

# Yurinsha Book News

*A publication of Hindustan Book Agency*

**Mumford, D. / Oda Tadao :** 495-078  
**Algebraic Geometry II**

Several generations of students of algebraic geometry have learned the subject from David Mumford's fabled "Red Book", which contains notes of his lectures at Harvard University. Their genesis and evolution are described by Mumford in the preface:

*Initially, notes to the course were mimeographed and bound and sold by the Harvard mathematics department with a red cover. These old notes were picked up by Springer and are now sold as The Red Book of Varieties and Schemes.*

*However, every time I taught the course, the content changed and grew. I had aimed to eventually publish more polished notes in three volumes ...*

This book contains what Mumford had then intended to be Volume II. It covers the material in the "Red Book" in more depth, with several topics added. Mumford has revised the notes in collaboration with Tadao Oda.

**Table of Contents:** \*Schemes and sheaves: definitions \*Exploring the world of schemes \*Elementary global study of Proj R \*Ground fields and base rings \*Singular vs. non-singular \*Group schemes and applications \*The cohomology of coherent sheaves \*Applications of cohomology \*Two deeper results

Dec. 2015 516pp. 13,820.  
9789380250809

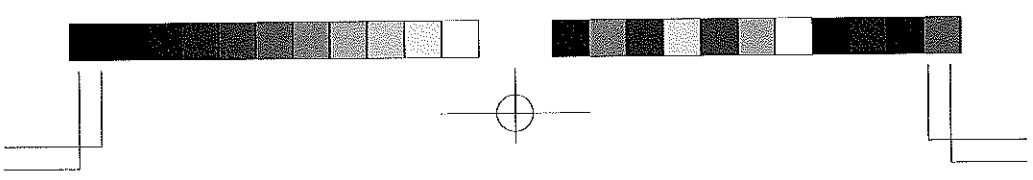
**A. M. S.**

<http://www.yurinsha.com>

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**No. 498 Nov. - Dec. 2015**

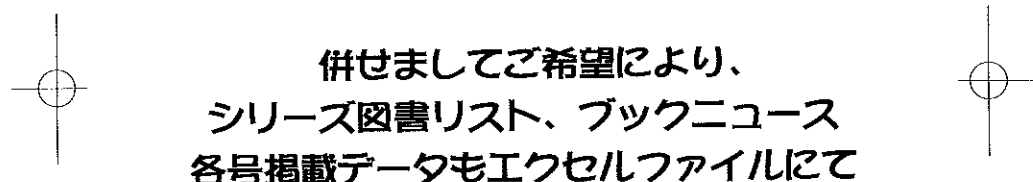
敬理科学 **友 隣 社** 洋書専門



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ご提供のお知らせ**

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**(株) 友 隣 社**

**Miura Koryo/ Kawasaki Toshikazu/ Tachi Tomohiro/  
Uehara Ryuhei/Lang, R. /Wang-Iverson, P. (eds.):  
Origami 6 2 Vols. Set**

Origami6 is a unique collection of papers illustrating the connections between origami and a wide range of fields. The papers compiled in this two-part set were presented at the 6th International Meeting on Origami in Science, Mathematics and Education. They display the creative melding of origami (or, more broadly, folding) with fields ranging from cell biology to space exploration, from education to kinematics, from abstract mathematical laws to the artistic and aesthetics of sculptural design.

Jan. 2016 736 pp. 498-028  
9781470418748 23,640.

**Simon, B.: 498-151  
A Comprehensive Course in Analysis. 5 Vols Set**

A Comprehensive Course in Analysis by Poincar Prize winner Barry Simon is a five-volume set that can serve as a graduate-level analysis textbook with a lot of additional bonus information, including hundreds of problems and numerous notes that extend the text and provide important historical background. Depth and breadth of exposition make this set a valuable reference source for almost all areas of classical analysis.

Dec. 2015 3259 pp. 各卷詳報掲載 No. 152 - 156  
9781470410988 63,640.

*Student Mathematical Library,*

**Vol. 78: Nelson, G.: 498-140**

**A User-Friendly Introduction to  
Lebesgue Measure and Integration**

A User-Friendly Introduction to Lebesgue Measure and Integration provides a bridge between an undergraduate course in Real Analysis and a first graduate-level course in Measure Theory and Integration.

