Yurinsha Book News

Ergebnisse der Mathematik und ihrer Grenzgebiete 3 Folge

507-176

Band 64: Ay, N. /Jost, J. /Le, H. / Schwachhofer, L.:
Information Geometry

The book provides a comprehensive introduction and a novel mathematical foundation of the field of information geometry with complete proofs and detailed background material on measure theory, Riemannian geometry and Banach space theory.
Parametrised measure models are defined as fundamental geometric objects, which can be both finite or infinite dimensional. Based on these models, canonical tensor fields are introduced and further studied, including the Fisher metric and the Amari-Chentsov tensor, and embeddings of statistical manifolds are investigated.
This novel foundation then leads to application highlights, such as generalizations and extensions of the classical uniqueness result of Chentsov or the Cramer-Rao inequality.
Additionally, several new application fields of information geometry are highlighted, for instance hierarchical and graphical models, complexity theory, population genetics, or Markov Chain Monte Carlo.

Aug. 2017 ....
9783319564777 20,130.

Springer

http://www.yurinsha.com
ホームページは毎月1日更新予定です

No.507 May - June 2017

数理科学 友 隣 社 洋書専門

Mathematical Surveys and Monographs,

Vol. 222: **Buium, A.:** No. 507-038

Foundations of Arithmetic Differential Geometry

The aim of this book is to introduce and develop an arithmetic analogue of classical differential geometry.
In this new geometry the ring of integers plays the role of a ring of functions on an infinite dimensional manifold.
The role of coordinate functions on this manifold is played by the prime numbers.
The role of partial derivatives of functions with respect to the coordinates is played by the Fermat quotients of integers with respect to the primes.
The role of metrics is played by symmetric matrices with integer coefficients.
The role of connections (respectively curvature) attached to metrics is played by certain adelic (respectively global) objects attached to the corresponding matrices.
One of the main conclusions of the theory is that the spectrum of the integers is "intrinsically curved"; the study of this curvature is then the main task of the theory.

June 2017 ....
9781470436230 21,210.

Vol. 221: **Gaitsgory, D. /Rozenblyum, N.:** No. 507-052

A Study in Derived Algebraic Gemetry: Vol. I and II

Derived algebraic geometry is a far-reaching generalization of algebraic geometry. It has found numerous applications in various parts of mathematics, most prominently in representation theory.
This two-volume monograph develops generalization of various topics in algebraic geometry in the context derived algebraic geometry.
Volume 1 presents the theory of ind-coherent sheaves, which are a "renormalization" of quasi-coherent sheaves and provide a natural setting for Grothendieck-Serre duality as well as geometric incarnations of numerous categories of interest in representation theory.

July 2017 ....
9781470435684 37,630.

Vol. 221-No. 1: **Gaitsgory, D. /Rozenblyum, N.:** No. 507-053

A Study in Derived Algebraic Gemetry: Vol. 1: Correspondence and Duality

Volume 1 presents the theory of ind-coherent sheaves, which are a "renormalization" of quasi-coherent sheaves and provide a natural setting for Grothendieck-Serre duality as well as geometric incarnations of numerous categories of interest in representation theory.

July 2017 ....
9781470435691 21,210.

Vol. 221-No. 2: **Gaitsgory, D. /Rozenblyum, N.:** No. 507-054

A Study in Derived Algebraic Gemetry: Vol. II: Deformations, Lie Theory and Formal Geometry

Volume 2 develops deformation theory, Lie theory and the theory of algebroids in the context of derived algebraic geometry.
To that end, it introduces the notion of inf-scheme, which is an infinitesimal deformation of a scheme and studies ind-coherent sheaves on inf-schemes.

July 2017 ....
9781470435707 21,210.

A. M. S.

Mathematical Surveys and Monographs,

No. 507-072

Vol. 220: Shen, A. /Uspensky, V. /Vereshchagin, N.:
Kolmogorov Complexity and Algorithmic Randomness

Looking at a sequence of zeros and ones, we often feel that it is not random, that is, it is not plausible as an outcome of fair coin tossing.
Why? The answer is provided by algorithmic information theory: because the sequence is compressible, that is, it has small complexity or, equivalently, can be produced by a short program.
This idea, going back to Solomonoff, Kolmogorov, Chaitin, Levin, and others, is now the starting point of algorithmic information theory.
The first part of this book is a textbook-style exposition of the basic notions of complexity and randomness; the second part covers some recent work done by participants of the "Kolmogorov seminar" in Moscow (started by Kolmogorov himself in the 1980s) and their colleagues.
This book contains numerous exercises (embedded in the text) that will help readers to grasp the material.

