

Yurinsha Book News

Helgason, S.:

452-071

Integral Geometry and Radon Transforms

In this text, integral geometry deals with Radon's problem of representing a function on a manifold in terms of its integrals over certain submanifolds — hence the term the Radon transform. Examples and far-reaching generalizations lead to fundamental problems such as: (i) injectivity, (ii) inversion formulas, (iii) support questions, (iv) applications (e.g., to tomography, partial differential equations and group representations). For the case of the plane, the inversion theorem and the support theorem have had major applications in medicine through tomography and CAT scanning. While containing some recent research, the book is aimed at beginning graduate students for classroom use or self-study. A number of exercises point to further results with documentation.

From the reviews "Integral Geometry is a fascinating area, where numerous branches of mathematics meet together. The contents of the book is concentrated around the duality and double fibration, which is realized through the masterful treatment of a variety of examples. The book is written by an expert, who has made fundamental contributions to the area."

— Boris Rubin, Louisiana State University

Nov. 2010
9781441960542

301 pp.
10,070.

Springer

<http://www.yurinsha.com>

ホームページは毎月25日更新予定です

No. 452

Feb. 2011

数理科学 友隣社 洋書専門

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(株) 友 隣 社

*Graduate Studies in Mathematics,**Vol. 123: Eskin, G.:*

452-118

**Lectures on
Linear Partial Differential Equations**

The first three chapters are on elementary distribution theory and Sobolev spaces with many examples and applications to equations with constant coefficients.

The following chapters study the Cauchy problem for parabolic and hyperbolic equations, boundary value problems for elliptic equations, heat trace asymptotics, and scattering theory.

The book also covers microlocal analysis, including the theory of pseudodifferential and Fourier integral operators, and the propagation of singularities for operators of real principal type.

Among the more advanced topics are the global theory of Fourier integral operators and the geometric optics construction in the large, the Atiyah-Singer index theorem in \mathbb{R}^n , and the oblique derivative problem.

May 2011

411 pp.

9780821852842

9,400.

Vol. 121: Colding, T. /Minicozzi II, W.:

452-151

A Course in Minimal Surfaces

Minimal surfaces date back to Euler and Lagrange and the beginning of the calculus of variations. Many of the techniques developed have played key roles in geometry and partial differential equations.

Examples include monotonicity and tangent cone analysis originating in the regularity theory for minimal surfaces, estimates for nonlinear equations based on the maximum principle arising in Bernstein's classical work, and even Lebesgue's definition of the integral that he developed in his thesis on the Plateau problem for minimal surfaces.

This book starts with the classical theory of minimal surfaces and ends up with current research topics. Of the various ways of approaching minimal surfaces (from complex analysis, PDE, or geometric measure theory), the authors have chosen to focus on the PDE aspects of the theory.

Apr. 2011

320 pp.

9780821853238

8,000.

*Fields Institute Communications,**Vol. 60: Cojocaru, A.-C. /*

452-056

*Lauter, K. /Pries, R. /Scheidler, R. (eds.):***Win — Women in Numbers:****Research Directions in Number Theory**

This volume evolved out of the workshop WIN—Women In Numbers, held November 2-7, 2008, at the Banff Int'l Research Station (BIRS) in Banff.

It includes articles showcasing outcomes from collaborative research initiated during the workshop as well as survey papers aimed at introducing graduate students and recent PhDs to important research topics in number theory.

The contributions in this volume span a wide range of topics in arithmetic geometry and algebraic, algorithmic, and analytic number theory.

Clusters of papers center around the four topics of moduli spaces and Shimura curves, curves and Jacobians over finite fields, Galois covers of function fields in positive characteristic, and zeta functions of graphs, with a fifth group of three individual articles on modular forms, Iwasawa theory, and Galois representations, respectively.

Mar. 2011

288 pp.

9780821852262

13,590.

A. M. S.

*Mathematical Surveys and Monographs,**Vol. 172: Aschbacher, M. /*

452-044

Lyons, R. /Smith, S. /Solomon, R.:

**The Classification of Finite Simple Groups:
Groups of Characteristic 2 Type**

The book provides an outline and modern overview of the classification of the finite simple groups. It primarily covers the "even case", where the main groups arising are Lie-type (matrix) groups over a field of characteristic 2. The book thus completes a project begun by Daniel Gorenstein's 1983 book, which outlined the classification of groups of "noncharacteristic 2 type". However, this book provides much more.

Chapter 0 is a modern overview of the logical structure of the entire classification. Chapter 1 is a concise but complete outline of the "odd case" with updated references, while Chapter 2 sets the stage for the remainder of the book with a similar outline of the "even case".