The main goal of this book is to prepare students for what they may encounter in graduate school, but will be useful for many beginning graduate students as well. The book starts with the fundamentals of measure theory that are gently approached through the very concrete example of Lebesgue measure. With this approach, Lebesgue integration becomes a natural extension of Riemann integration.

Dec. 2015 229 pp.  
9781470421991 8,910.

*Student Mathematical Library,*

**Vol. 77: Kuhnel, W.: 498-182**

**Differential Geometry:  
Curves — Surfaces — Manifolds, 3rd ed.**

This carefully written book is an introduction to the beautiful ideas and results of differential geometry. The first half covers the geometry of curves and surfaces, which provide much of the motivation and intuition for the general theory. The second part studies the geometry of general manifolds, with particular emphasis on connections and curvature. The text is illustrated with many figures and examples. The prerequisites are undergraduate analysis and linear algebra. This new edition provides many advancements, including more figures and exercises, and—as a new feature—a good number of solutions to selected exercises.

Oct. 2015 412 pp.  
9781470423209 8,910.

**A. M. S.**

**Vol. 209: Oudot,S.:**

498-084

**Persistence Theory:****From Quiver Representations to Data Analysis**

Persistence theory emerged in the early 2000s as a new theory in the area of applied and computational topology.

This book provides a broad and modern view of persistence theory, including its algebraic, topological, and algorithmic aspects. It also elaborates on applications in data analysis.

The level of detail of the exposition has been set so as to keep a survey style, while providing sufficient insights into the proofs so the reader can understand the mechanisms at work.

The book is organized into three parts. The first part is dedicated to the foundations of persistence and emphasizes its connection to quiver representation theory. The second part focuses on its connection to applications through a few selected topics. The third part provides perspectives for both the theory and its applications.

Jan. 2016

218 pp.

9781470425456

20,000.

**Vol. 208: Ozsvath,P. /Stipsicz,A. /Szabo,Z.:**

498-188

**Grid Homology for Knots and Links**

Knot theory is a classical area of low-dimensional topology, directly connected with the theory of three-manifolds and smooth four-manifold topology.

In recent years, the subject has undergone transformative changes thanks to its connections with a number of other mathematical disciplines, including gauge theory; representation theory and categorification; contact geometry; and the theory of pseudo-holomorphic curves.

Starting from the combinatorial point of view on knots using their grid diagrams, this book serves as an introduction to knot theory, specifically as it relates to some of the above developments. After a brief overview of the background material in the subject, the book gives a self-contained treatment of knot Floer homology from the point of view of grid diagrams.

Applications include computations of the unknotting number and slice genus of torus knots, and tools to study variants of knot theory in the presence of a contact structure. Additional topics are presented to prepare readers for further study in holomorphic methods in low-dimensional topology, especially Heegaard Floer homology.

Dec. 2015

410 pp.

9781470417376

20,000.

**Vol. 207: Bogachev,V. /Krylov,N. /**

498-106

**Rockner,M. /Shaposhnikov,S.:****Fokker-Planck-Kolmogorov Equations**

This book gives an exposition of the principal concepts and results related to second order elliptic and parabolic equations for measures, the main examples of which are Fokker-Planck-Kolmogorov equations for stationary and transition probabilities of diffusion processes.

Existence and uniqueness of solutions are studied along with existence and Sobolev regularity of their densities and upper and lower bounds for the latter.

The target readership includes mathematicians and physicists whose research is related to diffusion processes as well as elliptic and parabolic equations.

Jan. 2016

489 pp.

9781470425586

20,000.

**A. M. S.**

Yurinsha Book News

*Graduate Studies in Mathematics,*

**Vol. 169: Vasy, A.:**

498-164

**Partial Differential Equations:**

**An Accessible Route Through Theory and Applications**

This text on partial differential equations is intended for readers who want to understand the theoretical underpinnings of modern PDEs in settings that are important for the applications without using extensive analytic tools required by most advanced texts.

The assumed mathematical background is at the level of multivariable calculus and basic metric space material, but the latter is recalled as relevant as the text progresses.

The key goal of this book is to be mathematically complete without overwhelming the reader, and to develop PDE theory in a manner that reflects how researchers would think about the material.

A concrete example is that distribution theory and the concept of weak solutions are introduced early because while these ideas take some time for the students to get used to, they are fundamentally easy and, on the other hand, play a central role in the field.

Jan. 2016

280 pp.

9781470418816

12,550.