July 2017 ....
9781470431822 21,210.

Vol. 219: Evan Schwartz, R.: No. 507-097
The Projective Heat Map

This book introduces a simple dynamical model for a planar heat map that is invariant under projective transformations.
The map is defined by iterating a polygon map, where one starts with a finite planar N-gon and produces a new N-gon by a prescribed geometric construction. One of the appeals of the topic of this book is the simplicity of the construction that yet leads to deep and far reaching mathematics.
To construct the projective heat map, the author modifies the classical affine invariant midpoint map, which takes a polygon to a new polygon whose vertices are the midpoints of the original.
The author provides useful background which makes this book accessible to a beginning graduate student or advanced undergraduate as well as researchers approaching this subject from other fields of specialty.
The book includes many illustrations, and there is also a companion computer program.

May 2016 196 pp.
9781470434656 19,840.

Vol. 218: Das, T. /Simmons, D. /Urbanski, M.: No. 507-042
Geometry and Dynamics in Gromov Hyperbolic Metric Spaces:
With An Emphasis on Non-Proper Settings

This book presents the foundations of the theory of groups and semigroups acting isometrically on Gromov hyperbolic metric spaces.
Particular emphasis is paid to the geometry of their limit sets and on behavior not found in the proper setting.
The authors provide a number of examples of groups which exhibit a wide range of phenomena not to be found in the finite-dimensional theory.
The book contains both introductory material to help beginners as well as new research results, and closes with a list of attractive unsolved problems.

May 2017 281 pp.
9781470434656 19,840.

A. M. S.

Mathematical Surveys and Monographs,

Vol. 216: Gehring, F. /Martin, G. /Palka, B.: No. 507-105

An Introduction to the Theory of

Higher-Dimensional Quasiconformal Mappings

This book offers a modern, up-to-date introduction to quasiconformal mappings from an explicitly geometric perspective, emphasizing both the extensive developments in mapping theory during the past few decades and the remarkable applications of geometric function theory to other fields, including dynamical systems, Kleinian groups, geometric topology, differential geometry, and geometric group theory.

It is a careful and detailed introduction to the higher-dimensional theory of quasiconformal mappings from the geometric viewpoint, based primarily on the technique of the conformal modulus of a curve family.

Notably, the final chapter describes the application of quasiconformal mapping theory to Mostow's celebrated rigidity theorem in its original context with all the necessary background.

May 2017 430 pp.

9780821843604 19,840.

Graduate Studies in Mathematics,

Vol. 179: Cohen, H. /Stromberg, F: No. 507-040

Modular Forms:

A Classical Approach

This comprehensive textbook, which includes numerous exercises, aims to give a complete picture of the classical aspects of the subject, with an emphasis on explicit formulas. After a number of motivating examples such as elliptic functions and theta functions, the modular group, its subgroups, and general aspects of holomorphic and nonholomorphic modular forms are explained, with an emphasis on explicit examples.

The heart of the book is the classical theory developed by Hecke and continued up to the Atkin-Lehner-Li theory of newforms and including the theory of Eisenstein series, Rankin-Selberg theory, and a more general theory of theta series including the Weil representation.

The final chapter explores in some detail more general types of modular forms such as half-integral weight, Hilbert, Jacobi, Maass, and Siegel modular forms.

July 2017 ....

9780821849477 16,080.

Student Mathematical Library,

Vol. 82: Wadsworth, A.: No. 507-079

Problems in Abstract Algebra

The book provides more variety and more challenging problems than are found in most algebra textbooks.

It is intended for students wanting to enrich their learning of mathematics by tackling problems that take some thought and effort to solve.

The book contains problems on groups (including the Sylow Theorems, solvable groups, presentation of groups by generators and relations, and structure and duality for finite abelian groups); rings (including basic ideal theory and factorization in integral domains and Gauss's Theorem); linear algebra (emphasizing linear transformations, including canonical forms); and fields (including Galois theory). Hints to many problems are also included.

June 2017 269 pp.

9781470435837 8,890.