The remaining six chapters describe in detail the fundamental results whose union completes the proof of the classification theorem.

Mar. 2011

347 pp.

9780821853368

11,940.

Vol. 171: Pastur, L. /Shcherbina, M.:

452-088

**Eigenvalue Distribution of
Large Random Matrices**

Random matrix theory is a wide and growing field with a variety of concepts, results, and techniques and a vast range of applications in mathematics and the related sciences.

The book, written by well-known experts, offers beginners a fairly balanced collection of basic facts and methods (Part 1 on classical ensembles) and presents experts with an exposition of recent advances in the subject (Parts 2 and 3 on invariant ensembles and ensembles with independent entries).

The text includes many of the authors' results and methods on several main aspects of the theory, thus allowing them to present a unique and personal perspective on the subject and to cover many topics using a unified approach essentially based on the Stieltjes transform and orthogonal polynomials.

May 2011

634 pp.

9780821852859

13,330.

Vol. 170: Costello, K.:

452-057

Renormalization and Effective Field Theory

This book is quite a remarkable contribution. It should make perturbative quantum field theory accessible to mathematicians.

There is a lot of insight in the way the author uses the renormalization group and effective field theory to analyze perturbative renormalization; this may serve as a springboard to a wider use of those topics, hopefully to an eventual nonperturbative understanding. — Edward Witten Quantum field theory has had a profound influence on mathematics, and on geometry in particular. However, the notorious difficulties of renormalization have made quantum field theory very inaccessible for mathematicians.

This book provides complete mathematical foundations for the theory of perturbative quantum field theory, based on Wilson's ideas of low-energy effective field theory and on the Batalin-Vilkovisky formalism.

As an example, a cohomological proof of perturbative renormalizability of Yang-Mills theory is presented.

Mar. 2011

251 pp.

9780821852880

10,670.

A. M. S.

Contemporary Mathematics,

Vol. 538: Cogolludo-Agustin, J. / Hironaka Eriko (eds.): 452-055
Topology of Algebraic Varieties and Singularities

This volume contains invited expository and research papers from the conference *Topology of Algebraic Varieties*, in honor of Anatoly Libgober's 60th birthday, held June 22-26, 2009, in Jaca, Spain. The volume contains four parts corresponding to the four main focal points of the conference: algebraic geometry and fundamental groups, braids and knots, hyperplane arrangements, and singularities. Together, the papers provide an overview of the current status of a broad range of topological questions in Algebraic Geometry. This book is published in cooperation with Real Sociedad Matematica Espanola (RSME).

Apr. 2011 484 pp.
 9780821848906 17,140.

Vol. 537: Milies, C.: 452-084
Groups, Algebras and Applications

This book contains the proceedings of the XVIII Latin American Algebra Colloquium, held from August 3-8, 2009, in Sao Paulo, Brazil. It includes research articles as well as up-to-date surveys covering several directions of current research in algebra, such as Asymptotic Codimension Growth, Hopf Algebras, Structure Theory of both Associative and Non-Associative Algebras, Partial Actions of Groups on Rings, and contributions to Coding Theory.

Apr. 2011 324 pp.
 9780821852392 13,330.

A. M. S.

AMS Chelsea Publishing,

Vol. 241: Berberian, S.: 452-107
Measure and Integration

This highly flexible text is organized into two parts: Part I is suitable for a one-semester course at the first-year graduate level, and the book as a whole is suitable for a full-year course. Part I treats the theory of measure and integration over abstract measure spaces. Prerequisites are a familiarity with epsilon-delta arguments and with the language of naive set theory (union, intersection, function). The fundamental theorems of the subject are derived from first principles, with details in full. Highlights include convergence theorems (monotone, dominated), completeness of classical function spaces (Riesz-Fischer theorem), product measures (Fubini's theorem), and signed measures (Radon-Nikodym theorem). Part II is more specialized; it includes regular measures on locally compact spaces, the Riesz-Markoff theorem on the measure-theoretic representation of positive linear forms, and Haar measure on a locally compact group. The group algebra of a locally compact group is constructed in the last chapter, by an especially transparent method that minimizes measure-theoretic difficulties.

Prerequisites for Part II include Part I plus a course in general topology.

Apr. 2011 312 pp.
 9780821853283 6,480.

A. M. S. /Chelsea

Progress in Mathematics,

Vol. 289: Colombo, F. /Sabadini, I. /Struppa, D.: 452-113

Noncommutative Functional Calculus:

Theory and Applications of Slice Hyperholomorphic Functions

The book contains recent results concerning a functional calculus for n-tuples of not necessarily commuting linear operators and for quaternionic linear operators.

