamente le configurazioni assunte allo scopo di produrre congetture e costruire dimostrazioni.

 2006. XVIII, 160 pagg. Con CD-ROM.
(Convergenze) Brossura
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M. Bertolini, M. Cazzola, M. Dedò, S. Di Sieno,
Dipartimento di Matematica, Università di Milano;
E. Frigerio, D. Luminati, G. Poldi, M. Rampichini,
I. Tamanini, G. M. Todesco, C. Turrini (Eds.)

mateMilano

percorsi matematici in città

Questo libro, nato come il catalogo della mostra dallo stesso titolo, raccoglie i testi che ne avevano accompagnato gli exhibit.

2005. XII, 200 pagg. Brossura
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L. Catastini, F. Ghione, Università di Roma, Italia

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M. Emmer, Università degli Studi "La Sapienza",
Roma, Italia (Ed.)

matematica e cultura 2000

L'opera è frutto del convegno "Matematica e Cultura" organizzato a Venezia nel Marzo 1999.

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