A. M. S.

Memoirs of the American Mathematical Society,

Vol. 1179: **Hofer, H. /Wysocki, K. /Zehnder, E.:** No. 507-154
Applications of Polyfold Theory I:
The Polyfolds of Gromov-Witten Theory

In this paper the authors start with the construction of the symplectic field theory (SFT). As a general theory of symplectic invariants, SFT has been outlined in Introduction to symplectic field theory (2000), by Y. Eliashberg, A. Givental and H. Hofer who have predicted its formal properties.
The actual construction of SFT is a hard analytical problem which will be overcome be means of the polyfold theory due to the present authors.
The current paper addresses a significant amount of the arising issues and the general theory will be completed in part II of this paper.
To illustrate the polyfold theory the authors use the results of the present paper to describe an alternative construction of the Gromov-Witten invariants for general compact symplectic manifolds.

June 2017 218 pp.
9781470422035 12,830.

No. 1174: **Colombo, F. /Sabadini, I.:** No. 507-092
The Mathematics of Superoscillations

In the past 50 years, quantum physicists have discovered, and experimentally demonstrated, a phenomenon which they termed superoscillations.
Aharonov and his collaborators showed that superoscillations naturally arise when dealing with weak values, a notion that provides a fundamentally different way to regard measurements in quantum physics.
From a mathematical point of view, superoscillating functions are a superposition of small Fourier components with a bounded Fourier spectrum, which result, when appropriately summed, in a shift that can be arbitrarily large, and well outside the spectrum.

Apr. 2017 107 pp.
9781470423247 12,830.

No. 1173: **Fefferman, C. /Lee-thorp, J.:** No. 507-100
Topologically Protected States in
One-Dimensional Systems

The authors study a class of periodic Schrodinger operators, which in distinguished cases can be proved to have linear band-crossings or "Dirac points".
They then show that the introduction of an "edge", via adiabatic modulation of these periodic potentials by a domain wall, results in the bifurcation of spatially localized "edge states".

Apr. 2017 118 pp.
9781470423230 12,830.

No. 1168: **Davidson, K. /Fuller, A.:** No. 507-094
Semicrossed Products of
Operator Algebras by Semigroups

The authors examine the semicrossed products of a semigroup action by *-endomorphisms on a C*-algebra, or more generally of an action on an arbitrary operator algebra by completely contractive endomorphisms.
The choice of allowable representations affects the corresponding universal algebra.

Apr. 2017 97 pp.
9781470423094 12,830.

A. M. S.

Frontiers in Mathematics

Ezquerro, J. /Hernandez-Veron, M.: No. 507-098

Newton's Method:

An Updated Approach of Kantorovich's Theory

The book shows the importance of studying semilocal convergence in iterative methods through Newton's method and addresses the most important aspects of the Kantorovich's theory including implicated studies. Kantorovich's theory for Newton's method used techniques of functional analysis to prove the semilocal convergence of the method by means of the well-known majorant principle.

Aug. 2017 166 pp.
9783319559759 14,090.

Trends in Mathematics

Andersson, M. /Boman, J. (eds.): No. 507-081

Analysis Meets Geometry:

The Mikael Passare Memorial Volume

This book is dedicated to the memory of Mikael Passare, an outstanding Swedish mathematician who devoted his life to developing the theory of analytic functions in several complex variables and exploring geometric ideas first-hand. It includes several papers describing Mikael's life as well as his contributions to mathematics, written by friends of Mikael's who share his attitude and passion for science.

Oct. 2017 350 pp.
9783319524696 21,960.

ANHA: Applied and Numerical Harmonic Analysis

Pesenson, I. /Le Gia, Q. /Mayeli, A. /
Mhaskar, H. /Zhou, D.-X. (Eds.) No. 507-121

Novel Methods in Harmonic Analysis, Vol. 1

Frames and Other Bases in Abstract and Function Spaces

This book draws on a number of original research and survey papers from well-known specialists detailing the latest innovations and recently discovered links between various fields. Along with many deep theoretical results, these volumes contain numerous applications to problems in signal processing, medical imaging, geodesy, statistics, and data science.

June 2017 422 pp.
9783319555492 21,040.

Recent Applications of Harmonic Analysis to Function

Novel Methods in Harmonic Analysis, Vol. 2

Spaces, Differential Equations, and Data Science

June 2017 462 pp. No. 507-122
9783319555553 21,040.

Bustamante, J.: No. 507-087

Bernstein Operators and Their Properties

This book provides comprehensive information on the main aspects of Bernstein operators, based on the literature to date. Bernstein operators have a long-standing history and many papers have been written on them. Among all types of positive linear operators, they occupy a unique position because of their elegance and notable approximation properties.

May 2017 374 pp.
9783319554013 20,130.