These calculi are based on a new theory of hyperholomorphicity for functions with values in a Clifford algebra the so-called slice monogenic functions which are carefully described in the book and, in particular, for functions with values in the algebra of quaternions the so-called slice regular functions. All the results in the book are new (except for an Appendix on the Riesz-Dunford functional calculus and for a short introduction to Clifford algebras) and appear for the first time organized in a monograph.

Apr. 2011 270 pp.

9783034801096 13,430.

Oberwolfach Seminars,

Vol. 42: Dorfler, W. /Lechleiter, A. /Plum, M. / 452-117

Schneider, G. /Wieners, C.:

Photonic Crystals:

Mathematical Analysis and Numerical Approximation

Propagation of electromagnetic waves in structured materials at nano scales is an important topic for the construction of materials with completely new properties.

The questions concern the computation of the bandstructure of the crystal to detect and forecast the allowed or prohibited transmissions, to find new materials with prescribed band gaps, to predict the consequences of local dotings, recover crystal properties from scattered data and study the behaviour of wave packets in crystals and wave guides.

The mathematical tools to deal with these problems range from analysis to numerical methods and include the following topics: Spectral theory of periodic differential operators, including Maxwell equations

Numerical approximation for Maxwell equations

Numerical solutions to large-scale eigenvalue problems

Apr. 2012 168 pp.

9783034801126 5,030.

Modern Birkhauser Classics

Hofer, H. /Zehnder, E.: 1994 Reprint

Symplectic Invariants and

Hamiltonian Dynamics

452-124

The discoveries of the last decades have opened new perspectives for the old field of Hamiltonian systems and led to the creation of a new field: symplectic topology.

Surprising rigidity phenomena demonstrate that the nature of symplectic mappings is very different from that of volume preserving mappings. This raises new questions, many of them still unanswered.

On the other hand, analysis of an old variational principle in classical mechanics has established global periodic phenomena in Hamiltonian systems. As it turns out, these seemingly different phenomena are mysteriously related. One of the links is a class of symplectic invariants, called symplectic capacities.

Feb. 2011 341 pp.

9783034801034 10,070.

Birkhauser

London Mathematical Society Lecture Note Series,

Vol. 386: Mann, A. /Sandu, G. /Sevenster, M.: 452-036

**Independence-Friendly Logic:
A Game-Theoretic Approach**

Bringing together over twenty years of research, this book gives a complete overview of independence-friendly logic.

It emphasizes the game-theoretical approach to logic, according to which logical concepts such as truth and falsity are best understood via the notion of semantic games.

The book pushes the paradigm of game-theoretical semantics further than the current literature by showing how mixed strategies and equilibria can be used to analyze independence-friendly formulas on finite models.

The book is suitable for graduate students and advanced undergraduates who have taken a course on first-order logic.

Apr. 2011

200 pp.

9780521149341

7,870.

**Vol. 387: Campbell, C. /Quick, M. /Robertson, E. /
Roney-Dougal, C. /Smith, G. /Traustason, G. (eds.):
Groups St Andrews 2009 in Bath, Vol. 1**

Groups St Andrews 2009 was held in the University of Bath in August 2009 and this first volume of a two-volume book contains selected papers from the international conference. 452-051

Five main lecture courses were given at the conference, and articles based on their lectures form a substantial part of the proceedings.

This volume contains the contributions by Gerhard Hiss (RWTH Aachen) and Volodymyr Nekrashevych (Texas A&M).

Apart from the main speakers, refereed survey and research articles were contributed by other conference participants.

Arranged in alphabetical order, these articles cover a wide spectrum of modern group theory.

May 2011

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9780521279031

8,210.

**Vol. 388: Campbell, C. /Quick, M. /Robertson, E. /
Roney-Dougal, C. /Smith, G. /Traustason, G. (eds.):
Groups St Andrews 2009 in Bath, Vol. 2** 452-052

May 2011

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9780521279048

8,210.

**Vol. 385: Marcus, B. /Petersen, K. /Weissman, T. (eds.):
Entropy of Hidden Markov Processes and
Connections to Dynamical Systems**

'Papers from the Banff International Research Station Workshop, October 2007'
Hidden Markov processes (HMPs) are important objects of study in many areas of pure and applied mathematics, including information theory, probability theory, dynamical systems and statistical physics, with applications in electrical engineering, computer science and molecular biology. This collection of research and survey papers presents important new results and open problems, serving as a unifying gateway for researchers in these areas.