**Vol. 168: Aizenman, M. / Warzel, S.:**

498-099

**Random Operators:**

**Disorder Effects on Quantum Spectra and Dynamics**

This book provides an introduction to the mathematical theory of disorder effects on quantum spectra and dynamics. Topics covered range from the basic theory of spectra and dynamics of self-adjoint operators through Anderson localization--presented here via the fractional moment method, up to recent results on resonant delocalization.

The subject's multifaceted presentation is organized into seventeen chapters, each focused on either a specific mathematical topic or on a demonstration of the theory's relevance to physics, e.g., its implications for the quantum Hall effect.

The mathematical chapters include general relations of quantum spectra and dynamics, ergodicity and its implications, methods for establishing spectral and dynamical localization regimes, applications and properties of the Green function, its relation to the eigenfunction correlator, fractional moments of Herglotz-Pick functions, the phase diagram for tree graph operators, etc.

Jan. 2016

320 pp.

9781470419134

14,360.

**Vol. 166: Torchinsky, A.:**

498-163

**Problems in Real and Functional Analysis**

It is generally believed that solving problems is the most important part of the learning process in mathematics because it forces students to truly understand the definitions, comb through the theorems and proofs, and think at length about the mathematics.

The purpose of this book is to complement the existing literature in introductory real and functional analysis at the graduate level with a variety of conceptual problems (1,457 in total), ranging from easily accessible to thought provoking, mixing the practical and the theoretical aspects of the subject. Problems are grouped into ten chapters covering the main topics usually taught in courses on real and functional analysis.

Dec. 2015

467 pp.

9781470420574

14,360.

**A. M. S.**

*Graduate Studies in Mathematics,***Vol. 167: Neu, J.:****Singular Perturbation in the Physical Sciences**

This book is the testimony of a physical scientist whose language is singular perturbation analysis. 498-141

Classical mathematical notions, such as matched asymptotic expansions, projections of large dynamical systems onto small center manifolds, and modulation theory of oscillations based either on multiple scales or on averaging/transformation theory, are included.

The narratives of these topics are carried by physical examples: Let's say that the moment when we "see" how a mathematical pattern fits a physical problem is like "hitting the ball." Yes, we want to hit the ball.

But a powerful stroke includes the follow-through.

Jan. 2016

335 pp.

9781470425555

14,360.

**Vol. 165: Rotman, J.:**

498-086

**Advanced Modern Algebra, Part 1., 3rd ed.**

This new edition, now in two parts, has been significantly reorganized and many sections have been rewritten.

This first part, designed for a first year of graduate algebra, consists of two courses: Galois theory and Module theory.

Topics covered in the first course are classical formulas for solutions of cubic and quadratic equations, classical number theory, commutative algebra, groups, and Galois theory.

Topics in the second course are Zorn's lemma, canonical forms, inner product spaces, categories and limits, tensor products, projective, injective, and flat modules, multilinear algebra, affine varieties, and Grobner bases.

Nov. 2015

709 pp.

9781470415549

16,180.

*Contemporary Mathematics,***Vol. 651: Dzhamay, A. / Maruno Kenichi / Ormerod, C. (eds.):**

498-115

**Algebraic and Analytic Aspects of****Integrable Systems and Painleve Equations**

The theory of integrable systems has been at the forefront of some of the most important developments in mathematical physics in the last 50 years.

The techniques to study such systems have solid foundations in algebraic geometry, differential geometry, and group representation theory.

Nov. 2015

194 pp.

9781470416546

19,090.

**Vol. 648: Alvarez-Consul, L. / Burgos-Gil, J. / Ebrahimi-Fard, K. (eds.):**

498-049

**Feynman Amplitudes, Periods and Motives**

Feynman amplitudes are integrals attached to Feynman diagrams by means of Feynman rules. They form a central part of perturbative quantum field theory, where they appear as coefficients of power series expansions of probability amplitudes for physical processes.

The efficient computation of Feynman amplitudes is pivotal for theoretical predictions in particle physics. Periods are numbers computed as integrals of algebraic differential forms over topological cycles on algebraic varieties.

Oct. 2015

289 pp.

9781470422479

19,090.