Birkhauser

Agarwal, R. /Flaut, E.: No. 507-033

An Introduction to Linear Algebra

The techniques of linear algebra are used extensively across the applied sciences, and in many different areas of algebra such as group theory, module theory, representation theory, ring theory, and Galois theory. Written by experienced researchers with a decades of teaching experience, Introduction to Linear Algebra is a clear and rigorous introductory text on this key topic for students of both applied sciences and pure mathematics.

Apr. 2017 236 pp.
9781138626706 9,670.

Hu, Q.: No. 507-059

Concise Introduction to Linear Algebra

This book deals with the subject of linear algebra, covering vectors and linear systems, vector spaces, orthogonality, determinants, eigenvalues and eigenvectors, singular value decomposition.
It adopts an efficient approach to lead students from vectors, matrices quickly into more advanced topics including, LU decomposition, orthogonal decomposition, Least squares solutions, Gram-Schmidt process, eigenvalues and eigenvectors, diagonalizability, spectral decomposition, positive definite matrix, quadratic forms, singular value decompositions and principal component analysis.
This book is designed for onesemester teaching to undergraduate students.

July 2017 222 pp.
9781138044494 10,100.

Saha Ray, S. /Gupta, A.: No. 507-128

Wavelet Methods for Solving Partial Differential Equations and Fractional Differential Equations

The main focus of the book is to implement wavelet based transform methods for solving the problem of fractional order partial differential equations arising in modelling real physical phenomena.
This book explores the analytical and numerical approximate solution obtained by wavelet methods for both classical and fractional order partial differential equations.

Aug. 2017 300 pp.
9781138053816 20,420.

Monographs and Research Notes in Mathematics

Sills, A.: No. 507-073

An Invitation to the Rogers-Ramanujan Identities

The Rogers ---Ramanujan identities are a pair of infinite series--- infinite product identities that were first discovered in 1894. Over the past several decades these identities, and identities of similar type, have found applications in number theory, combinatorics, Lie algebra and vertex operator algebra theory, physics (especially statistical mechanics), and computer science (especially algorithmic proof theory). Presented in a coherant and clear way, this will be the first book entirely devoted to the Rogers-Ramanujan identities and will include related historical material that is unavailable elsewhere.

Dec. 2017 400 pp.
9781498745253 16,550.

C R C Press /Chapman and Hall

Textbooks in Mathematics

Saoub, K.: No. 507-071

A Tour Through Graph Theory

This book introduces graph theory to students who are not mathematics majors. The primary use of this book is for furthering mathematical reasoning through the subject of graph theory. Concepts are introduced through relatable real-world examples modeled mathematically.
The book is written with no proofs, but rather explanations so students understand where the results come from. Each chapter attempts to answer three main questions--existence (does a solution exist?), construction (how do we find a solution?), and optimization (how do we find the best answer or dind one quickly?). Ample examples and exercises are provided to help students better understand the concepts.

Oct. 2017 350 pp.
9781138197800 10,750.

Sawano Yoshihiro /Di Fazio, G. / Hakim, D. /Nakamura Shohei : No. 507-129

Morrey Spaces:

Introduction and Applications to Integral Operators and PDE's

The contents of this book are dedicated to the theoretical aspect of Morrey spaces. In addition, applications to PDEs is provided. Some of the topics described include Bilinear estimates, Boundedness of pseudo-differential operators; Elliptic differential operators and Fractional integral operators. This book gives examples in many fields of analysis, functional analysis, Fourier analysis and so on.

Feb. 2018 500 pp.
9781498765510 21,500.

Broemeling,L.: No. 507-178

Bayesian Inference for Stochastic Processes

The book is designed to introduce Bayesian inference methods for stochastic processes. It is well-known that the Bayesian approach has certain advantages compared to non-Bayesian, among which is the optimal use of prior information via data from previous similar experiments.
The book begins with a brief review of Bayesian inference and uses many examples relevant to the analysis of stochastic processes, including the four major types, i.e. discrete time, discete state space, continuous time and continuous state space.

Oct. 2017 450 pp.
9781138196131 16,550.

Yoshikawa Daisuke / Ohsaki Shuichi : No. 507-247

R Programming and

Its Applications in Financial Mathematics

This book provides various calculation methods for financial mathematics utilizing R programming, and includes basic finance theories and statistical analysis. R programming offers simple methods for easily analyzing financial data and provides various numerical applications. In addition to the ample applications of R programming provided, the book delivers simple descriptions to assist readers in the immediate application of the methods to financial data.

Nov. 2017 250 pp.
9781498766098 20,420.