Based on talks given at the Banff International Research Station Workshop, 2007, this volume addresses a central problem of the subject: computation of the Shannon entropy rate of an HMP.

July 2011

272 pp.

9780521111133

8,550.

452-206

Cambridge

Pure and Applied Mathematics,

Bergman, C.:

452-033

**Universal Algebra:
Fundamentals and Selected Topics**

Preparing readers for research in the field, this book provides a solid grounding in the fundamental constructions and concepts of universal algebra. It also explores a variety of recent research topics. By introducing familiar structures and tools, such as abelian groups and commutative rings, readers see how universal algebra is related to other areas. The first part of the book covers the central concepts, including homomorphism, subdirect irreducibility, and free algebra. The second part focuses on such novel topics as congruence distributive, arithmetical, and Maltsev varieties.

Aug. 2011 256 pp.
9781439851296 12,860.

Freedden, F.:

452-064

Metaharmonic Lattice Point Theory

This book explains the analytic theory of numbers involving methods of mathematical geophysics. It establishes multidimensional Euler and Poisson summation formulas corresponding to elliptic operators for the adaptive discussion of formulas and identities of weighted lattice point numbers. Focusing on nonuniform distribution of lattice points, the text presents fundamental tools of analytic theory, mathematical physics, and Fourier analysis before covering Green functions and Euler, lattice point, lattice ball, and Poisson summation.

Apr. 2011 473 pp.
9781439861844 13,870.

Bainovd. /Hristova, S.:

452-106

Differential Equations with Maxima

Certain qualitative and approximate methods are needed to solve problems of differential equations with maxima, which depend on the maximum value of a state on past time intervals. One of the few up-to-date references on the topic, this book develops these qualitative and approximate methods of analysis for nonlinear differential equations with maxima. It explains the underlying theory of differential equations and how to accurately model real-world applications, including automatic control systems. It also covers how to solve initial value and boundary value problems of differential equations with maxima.

Apr. 2011 256 pp.
9781439867570 12,860.

Discrete Mathematics and Its Applications

Mollin, R.:

452-085

Algebraic Number Theory, 2nd ed.

Bringing the material up to date to reflect modern applications, Algebraic Number Theory, Second Edition has been completely rewritten and reorganized to incorporate a new style, methodology, and presentation. This edition focuses on integral domains, ideals, and unique factorization in the first chapter; field extensions in the second chapter; and class groups in the third chapter.

Jan. 2011 442 pp.
9781439845981 11,650.

Chapman & Hall

*Oxford Graduate Texts in Mathematics,***Vol. 22: Donaldson, S.:**

452-154/155

Riemann Surfaces

This graduate text on Riemann surface theory proves the fundamental analytical results on the existence of meromorphic functions and the Uniformisation Theorem.

The approach taken emphasises PDE methods, applicable more generally in global analysis. The connection with geometric topology, and in particular the role of the mapping class group, is also explained.

To this end, some more sophisticated topics have been included, compared with traditional texts at this level.

While the treatment is novel, the roots of the subject in traditional calculus and complex analysis are kept well in mind.

Mar. 2011 << Aug. 2009

304 pp.

9780198526391/9780199606740

11,050./5,530. (Paper ed.)

*Oxford Statistical Science Series,***Vol. 36: Fahrmeir, L. /Kneib, T.:**

452-188

Bayesian Smoothing and Regression for Longitudinal, Spatial and Event History Data

Several recent advances in smoothing and semiparametric regression are presented in this book from a unifying, Bayesian perspective.

Simulation-based full Bayesian Markov chain Monte Carlo (MCMC) inference, as well as empirical Bayes procedures closely related to penalized likelihood estimation and mixed models, are considered here.

Throughout, the focus is on semiparametric regression and smoothing based on basis expansions of unknown functions and effects in combination with smoothness priors for the basis coefficients.

Apr. 2011

536 pp.

9780199533022

11,050.

Diggle, P. /Chetwynd, A.:

452-185/186

Statistics and Scientific Method:**An Introduction for Students and Researchers**

Most introductory statistics text-books are written either in a highly mathematical style for an intended readership of mathematics undergraduate students, or in a recipe-book style for an intended audience of non-mathematically inclined undergraduate or postgraduate students, typically in a single discipline; hence, "statistics for biologists", "statistics for psychologists", and so on.

May 2011

208 pp.

9780199543182/9780199543199

10,050./4,010. (Paper ed.)

*Numerical Mathematics and Scientific Computation,***Metcalf, M. /Reid, J. /Cohen, M.:**

452-247/248

Modern Fortran Explained, 4th ed.