**A. M. S.**

**Hardy,G./Seshu Aiyar,P./Wilson,B. (eds.):  
Collected Papers of Srinivasa Ramanujan**

Originally published in 1927, this book presents the collected papers of the renowned Indian mathematician Srinivasa Ramanujan (1887-1920), with editorial contributions from G. H. Hardy (1877-1947). Detailed notes are incorporated throughout and appendices are also included. This book will be of value to anyone with an interest in the works of Ramanujan and the history of mathematics.

Dec. 2015 392 pp. 498-016  
9781107536517 8,200.

*London Mathematical Society Lecture Note Series,*

**Vol. 430: Robinson,J./Rodrigo,J. /  
Sadowski,W./Vidal-Lopez,A.:  
Recent Progress in the Theory of  
the Euler and Navier-Stokes Equations**

Mar. 2016 .... 13,120.  
9781107554979

**Vol. 429: Taelman,L.:  
Sheaves and Functions Modulo p:  
Lectures on the Woods Hole Trace Formula**

The Woods Hole trace formula is a Lefschetz fixed-point theorem for coherent cohomology on algebraic varieties. It leads to a version of the sheaves-functions dictionary of Deligne, relating characteristic-p-valued functions on the rational points of varieties over finite fields to coherent modules equipped with a Frobenius structure. This book begins with a short introduction to the homological theory of crystals of Bocklandt and Pink with the aim of introducing the sheaves-functions dictionary as quickly as possible, illustrated with elementary examples and classical applications. Subsequently, the theory and results are expanded to include infinite coefficients, L-functions, and applications to special values of Goss L-functions and zeta functions.

Mar. 2016 129 pp. 498-092  
9781316502594 11,480.

**Vol. 428: Dodson,C./Galanis,G./Vassiliou,E.:  
Geometry in A Frechet Context:  
A Projective Limit Approach**

Many geometrical features of manifolds and fibre bundles modelled on Frechet spaces either cannot be defined or are difficult to handle directly. This is due to the inherent deficiencies of Frechet spaces; for example, the lack of a general solvability theory for differential equations, the non-existence of a reasonable Lie group structure on the general linear group of a Frechet space, and the non-existence of an exponential map in a Frechet-Lie group. In this book, the authors describe in detail a new approach that overcomes many of these limitations by using projective limits of geometrical objects modelled on Banach spaces. It will appeal to researchers and graduate students from a variety of backgrounds with an interest in infinite-dimensional geometry.

Jan. 2016 314 pp. 498-177  
9781316601952 14,760.

**Cambridge**

*London Mathematical Society Lecture Note Series,***Vol. 427: Kerr, M. / Pearlstein, G.:** 498-181**Recent Advances in Hodge Theory:  
Period Domains, Algebraic Cycles, and Arithmetic**

In its simplest form, Hodge theory is the study of periods - integrals of algebraic differential forms which arise in the study of complex geometry and moduli, number theory and physics.

Organized around the basic concepts of variations of Hodge structure and period maps, this volume draws together new developments in deformation theory, mirror symmetry, Galois representations, iterated integrals, algebraic cycles and the Hodge conjecture.

Its mixture of high-quality expository and research articles make it a useful resource for graduate students and seasoned researchers alike.

Mar. 2016

528 pp.

9781107546295

18,860.

**Vol. 426: Bridges, T. / Groves, M. / Nicholls, D.:** 498-242**Lectures on the Theory of Water Waves**

In the summer of 2014 leading experts in the theory of water waves gathered at the Newton Institute for Mathematical Sciences in Cambridge for four weeks of research interaction. A cross-section of those experts was invited to give introductory-level talks on active topics. This book is a compilation of those talks and illustrates the diversity,

intensity, and progress of current research in this area.

The key themes that emerge are numerical methods for analysis, stability and simulation of water waves, transform methods, rigorous analysis of model equations, three-dimensionality of water waves, variational principles, shallow water hydrodynamics, the role of deterministic and random bottom topography, and modulation equations.

This book is an ideal introduction for PhD students and researchers looking for a research project.

It may also be used as a supplementary text for advanced courses in mathematics or fluid dynamics.

Mar. 2016

300 pp.

9781107565562

14,760.

**Vol. 425: Aravinda, C. / Farrell, F. / Lafont, J.-F. (eds.):** 498-168  
**Geometry, Topology, and  
Dynamics in Negative Curvature**

The ICM 2010 satellite conference 'Geometry, Topology and Dynamics in Negative Curvature' afforded an excellent opportunity to discuss various aspects of this fascinating interdisciplinary subject in which methods and techniques from geometry, topology, and dynamics often interact in novel and interesting ways.