C R C Press /Chapman and Hall

Problem Books in Mathematics

Sedrakyan, H. /Sedrakyan, N.: No. 507-168

Geometric Inequalities:
Methods of Proving

This unique collection of new and classical problems provides full coverage of geometric inequalities. Many of the 1,000 exercises are presented with detailed author-prepared-solutions, developing creativity and an arsenal of new approaches for solving mathematical problems.
This book can serve teachers, high-school students, and mathematical competitors.
It may also be used as supplemental reading, providing readers with new and classical methods for proving geometric inequalities.

May 2017 671 pp.
9783319550794 10,980.

Springer Undergraduate Mathematics

Komornik, V.: No. 507-111

Topology, Calculus and Approximation

Presenting basic results of topology, calculus of several variables, and approximation theory which are rarely treated in a single volume, this textbook includes several beautiful, but almost forgotten, classical theorems of Descartes, Erdos, Fejer, Stieltjes, and Turan.
The exposition style of Topology, Calculus and Approximation follows the Hungarian mathematical tradition of Paul Erdős and others.
In the first part, the classical results of Alexandroff, Cantor, Hausdorff, Helly, Peano, Radon, Tietze and Urysohn illustrate the theories of metric, topological and normed spaces

May 2017 354 pp.
9781447173151 6,400.

Universitext

Dimca, A.: No. 507-043

Hyperplane Arrangements:
An Introduction

This textbook provides an accessible introduction to the rich and beautiful area of hyperplane arrangement theory, where discrete mathematics, in the form of combinatorics and arithmetic, meets continuous mathematics, in the form of the topology and Hodge theory of complex algebraic varieties.
The topics discussed in this book range from elementary combinatorics and discrete geometry to more advanced material on mixed Hodge structures, logarithmic connections and Milnor fibrations.
The author covers a lot of ground in a relatively short amount of space, with a focus on defining concepts carefully and giving proofs of theorems in detail where needed.
Including a number of surprising results and tantalizing open problems, this timely book also serves to acquaint the reader with the rapidly expanding literature on the subject.
Hyperplane Arrangements will be particularly useful to graduate students and researchers who are interested in algebraic geometry or algebraic topology.
The book contains numerous exercises at the end of each chapter, making it suitable for courses as well as self-study.

May 2017 188 pp.
9783319562209 10,430.

Springer

Infosys Science Foundation Series

Lal, R.: No. 507-062

Algebra 1:
Groups, Rings, Fields and Arithmetic

This is the first in a series of three volumes dealing with important topics in algebra. It offers an introduction to the foundations of mathematics together with the fundamental algebraic structures, namely groups, rings, fields, and arithmetic.
Intended as a text for undergraduate and graduate students of mathematics, it discusses all major topics in algebra with numerous motivating illustrations and exercises to enable readers to acquire a good understanding of the basic algebraic structures, which they can then use to find the exact or the most realistic solutions to their problems.

Aug. 2017 ....
9789811042522 12,260.

Lal, R.: No. 507-063

Algebra 2:
Linear Algebra, Galois Theory, Representation Theory, Group extensions and Schur Multiplier

This is the second in a series of three volumes dealing with important topics in algebra. Volume 2 is an introduction to linear algebra (including linear algebra over rings), Galois theory, representation theory, and the theory of group extensions.
The section on linear algebra (chapters 1?5) does not require any background material from Algebra 1, except an understanding of set theory.

July 2017 ....
9789811042553 12,260.

Algebra and Applications,

Krylov, P. /Tuganbaev, A.: No. 507-061

Formal Matrices

This monograph is a comprehensive account of formal matrices, examining homological properties of modules over formal matrix rings and summarising the interplay between Morita contexts and K theory. While various special types of formal matrix rings have been studied for a long time from several points of view and appear in various textbooks, for instance to examine equivalences of module categories and to illustrate rings with one-sided non-symmetric properties, this particular class of rings has, so far, not been treated systematically.

Apr. 2017 156 pp.
9783319539065 14,090.

Developments in Mathematics,

Vol. 47: **Zhang, X.:** No. 507-139

Integrability of Dynamical Systems:
Algebra and Analysis

It summarizes the classical results of Darboux integrability and its modern development together with their related Darboux polynomials and their applications in the reduction of Liouville and elementary integrabilty and in the center focus problem, the weakened Hilbert 16th problem on algebraic limit cycles and the global dynamical analysis of some realistic models in fields such as physics, mechanics and biology.