Fortran remains one of the principal programming languages used in high-performance scientific, numerical, and engineering computing.

A series of significant revisions to the standard versions of the language have progressively enhanced its capabilities and the latest standard, Fortran 2008, includes many modern features, such as object orientation, coarrays for parallel programming, interoperability with C and various other enhancements.

Apr. 2011

512 pp.

9780199601417 /9780199601424

16,080./7,020. (Paper ed.)

Oxford University Press

Graduate Texts in Mathematics,

Vol. 202: Lee, J.:

452-163

Introduction to Topological Manifolds, 2nd ed.

This book is an introduction to manifolds at the beginning graduate level. It contains the essential topological ideas that are needed for the further study of manifolds, particularly in the context of differential geometry, algebraic topology, and related fields. Its guiding philosophy is to develop these ideas rigorously but economically, with minimal prerequisites and plenty of geometric intuition. Although this second edition has the same basic structure as the first edition, it has been extensively revised and clarified; not a single page has been left untouched.

The major changes include a new introduction to CW complexes; expanded treatments of manifolds with boundary, local compactness, group actions, and proper maps; and a new section on paracompactness.

Jan. 2011

433 pp.

9781441979391

10,070.

Springer Monographs in Mathematics

Shimura, G.:

452-093

Arithmetic of Quadratic Forms

This book is divided in two parts. The first part is preliminary and consists of algebraic number theory and the theory of semisimple algebras.

There are two principal topics: classification of quadratic forms and quadratic diophantine equations.

The first topic is further divided into two types of theories: classification over an algebraic number field and classification over the ring of algebraic integers. To ensure the book would be concise, the author proved basic theorems in local class field theory only in some special cases, and the Hilbert reciprocity law only over the rational number field.

However, the author stated the main theorems with an arbitrary number field as the base field, so the reader familiar with class field theory will be able to learn the arithmetic theory of quadratic forms with no further references.

July 2010

237 pp.

9781441917317

13,430.

Grundlehren der mathematischen wissenschaften,

Vol. 343: Bahouri, H. /Chemin, J.-Y. /Danchin, R.:

452-105

**Fourier Analysis and
Nonlinear Partial Differential Equations**

In recent years, the Fourier analysis methods have experienced a growing interest in the study of partial differential equations.

In particular, those techniques based on the Littlewood-Paley decomposition have proved to be very efficient for the study of evolution equations.

The present monograph aims at presenting a self-contained, state-of-the-art models of those techniques with applications to different classes of partial differential equations: transport, heat, wave and Schrodinger equations.

It will also offer more sophisticated models originating from fluid mechanics or general relativity.

The present book is either directed to anyone with a good undergraduate level of knowledge in analysis or useful for experts who are eager to know the benefit that one might gain from Fourier analysis when dealing with nonlinear partial differential equations.

Jan. 2011

522 pp.

9783642168291

16,790.

Springer

*Encyclopaedia of Mathematical Sciences,***Vol. 139: Timashev, D.:**

452-097

**Homogeneous Spaces and
Equivariant Embeddings**

Homogeneous spaces of linear algebraic groups lie at the crossroads of algebraic geometry, theory of algebraic groups, classical projective and enumerative geometry, harmonic analysis, and representation theory. By standard reasons of algebraic geometry, in order to solve various problems on a homogeneous space, it is natural and helpful to compactify it while keeping track of the group action, i.e., to consider equivariant completions or, more generally, open embeddings of a given homogeneous space. Such equivariant embeddings are the subject of this book. We focus on the classification of equivariant embeddings in terms of certain data of "combinatorial" nature (the Luna-Vust theory) and description of various geometric and representation-theoretic properties of these varieties based on these data.

The class of spherical varieties, intensively studied during the last three decades, is of special interest in the scope of this book. Spherical varieties include many classical examples, such as Grassmannians, flag varieties, and varieties of quadrics, as well as well-known toric varieties.

Apr. 2011

262 pp.

9783642183980

15,110.

*Universitext***Bauerle, N. /Rieder, U.:****Markov Decision Processes with
Applications to Finance**

452-174

The theory of Markov Decision Processes focuses on controlled Markov chains in discrete time.

The authors establish the theory for general state and action spaces and at the same time show its application by means of numerous examples, mostly taken from the fields of finance and operations research.

By using a structural approach many technicalities (concerning measure theory) are avoided. They cover problems with finite and infinite horizons, as well as Partially Observable Markov Decision Processes, Piecewise Deterministic Markov Decision Processes and stopping problems.