Containing ten survey articles written by some of the leading experts in the field, this proceedings volume provides an overview of important recent developments relating to negative curvature.

Topics covered include homogeneous dynamics, harmonic manifolds, the Atiyah Conjecture, counting circles and arcs, and hyperbolic buildings.

Each author pays particular attention to the expository aspects, making the book particularly useful for graduate students and mathematicians interested in transitioning from other areas via the common theme of negative curvature.

Dec. 2015

358 pp.

9781107529007

16,240.

**Cambridge**



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*Grundlehren der mathematischen wissenschaften,*

**Vol. 351: den Hollander, F. / Bovier, A.:** 498-323

**Metastability:  
A Potential-Theoretic Approach**

This monograph provides a concise presentation of a mathematical approach to metastability, a wide-spread phenomenon in the dynamics of non-linear systems - physical, chemical, biological or economic - subject to the action of temporal random forces typically referred to as noise, based on potential theory of reversible Markov processes. The authors shed new light on the metastability phenomenon as a sequence of visits of the path of the process to different metastable sets, and focuses on the precise analysis of the respective hitting probabilities and hitting times of these sets. The theory is illustrated with many examples, ranging from finite-state Markov chains, finite-dimensional diffusions and stochastic partial differential equations, via mean-field dynamics with and without disorder, etc.

Jan. 2016 ..... 22,550.  
9783319247755

*Fields Institute Communications,*

**Vol. 77: Alaca, A. / Alaca, S. / Williams, K. (eds.):** 498-048  
**Advances in the Theory of Numbers:**  
Proceedings of the Thirteenth Conference of  
the Canadian Number Theory Association

The theory of numbers continues to occupy a central place in modern mathematics because of both its long history over many centuries as well as its many diverse applications to other fields such as discrete mathematics, cryptography, and coding theory. The proof by Andrew Wiles (with Richard Taylor) of Fermat's last theorem published in 1995 illustrates the high level of difficulty of problems encountered in number-theoretic research as well as the usefulness of the new ideas arising from its proof.

Topics of the talks reflected the diversity of current trends and activities in modern number theory. These topics included modular forms, hypergeometric functions, elliptic curves, distribution of prime numbers, diophantine equations, L-functions, Diophantine approximation, and many more.

Oct. 2015 ..... 17,420.  
9781493932009 226 pp.

*Encyclopaedia of Mathematical Sciences,*

**Vol. \*\*\*: Derksen, H. / Kemper, G.:** 498-063  
**Computational Invariant Theory**

This book is about the computational aspects of invariant theory. Of central interest is the question how the invariant ring of a given group action can be calculated. Algorithms for this purpose form the main pillars around which the book is built. There are two introductory chapters, one on Grobner basis methods and one on the basic concepts of invariant theory, which prepare the ground for the algorithms. Then algorithms for computing invariants of finite and reductive groups are discussed.

Particular emphasis lies on interrelations between structural properties of invariant rings and computational methods. Finally, the book contains a chapter on applications of invariant theory, covering fields as disparate as graph theory, coding theory, dynamical systems, and computer vision.

Nov. 2015 ..... 22,600.  
9783662484203 320 pp.

**Springer**

Saito Kazuyuki /Wright,M.:  
**Monotone Complete  $C^*$ -algebras and  
 Generic Dynamics** 498-149

This monograph is about monotone complete  $C^*$ -algebras, their properties and the new classification theory. A self-contained introduction to generic dynamics is also included because of its important connections to these algebras. Our knowledge and understanding of monotone complete  $C^*$ -algebras has been transformed in recent years. This is a very exciting stage in their development, with much discovered but with many mysteries to unravel. This book is intended to encourage graduate students and working mathematicians to attack some of these difficult questions. Each bounded, upward directed net of real numbers has a limit. Monotone complete algebras of operators have a similar property. In particular, every von Neumann algebra is monotone complete but the converse is false.

Nov. 2015 ..... 14,350.  
 9781447167730

498-096

Wolfart,J. /Jones,G.:  
**Dessins d'Enfants on Riemann Surfaces**

This volume provides an introduction to dessins d'enfants and embeddings of bipartite graphs in compact Riemann surfaces. The first part of the book presents basic material, guiding the reader through the current field of research. A key point of the second part is the interplay between the automorphism groups of dessins and their Riemann surfaces, and the action of the absolute Galois group on dessins and their algebraic curves. It concludes by showing the links between the theory of dessins and other areas of arithmetic and geometry, such as the abc conjecture, complex multiplication and Beauville surfaces.