May 2017 378 pp.
9789811042256 20,130.

Springer

Applied Mathematical Sciences,

Vol. 90: Meyer, K. /Offin, D.: No. 507-118
Introduction to Hamiltonian Dynamical Systems and the N-Body Problem, 3rd ed.

This third edition text provides expanded material on the restricted three body problem and celestial mechanics.
With each chapter containing new content, readers are provided with new material on reduction, orbifolds, and the regularization of the Kepler problem, all of which are provided with applications.
The previous editions grew out of graduate level courses in mathematics, engineering, and physics given at several different universities.
The courses took students who had some background in differential equations and lead them through a systematic grounding in the theory of Hamiltonian mechanics from a dynamical systems point of view.
This text provides a mathematical structure of celestial mechanics ideal for beginners, and will be useful to graduate students and researchers alike.

Apr. 2017 386 pp.
9783319536903 12,810.

Springer INdAM Series,

Vol. 17: Colombini, F. /Del Santo, D. /Lannes, D. (eds.):
Shocks, Singularities and Oscillations in Nonlinear Optics and Fluid Mechanics No. 507-091

The book collects the most relevant results from the INdAM Workshop "Shocks, Singularities and Oscillations in Nonlinear Optics and Fluid Mechanics held in Rome, September 14-18, 2015.
The contributions discuss recent major advances in the study of nonlinear hyperbolic systems, addressing general theoretical issues such as symmetrizability, singularities, low regularity or dispersive perturbations.
It also investigates several physical phenomena where such systems are relevant, such as nonlinear optics, shock theory (stability, relaxation) and fluid mechanics (boundary layers, water waves, Euler equations, geophysical flows, etc.).
It is a valuable resource for researchers in these fields.

May 2017 252 pp.
9783319520414 17,380.

Fields Institute Communications,

Vol. 79: Melnik, R. /Makarov, R.: No. 507-235
Recent Progress and Modern Challenges in Applied Mathematics, Modeling and Computational Science

This volume is an excellent resource for professionals in various areas of applications of mathematics, modeling, and computational science.
It focuses on recent progress and modern challenges in these areas.
The volume provides a balance between fundamental theoretical and applied developments, emphasizing the interdisciplinary nature of modern trends and detailing state-of-the-art achievements in Applied Mathematics, Modeling, and Computational Science.
The chapters have been authored by international experts in their respective fields, making this book ideal for researchers in academia, practitioners, and graduate students.

May 2017 416 pp.
9781493969685 20,130.

Springer

Probability Theory and Stochastic Modelling,

Vol. 82: Fabbri, G. /Gozzi, F. /Swiech, A.: No. 507-183

Stochastic Optimal Control in Infinite Dimension

Providing an introduction to stochastic optimal control in infinite dimension, this book gives a complete account of the theory of second-order HJB equations in infinite-dimensional Hilbert spaces, focusing on its applicability to associated stochastic optimal control problems.
It features a general introduction to optimal stochastic control, including basic results (e.g. the dynamic programming principle) with proofs, and provides examples of applications.

May 2017 690 pp.
9783319530666 17,380.

Probability and its Applications

Vol. 80: Rio, E.: No. 507-197

Asymptotic Theory of Weakly Dependent Random Processes

The first chapter introduces covariance inequalities under strong mixing or absolute regularity. These covariance inequalities are applied in Chapters 2, 3 and 4 to moment inequalities, rates of convergence in the strong law, and central limit theorems. Chapter 5 concerns coupling. In Chapter 6 new deviation inequalities and new moment inequalities for partial sums via the coupling lemmas of Chapter 5 are derived and applied to the bounded law of the iterated logarithm. Chapters 7 and 8 deal with the theory of empirical processes under weak dependence. Lastly, Chapter 9 describes links between ergodicity, return times and rates of mixing in the case of irreducible Markov chains. Each chapter ends with a set of exercises.

May 2017 188 pp.
9783662543221 17,380.

Poincare, H.: No. 507-295

The Three-Body Problem and the Equations of Dynamics: Poincare's Foundational Work on Dynamical Systems Theory

Here is an accurate and readable translation of a seminal article by Henri Poincare that is a classic in the study of dynamical systems popularly called chaos theory. In an effort to understand the stability of orbits in the solar system, Poincare applied a Hamiltonian formulation to the equations of planetary motion and studied these differential equations in the limited case of three bodies to arrive at properties of the equations solutions, such as orbital resonances and horseshoe orbits.

Apr. 2017 248 pp.
9783319528984 20,130.