Mar. 2011

386 pp.

9783642183232

10,070.

*Selected Works in Probability and Statistics***Davis, A. /Lii, K.-S. /Politis, D.:**

452-009

Selected Works of Murray Rosenblatt

During the second half of the 20th century, Murray Rosenblatt was one of the most celebrated and leading figures in probability and statistics. Among his many contributions, Rosenblatt conducted seminal work on density estimation, central limit theorems under strong mixing conditions, spectral domain methodology, long memory processes and Markov processes. He has published over 130 papers and 5 books, many as relevant today as when they first appeared decades ago.

This volume is a celebration of Murray Rosenblatt's stellar research career that spans over six decades, and includes some of his most interesting and influential papers.

Apr. 2011

539 pp.

9781441983381

25,190.

Springer

Chernick, M. /LaBudde, R.: 452-179
**An Introduction to Bootstrap Methods
 with Applications to R**

This book provides both an elementary and a modern introduction to the bootstrap for students who do not have an extensive background in advanced mathematics. It offers reliable, hands-on coverage of the bootstrap's considerable advantages – as well as its drawbacks.

The book outpaces the competition by skillfully presenting results on improved confidence set estimation, estimation of error rates in discriminant analysis, and applications to a wide variety of hypothesis testing and estimation problems.

The authors take great care to draw connections between the more traditional resampling methods and the bootstrap, oftentimes displaying helpful computer routines in R. Emphasis throughout the book is on the use of the bootstrap as an exploratory tool including its value in variable selection and other modeling environments.

Apr. 2011 384 pp.
 9780470467046 15,240.

Wiley Series in Probability and Statistics

Cornell, J.: 452-180
A Primer on Experiments with Mixtures

This book shows readers how to design and set up basic mixture experiments, then analyze the data and draw inferences from the results. It encompasses useful techniques and provides worked examples for every method used.

It is an abridged version of the author's best-selling, more advanced title on EXPERIMENTS WITH MIXTURES, along with additional exercises, further transitional commentary, new material on generalized linear models and mixture transformations, and new examples where appropriate.

Apr. 2011 368 pp.
 9780470643389 13,970.

Huber, P.: 452-197
**Data Analysis:
 What Can Be Learned from the Past 50 Years**

Why should one study data analysis? How should it be taught? What techniques work best, and for whom? How valid are the results? How much data should be tested? Which machine languages should be used, if used at all? Emphasis on apprenticeship (through hands-on case studies) and anecdotes (through real-life applications) are the tools that Peter J. Huber uses in this volume.

Concern with specific statistical techniques is not of immediate value; rather, questions of strategy - when to use which technique - are employed. Central to the discussion is an understanding of the significance of massive (or robust) data sets, the implementation of languages, and the use of models. Each is sprinkled with an ample number of examples and case studies.

Mar. 2011 240 pp.
 9781118010648 13,970.

Eubank, R. /Hsing, T.: 452-187
Statistical Analysis of Functional Data

Nov. 2011 480 pp. 9780470016916 12,700.

Montgomery, D.: 452-207
Introduction to Linear Regression Analysis, 5th ed.

Apr. 2011 672 pp. 9780470542811 15,870.

Wiley

Reis, C.:

452-091/092

Abstract Algebra:**An Introduction to Groups, Rings and Fields**

This book is appropriate for second to fourth year undergraduates. In addition to the material traditionally taught at this level, the book contains several applications: Polya-Burnside Enumeration, Mutually Orthogonal Latin Squares, Error-Correcting Codes and a classification of the finite groups of isometries of the plane and the finite rotation groups in Euclidean 3-space. It is hoped that these applications will help the reader achieve a better grasp of the rather abstract ideas presented and convince him/her that pure mathematics, in addition to having an austere beauty of its own, can be applied to solving practical problems.

Mar. 2011

504 pp.

9789814335645/9789814340281

13,720./7,370. (Paper ed.)

Steeb, W.-H. /Hardy, Y.:

452-096

Matrix Calculus and Kronecker Product:

A Practical Approach to **Linear and Multilinear Algebra**, 2nd ed. This book provides a self-contained and accessible introduction to linear and multilinear algebra. Besides the standard techniques for linear and multilinear algebra many advanced topics are included. Emphasis is placed on the Kronecker product and tensor product. The Kronecker product has widespread applications in signal processing, discrete wavelets, statistical physics, computer graphics, fractals, quantum mechanics and quantum computing. All these fields are covered in detail.

June 2011

280 pp.

9789814335317

9,910.