June 2016 ..... 10,250.  
 9783319247090

Alias,L. /Mastrolia,P. /Rigoli,M.:  
**Maximum Principles and  
 Geometric Applications** 498-100

This monograph presents an introduction to some geometric and analytic aspects of the maximum principle. In doing so, it analyses with great detail the mathematical tools and geometric foundations needed to develop the various new forms that are presented in the first chapters of the book. In particular, a generalization of the Omori-Yau maximum principle to a wide class of differential operators is given, as well as a corresponding weak maximum principle and its equivalent open form and parabolicity as a special stronger formulation of the latter. In the second part, the attention focuses on a wide range of applications, mainly to geometric problems, but also on some analytic (especially PDEs) questions including: the geometry of submanifolds, hypersurfaces in Riemannian and Lorentzian targets, Ricci solitons, Liouville theorems, uniqueness of solutions of Lichnerowicz-type PDEs and so on.

June 2016 ..... 19,470.  
 9783319243351

**Springer**

Yurinsha Book News

*Lecture Notes in Mathematics,*

**Vol. 2156: Halle, L. / Nicaise, J.:  
Neron Models and Base Change** 498-070

Presenting the first systematic treatment of the behavior of Neron models under ramified base change, this book can be read as an introduction to various subtle invariants and constructions related to Neron models of semi-abelian varieties, motivated by concrete research problems and complemented with explicit examples. Neron models of abelian and semi-abelian varieties have become an indispensable tool in algebraic and arithmetic geometry since Neron introduced them in his seminal 1964 paper.

Mar. 2016 ..... 7,170.  
9783319266374

**Vol. 2133: Mukhamedov, F. / Ganikhodjaev, N.:  
Quantum Quadratic Operators and Processes**

Covering both classical and quantum approaches, this unique and self-contained book presents the most recent developments in the theory of quadratic stochastic operators and their Markov and related processes. The asymptotic behavior of dynamical systems generated by classical and quantum quadratic operators is investigated and various properties of quantum quadratic operators are studied, providing an insight into the construction of quantum channels.

This book is suitable as a textbook for an advanced undergraduate/graduate level course or summer school in quantum dynamical systems.

Oct. 2015 ..... 9,220.  
9783319228365 231 pp.

**Vol. 2151: Shi, Z.:  
Branching Random Walks** 498-226

*Ecole d'Été de Probabilités de Saint-Flour*

Providing an elementary introduction to branching random walks, the main focus of these lecture notes is on the asymptotic properties of one-dimensional discrete-time supercritical branching random walks, and in particular, on extreme positions in each generation, as well as the evolution of these positions over time. Starting with the simple case of Galton-Watson trees, the text primarily concentrates on exploiting, in various contexts, the spinal structure of branching random walks.

The notes end with some applications to biased random walks on trees.

Feb. 2016 ..... 14,350.  
9783319253718

*Probability Theory and Stochastic Modelling,*

**Bouleau, N. / Denis, L.: 498-107**

**Dirichlet Forms Methods for  
Poisson Point Measures and Levy Processes:**

A simplified approach to Malliavin calculus adapted to Poisson random measures is developed and applied in this book. Called the "lent particle method" it is based on perturbation of the position of particles. Poisson random measures describe phenomena involving random jumps or the random distribution of particles.

Thanks to the theory of Dirichlet forms, the authors develop a mathematical tool for a quite general class of random Poisson measures and significantly simplify computations of Malliavin matrices of Poisson functionals.

Feb. 2016 ..... 17,420.  
9783319258188

**Springer**

Chueshov, I.:

498-111

**Dynamics of Quasi-Stable Dissipative Systems**

This book is devoted to background material and recently developed mathematical methods in the study of infinite-dimensional dissipative systems. The theory of such systems is motivated by the long-term goal to establish rigorous mathematical models for turbulent and chaotic phenomena. The aim here is to offer general methods and abstract results pertaining to fundamental dynamical systems properties related to dissipative long-time behavior.

Oct. 2015

372 pp.

9783319229027

16,400.