Springer Theses

Christensen, T.: No. 507-274

From Classical to Quantum Plasmonics in Three and Two Dimensions

This thesis provides a comprehensive introduction to two active research directions within the field of plasmonics: (i) nonclassical, or quantum, aspects of the plasmonic response; and (ii) two-dimensional plasmonics, a recent innovation in the field stimulated by the advent of two-dimensional materials.

Jan. 2017 181 pp.
9783319485614 18,300.

Springer

Syam Prasad, K. /Srinivas, K. / No. 507-074/075
Harikrishnan, P. /Satyanarayana, B. (eds.):
Nearrings, Nearfields and Related Topics

Recent developments in various algebraic structures and the applications of those in different areas play an important role in Science and Technology. One of the best tools to study the non-linear algebraic systems is the theory of Near-rings.
The forward note by Gunter Pilz (Johannes Kepler University, Austria) explains about past developments and future prospects in the theory of nearrings and nearfields. Certain applications of nearrings are found in a few chapters.

Jan. 2017 324 pp.
9789813207356/9789813207370 21,890./17,440. (Paper ed.)

Yang, L.:
Hessian Polyhedra, Invariant Theory and Appell Hypergeometric Functions No. 507-138

Our book gives the complex counterpart of Klein's classic book on the icosahedron. We show that the following four apparently disjoint theories: the symmetries of the Hessian polyhedra (geometry), the resolution of some system of algebraic equations (algebra), the system of partial differetial equations of Appell hypergeometric functions (analysis) and the modular equation of Picard modular functions (arithmetic) are in fact dominated by the structure of a single object, the Hessian group. It provides another beautiful example on the fundamental unity of mathematics.

Sep. 2017 400 pp.
9789813209473 25,310.

Scardua, B. /Morales Rojas, K.: No. 507-167
Geometry, Dynamics and Topology of Foliations

The Geometric Theory of Foliations is one of the fields in Mathematics that gathers several distinct domains: Topology, Dynamical Systems, Differential Topology and Geometry, among others.
Its great development has allowed a better comprehension of several phenomena of mathematical and physical nature.
Our book contains material dating from the origins of the theory of foliations, from the original works of C Ehresmann and G Reeb, up till modern developments.

Apr. 2017 200 pp.
9789813207073 16,760.

Maeda Yoshiaki /Moriyoshi Hitoshi / No. 507-162
Kotani Motoko /Watamura Satoshi (eds.) :
Noncommutative Geometry and Physics, 4:
Workshop on Strings, Membranes and Topological Field Theory, Tohoku University, Sendai 2015

This book is a collection of the lectures and talks presented in the Tohoku Forum for Creativity in the thematic year 2015 "Fundamental Problems in Quantum Physics: Strings, Black Holes and Quantum Information" and related events in the period 2014-2016.
This volume especially contains an overview of recent developments in the theory of strings and membranes, as well as topological field theory.

May 2017 420 pp.
9789813144606 23,600.

World Scientific

Advanced Textbooks in Mathematics

Tretkoff, P.: No. 507-135

Periods and Special Functions in Transcendence

This book gives an introduction to some central results in transcendental number theory with application to periods and special values of modular and hypergeometric functions. It also includes related results on CalabiYau manifolds. Most of the material is based on the author's own research and appears for the first time in book form.
It is presented with minimal of technical language and no background in number theory is needed.

July 2017 250 pp.
9781786342942 16,760.

Lan, K. - W.: No. 507-064

Compactifications of PEL-Type Shimura Varieties and Kuga Families with Ordinary Loci

This book is a comprehensive treatise on the partial toroidal and minimal compactifications of the ordinary loci of PEL-type Shimura varieties and Kuga families, and on the canonical and subcanonical extensions of automorphic bundles. The results in this book serve as the logical foundation of several recent developments in the theory of p-adic automorphic forms; and of the author's work with Harris, Taylor, and Thorne on the construction of Galois representations without duality conditions, which is a major breakthrough in the Langlands program.

Oct. 2017 580 pp.
9789813207325 27,020.

Advanced Textbooks in Physics

Vvedensky, D. /Evans, T.: No. 507-078

Symmetry, Groups, and Representaions in Physics

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Oct. 2017 350 pp.
9781786340153 13,170.

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It contains the basic notions of functional equations, the methods of solving functional equations, the growth of functional equations in the last four decades and an extensive reference list on fundamental research papers that investigate the stability results of different types of functional equations and functional inequalities. No. 507-125/126

May 2017 340 pp.
9789813147607/9789813149977 16,760./8,210. (Paper ed.)