World Scientific Series on Nonlinear Science Series, A:

Samoilenko, A. /Stanzhytskyi, O.:

452-140

**Qualitative and Asymptotic Analysis of
Differential Equations with Random Perturbations**

The modern theory of differential equations with random perturbations is on the edge of two mathematical disciplines: random processes and ordinary differential equations. Consequently, the sources of these methods come both from the theory of random processes and from the classic theory of differential equations.

This work focuses on the approach to stochastic equations from the perspective of ordinary differential equations. For this purpose, both asymptotic and qualitative methods which appeared in the classical theory of differential equations and nonlinear mechanics are developed.

June 2011

350 pp.

9789814329064

12,450.

Wen, G.:

452-144

**Boundary Value Problems,
Integral Equations and Related**

In this volume, we report new results about various boundary value problems for partial differential equations and functional equations, theory and methods of integral equations and integral operators including singular integral equations, applications of boundary value problems and integral equations to mechanics and physics, numerical methods of integral equations and boundary value problems, theory and methods for inverse problems of mathematical physics, Clifford analysis and related problems.

Jan. 2011

436 pp.

9789814327855

19,560.

World Scientific Pub.

*Cambridge Studies in Advanced Mathematics,***Vol. 133: Malle, G. / Testerman, D:** 452-082**Linear Algebraic Groups and
Finite Groups of Lie Type**

Originating from a summer school taught by the authors, this concise treatment includes many of the main results in the area.

An introductory chapter describes the fundamental results on linear algebraic groups, culminating in the classification of semisimple groups.

The second chapter introduces more specialized topics in the subgroup structure of semisimple groups and describes the classification of the maximal subgroups of the simple algebraic groups.

The authors then systematically develop the subgroup structure of finite groups of Lie type as a consequence of the structural results on algebraic groups.

This approach will help students to understand the relationship between these two classes of groups.

Aug. 2011 250 pp.
9781107008540 8,440.

Vol. 131: Craven, D.: 452-058**The Theory of Fusion Systems:
An Algebraic Approach**

Fusion systems are a recent development in finite group theory and sit at the intersection of algebra and topology.

This book is the first to deal comprehensively with this new and expanding field, taking the reader from the basics of the theory right to the state of the art. Three motivational chapters, indicating the interaction of fusion and fusion systems in group theory, representation theory and topology are followed by six chapters that explore the theory of fusion systems themselves. Starting with the basic definitions, the topics covered include: weakly normal and normal subsystems; morphisms and quotients; saturation theorems; results about control of fusion; and the local theory of fusion systems.

July 2011 380 pp.
9781107005969 7,980.

*London Mathematical Society Student Texts,***Vol. 78: Garling, D.:** 452-066/067**Clifford Algebras**

Clifford algebras, built up from quadratic spaces, have applications in many areas of mathematics, as natural generalizations of complex numbers and the quaternions. They are famously used in proofs of the Atiyah-Singer index theorem, to provide double covers (spin groups) of the classical groups and to generalize the Hilbert transform.

They also have their place in physics, setting the scene for Maxwell's equations in electromagnetic theory, for the spin of elementary particles and for the Dirac equation.

This straightforward introduction to Clifford algebras makes the necessary algebraic background - including multilinear algebra, quadratic spaces and finite-dimensional real algebras - easily accessible to research students and final-year undergraduates.

The author also introduces many applications in mathematics and physics, equipping the reader with Clifford algebras as a working tool in a variety of contexts.

Feb. 2011 200 pp.
9781107096387/9781107422193 10,940./4,550. (Paper ed.)

Cambridge

Vol. 187: Simon, B.:

452-141

Convexity:**An Analytic Viewpoint**

Convexity is important in theoretical aspects of mathematics and also for economists and physicists. In this monograph the author provides a comprehensive insight into convex sets and functions including the infinite-dimensional case and emphasizing the analytic point of view.

Chapter one introduces the reader to the basic definitions and ideas that play central roles throughout the book.

The rest of the book is divided into four parts: convexity and topology on infinite-dimensional spaces; Loewner's theorem; extreme points of convex sets and related issues, including the Krein-Milman theorem and Choquet theory; and a discussion of convexity and inequalities.

The connections between disparate topics are clearly explained, giving the reader a thorough understanding of how convexity is useful as an analytic tool. A final chapter overviews the subject's history and explores further some of the themes mentioned earlier.

This is an excellent resource for anyone interested in this central topic.

June 2011

352 pp.

9781107007314

10,260.