Toth, G.:

498-193

**Measures of Symmetry for Convex Sets and Stability**

This textbook treats two important and related matters in convex geometry: the quantification of symmetry of a convex set - measures of symmetry - and the degree to which convex sets that nearly minimize such measures of symmetry are themselves nearly symmetric - the phenomenon of stability. By gathering the subject's core ideas and highlights around Grunbaum's general notion of measure of symmetry, it paints a coherent picture of the subject, and guides the reader from the basics to the state-of-the-art. The exposition takes various paths to results in order to develop the reader's grasp of the unity of ideas, while interspersed remarks enrich the material with a behind-the-scenes view of corollaries and logical connections, alternative proofs, and allied results from the literature.

Nov. 2015

305 pp.

9783319237329

16,400.

Liu, W. / Rockner, M.:

**Stochastic Partial Differential Equations:****An Introduction**

498-134

This book provides an introduction to the theory of stochastic partial differential equations (SPDEs) of evolutionary type. SPDEs are one of the main research directions in probability theory with several wide ranging applications. Many types of dynamics with stochastic influence in nature or man-made complex systems can be modelled by such equations. The theory of SPDEs is based both on the theory of deterministic partial differential equations, as well as on modern stochastic analysis. Whilst this volume mainly follows the "variational approach", it also contains a short account on the "semigroup (or mild solution) approach".

Oct. 2015

266 pp.

9783319223537

10,250.

Choe, G.:

**Stochastic Analysis for Finance with Simulations**

This book is an introduction to stochastic analysis and quantitative finance; it includes both theoretical and computational methods.

498-205

Topics covered are stochastic calculus, option pricing, optimal portfolio investment, and interest rate models. Also included are simulations of stochastic phenomena, numerical solutions of the Black-Scholes-Merton equation, Monte Carlo methods, and time series.

Basic measure theory is used as a tool to describe probabilistic phenomena.

Apr. 2016

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9783319255873

14,350.

**Springer**

Yurinsha Book News

*LTCC Advanced Mathematics Series,*

**Vol. 3: Bullett,S. /Fearn,T. /Smith,F. (eds.):** 498-041/042  
**Algebra, Logic and Combinatorics**

Since the discovery of neutrino oscillations neutrino physics has become an interesting field of research in physics.

They imply that neutrino must have a small mass and that the neutrinos, coupled to the charged leptons, are mixtures of the mass eigenstates, analogous to the flavor mixing of the quarks.

The mixing angles for the quarks are small, but for the leptons two of the mixing angles are large.

Aug. 2016 180 pp.  
9781783268191 /978173268207 13,650./6,920. (Paper ed.)

**Doman,B.:** 498-114  
**The Classical Orthogonal Polynomials**

This book defines sets of orthogonal polynomials and derives a number of properties satisfied by any such set.

It continues by describing the classical orthogonal polynomials and the additional properties they have.

Nov. 2016 176 pp.  
9789814704038 13,650.

**Hagen,T. /Rupp,F. /Scheurle,J. (eds.):** 498-069  
**Dynamical Systems,**

**Number Theory and Applications:**

**A Festschrift in Honor of Armin Leutbecher's 80th Birthday**

This volume consists of a selection of research-type articles on dynamical systems, evolution equations, analytic number theory and closely related topics.

A strong emphasis is on a fair balance between theoretical and more applied work, thus spanning the chasm between abstract insight and actual application.

Several of the articles are expected to be in the intersection of dynamical systems theory and number theory. One article will likely relate the topics presented to the academic achievements and interests of Prof. Leutbecher and shed light on common threads among all the contributions.

Feb. 2016 250 pp.  
9789814699860 17,290.

**Jacob,N. /Evans,K.:** 498-128/129  
**A Course in Analysis:**

**Volume Introductory Calculus, Analysis of  
Functions of One Real Variable**

Part 1 begins with an overview of properties of the real numbers and starts to introduce the notions of set theory.

The absolute value and in particular inequalities are considered in great detail before functions and their basic properties are handled. From this the authors move to differential and integral calculus.

Many examples are discussed.

Proofs not depending on a deeper understanding of the completeness of the real numbers are provided.

As a typical calculus module, this part is thought as an interface from school to university analysis.

Oct. 2015 768 pp.  
9789814689083 /9789814689090 24,570./11,830. (Paper ed.)