World Scientific

No. 507-022

Riemann, B.:

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1953 Dover Reprint

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Aug. 2017 704 pp.
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Mar. 2016 ....
9780486801148 5,120.

No. 507-165

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Aug. 2017 96 pp.
9780486815664 1,870.

Dover

Halmos, P.: No. 507-057

Finite-Dimensional Vector Spaces, 2nd ed.

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A fine example of a great mathematician's intellect and mathematical style, this classic on linear algebra is widely cited in the literature.
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Aug. 2017 208 pp.
9780486814865 2,560.

Halmos, P.: No. 507-030

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Suitable for advanced undergraduates and graduate students in mathematics, it employs the language and notation of informal mathematics.
There are very few displayed theorems; most of the facts are stated in simple terms, followed by a sketch of the proof.
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The treatment covers the basic concepts of set theory, cardinal numbers, transfinite methods, and a good deal more in 25 brief chapters.

Apr. 2017 112 pp.
9780486814872 2,210.

Kelley, J.: No. 507-159

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This comprehensive treatment for beginning graduate-level students immediately found a significant audience, and it remains a highly worthwhile and relevant book for students of topology and for professionals in many areas.

Mar. 2017 320 pp.
9780486815442 3,920.

Rudin, W.: No. 507-070

Fourier Analysis on Groups

1962 Interscience Pub. Reprint

Written by a master mathematical expositor, this classic text reflects the results of the intense period of research and development in the area of Fourier analysis in the decade preceding its first publication in 1962.
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Apr. 2017 286 pp.
9780486813653 2,900.

Dover

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This book intends to construct a theory of modular forms for families of Calabi?Yau threefolds with Hodge numbers of the third cohomology equal to one. It discusses many differences and similarities between the new theory and the classical theory of modular forms defined on the upper half plane.
The main examples of the new theory are topological string partition functions which encode the Gromov-Witten invariants of the mirror Calabi-Yau threefolds.
It is mainly written for two primary target audiences: researchers in classical modular and automorphic forms who wish to understand the q-expansions of physicists derived from Calabi-Yau threefolds, and mathematicians in enumerative algebraic geometry who want to understand how mirror symmetry counts rational curves in compact Calabi-Yau threefolds.
This book is also recommended for mathematicians who work with automorphic forms and their role in algebraic geometry, in particular for those who have noticed that the class of algebraic varieties involved in their study is limited: for instance, it does not include compact non-rigid Calabi-Yau threefolds.

Apr. 2017 200 pp.
9781571463432 6,500.

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Apr. 2017 258 pp.
9781571463425 8,210.

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Apr. 2017 238 pp.
9781571463418 8,210.

International Press

EMS Series of Lectures in Mathematics,

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This book deals with PDE models for chemotaxis (the movement of biological cells or organisms in response of chemical gradients) and hydrodynamics (viscous, homogeneous, and incompressible fluid filling the entire space).
The underlying Keller-Segel equations (chemotaxis), Navier-Stokes equations (hydrodynamics), and their numerous modifications and combinations are treated in the context of inhomogeneous spaces of Besov-Sobolev type paying special attention to mapping properties of related nonlinearities.
Further models are considered, including (deterministic) Fokker-Planck equations and chemotaxis Navier-Stokes equations.
These notes are addressed to graduate students and mathematicians No. 506-055
having a working knowledge of basic elements of the theory of function spaces, especially of Besov-Sobolev type and interested in mathematical biology and physics.

Mar. 2017 138 pp.
9783037191729 5,860.

Zurich Lectures in Advanced Mathematics

Schachermayer, W.: No. 507-241

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Robert Merton's work from the early seventies had enormous impact on academic research as well as on the paradigms guiding practitioners.
One of the ramifications of this topic is the analysis of (small) proportional transaction costs, such as a Tobin tax.
The lecture notes present some striking recent results of the asymptotic dependence of the relevant quantities when transaction costs tend to zero.
An appealing feature of the consideration of transaction costs is that it allows for the first time to reconcile the no arbitrage paradigm with the use of non-semimartingale models, such as fractional Brownian motion.
This leads to the culminating theorem of the present lectures which roughly reads as follows: for a fractional Brownian motion stock price model we always find a shadow price process for given transaction costs.
This process is a semimartingale and can therefore be dealt with using the usual machinery of mathematical finance.

Mar. 2017 160 pp.
9783037191736 6,220.

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