Vol. 185: Katok, A. /Nitica, V.:

452-075

Rigidity in Higher Rank Abelian Group Actions,**Vol. 1: Introduction and Cocycle Problem**

This self-contained monograph presents rigidity theory for a large class of dynamical systems, differentiable higher rank hyperbolic and partially hyperbolic actions.

This first volume describes the subject in detail and develops the principal methods presently used in various aspects of the rigidity theory.

Part I serves as an exposition and preparation, including a large collection of examples that are difficult to find in the existing literature.

Part II focuses on cocycle rigidity, which serves as a model for rigidity phenomena as well as a useful tool for studying them.

The book is an ideal reference for applied mathematicians and scientists working in dynamical systems and a useful introduction for graduate students interested in entering the field.

June 2011

330 pp.

9780521879095

8,890.

Barber, D. /Cemgil, T. /Chiappa, S. (eds.):

452-173

Bayesian Time Series Models

'What's going to happen next?' Time series data hold the answers, and Bayesian methods represent the cutting edge in learning what they have to say. This ambitious book is the first unified treatment of the emerging knowledge-base in Bayesian time series techniques.

Exploiting the unifying framework of probabilistic graphical models, the book covers approximation schemes, both Monte Carlo and deterministic, and introduces switching, multi-object, non-parametric and agent-based models in a variety of application environments.

It demonstrates that the basic framework supports the rapid creation of models tailored to specific applications and gives insight into the computational complexity of their implementation.

May 2011

450 pp.

9780521196765

8,890.

Cambridge

Annals of Mathematics Studies,

Vol. 176: Edixhoven, B. /Couveignes, J.-M. / 452-061/062

de Jong, R. /Bosman, J. (eds.):

**Computational Aspects of
Modular Forms and Galois Representations:
How One Can Compute in Polynomial Time the Value of
Ramanujan's Tau at a Prime**

The computation of the Galois representations uses their realization, following Shimura and Deligne, in the torsion subgroup of Jacobian varieties of modular curves. The main challenge is then to perform the necessary computations in time polynomial in the dimension of these highly nonlinear algebraic varieties. Exact computations involving systems of polynomial equations in many variables take exponential time.

This is avoided by numerical approximations with a precision that suffices to derive exact results from them. Bounds for the required precision—in other words, bounds for the height of the rational numbers that describe the Galois representation to be computed—are obtained from Arakelov theory.

Two types of approximations are treated: one using complex uniformization and another one using geometry over finite fields.

June 2011

440 pp.

9780691142012/9780691142029

9,290./6,040. (Paper ed.)

Vol. 175: Brubaker, B. /Bump, D. /Friedberg, S.:

Weyl Group Multiple Dirichlet Series:**Type A Combinatorial Theory**

452-048/049

May 2011 184 pp.

9780691150659/9780691150666

7,900./4,600. (Paper ed.)

Princeton Mathematical Series

Farb, B. /Margalit, D.:

452-063

A Primer on Mapping Class Groups

The book begins by explaining the main group-theoretical properties of $\text{Mod}(S)$, from finite generation by Dehn twists and low-dimensional homology to the Dehn-Nielsen-Baer theorem. Along the way, central objects and tools are introduced, such as the Birman exact sequence, the complex of curves, the braid group, the symplectic representation, and the Torelli group.

The book then introduces Teichmüller space and its geometry, and uses the action of $\text{Mod}(S)$ on it to prove the Nielsen-Thurston classification of surface homeomorphisms.

June 2011

400 pp.

9780691147949

6,040.

Mathematical Notes

Fathi, A. /Laudenbach, F. /Poncaru, V.:

452-156

Thurston's Work on Surfaces

This book provides a detailed exposition of William Thurston's work on surface homeomorphisms, available here for the first time in English. Based on material of Thurston presented at a seminar in Orsay from 1976 to 1977, it covers topics such as the space of measured foliations on a surface, the Thurston compactification of Teichmüller space, the Nielsen-Thurston classification of surface homeomorphisms, and dynamical properties of pseudo-Anosov diffeomorphisms.

Aug. 2011

320 pp.

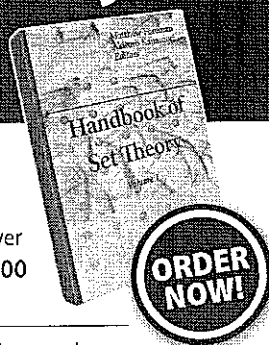
9780691147352

5,110.

Princeton University Press

Handbook of Set Theory

Matthew Foreman
Akihiro Kanamori (Eds.)



1st Edition., 2010, XIV, 2197 p., Hardcover
ISBN: 978-1-4020-4843-2 ► EUR 599.00

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