**World Scientific Publishing**

Speight, J.:

498-159/160

**A Sequential Introduction to Real Analysis**

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9781783267828 /9781783267835

13,650./6,920. (Paper ed.)

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Apr. 2016

350 pp.

9789814656498

20,930.

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On this journey, the book describes the "golden" qualitative theory of dynamical systems based on "metallic" proportions.

Finally, it presents a solution to a Millennium Problem by developing the Fibonacci special theory of relativity as an original physical-mathematical solution for the fine-structure constant. It is intended for a wide audience who are interested in the history of mathematics, non-Euclidean geometry, Hilbert's mathematical problems, dynamical systems, and Millennium Problems.

Mar. 2016

250 pp.

9789814678292

17,290.

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*EMS Series of Lectures in Mathematics,*

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**3-Manifold Groups**

The field of 3-manifold topology has made great strides forward since 1982 when Thurston articulated his influential list of questions. Primary among these is Perelman's proof of the Geometrization Conjecture, but other highlights include the Tameability Theorem of Agol and Calegari-Gabai, the Surface Subgroup Theorem of Kahn-Markovic, the work of Wise and others on special cube complexes, and, finally, Agol's proof of the Virtual Haken Conjecture.

This book summarizes all these developments and provides an exhaustive account of the current state of the art of 3-manifold topology, especially focusing on the consequences for fundamental groups of 3-manifolds.

As the first book on 3-manifold topology that incorporates the exciting progress of the last two decades, it will be an invaluable resource for researchers in the field who need a reference for these developments.

Nov. 2015

230 pp.

9783037191545

9,840.

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One of the main purposes of this book is to facilitate communication between to and symplectic geometers thinking about free loop spaces. It was written by active researchers coming to the topic from both perspectives and provides a concise overview of many of the classical results, while also beginning to explore the new directions of research that have emerged recently. As one highlight, it contains a research monograph by M. Abouzaid which proves a strengthened version of Viterbo's isomorphism between the homology of the free loop space of a manifold and the symplectic cohomology of its cotangent bundle, following a new strategy.

Sep. 2015

496 pp.

9783037191538

15,990.

*EMS Monographs in Mathematics,*

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Representation theory is used to explicitly compute the Dirac spectrum of compact symmetric spaces.

Dec. 2015

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15,990.

**The European Mathematical Society**

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We show that a simple Levi compatibility condition determines stability of WKB solutions to semiflinear hyperbolic initial-value problems issued from highly- oscillating initial data with large amplitudes.

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If the compatibility condition is satisfied, the solutions are defined over time intervals independent of the wavelength, and the associated WKB solutions are stable under a large class of initial perturbations.

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 9782856298121 8,390.

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**Dimer Models and Random Tilings**

Les etats de la Recherche is a recurrent event organized by the French Mathematical Society. In 2009, a session was devoted to dimer models and random tilings.

This volume regroups notes of some lectures given during this event, giving two different points of view on the topic.

One is focused on the Kasteleyn approach; the other uses techniques of orthogonal polynomials, with analogies with random matrix theory.

2015 97 pp.  
 9782856298152 6,670.

**Vol. 44: Borcea, L. / Kang, H. / Liu, H. / Uhlmann, G. / Ammari, H. / Garnier, J. (eds.):** 498-108  
**Inverse Problems and Imaging**

The workshop "Inverse problems and imaging" took place in Paris at the Institut Henri Poincare on February 20-22, 2013. It was organized under the auspices of the French Mathematical Society as a session of the "Etats de la recherche".

Its main objective was to present recent developments on inverse problems and imaging. Most of these developments result from interactions between several domains of mathematics: analysis and control of partial differential equations, stochastic analysis, statistics, multi-scale analysis.

The three mini-courses given by Lilliana Borcea, Hyeonbae Kang, and Gunther Uhlmann can be considered as perfect illustrations of these fruitful interactions. Lilliana Borcea addresses sensor array imaging in random media, more exactly in randomly perturbed waveguides.

She introduces different imaging methods and studies their resolution and stability properties. In his lecture Hyeonbae Kang reviews recent progress on imaging by generalized polarization tensors (GPTs), enhancement of near-cloaking by GPT-vanishing structures, cloaking by anomalous localized resonance, and analysis of stress concentration.

He shows how the Neumann-Poincare operator naturally arises in all these problems. Gunther Uhlmann considers transformation-optics based cloaking in acoustic and electromagnetic scattering.

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Volume 1

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