

賀正
**Yurinsha
Book News**

Mathematical Science Research Institute Publications

**Vol. 68: Eisenbud, D. / Iyengar, S. /
Singh, A. / Stafford, T. / Van den Bergh, M.:
Commutative Algebra and
Noncommutative Algebraic Geometry, Vol. 2:
Research Articles**

There have been many significant developments in these fields in recent years; what is more, the boundary between them has become increasingly blurred.

This was apparent during the MSRI program, where there were a number of joint seminars on subjects of common interest: birational geometry, D-modules, invariant theory, matrix factorizations, noncommutative resolutions, singularity categories, support varieties, and tilting theory, to name a few.

The volumes include a number of survey articles based on these lectures, along with expository articles and research papers by participants of the programs.

Jan. 2016 302 pp. 484-048
9781107149724 18,530.

**Vol. 67:
Commutative Algebra and
Noncommutative Algebraic Geometry, Vol. 1:
Expository Articles**

Dec. 2015 462 pp. 484-049
9781107065628 22,240.

Cambridge

<http://www.yurinsha.com>

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No. 499

Jan. - Feb. 2016

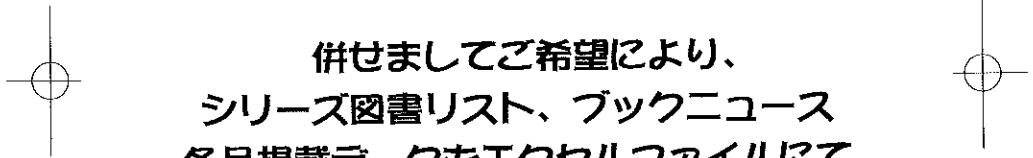
数理科学 **友隣社** 洋書専門



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(株) 友 隣 社

Yurinsha Book News

Contemporary Mathematics,

Vol. 655: Cojocaru, A. / David, C. / Pappalardi, F. (eds.):

SCHOLAR --

499-045

**A Scientific Celebration Highlighting
Open Lines of Arithmetic Research**

This proceedings volume is representative of the broad spectrum of topics that were addressed at the conference, such as elliptic curves, function field arithmetic, Galois representations, L-functions, modular forms and automorphic forms, sieve methods, and transcendental number theory.

Jan. 2016

256 pp.

9781470414573

19,460.

Vol. 654: Gasbarri, C. / Lu, S. / Roth, M. / Tschinkel, Y. (Eds.):

Rational Points, Rational Curves, and 499-053

Entire Holomorphic Curves on Projective Varieties

The program was dedicated to the study of subtle interconnections between geometric and arithmetic properties of higher-dimensional algebraic varieties. The main areas of the program were, among others, proving density of rational points in Zariski or analytic topology on special varieties, understanding global geometric properties of rationally connected varieties, as well as connections between geometry and algebraic dynamics exploring new geometric techniques in Diophantine approximation.

Jan. 2016

165 pp.

9781470414580

19,460.

Vol. 653: Agranovsky, M. / Ben-Artzi, M. / Galloway, G. /

Karp, L. / Khavinson, D. / Reich, S. /

499-082

Weinstein, G. / Zalcman, L. (eds.):

Complex Analysis and Dynamical Systems VI:

Part I: PDE, Differential Geometry, Radon Transform

The papers in this volume range over a wide variety of topics in Partial Differential Equations, Differential Geometry, and the Radon Transform. Taken together, the articles collected here provide the reader with a panorama of activity in partial differential equations and general relativity, drawn by a number of leading figures in the field.

They testify to the continued vitality of the interplay between classical and modern analysis.

The companion volume (Contemporary Mathematics, Volume 667) is devoted to complex analysis, quasiconformal mappings, and complex dynamics.

Jan. 2016

313 pp.

9781470416539

19,460.

Vol. 652: Avitabile, M. / Feldvoss, J. / Weigel, T. (eds.):

Lie Algebras and Related Topics

499-036

Lie algebras are at the core of several areas of mathematics, such as, Lie groups, algebraic groups, quantum groups, representation theory, homogeneous spaces, integrable systems, and algebraic topology.

The first part of this volume combines research papers with survey papers by the invited speakers.

The second part consists of several collections of problems on modular Lie algebras, their representations, and the conjugacy of their nilpotent elements as well as the Koszulity of (restricted) Lie algebras and Lie properties of group algebras or restricted universal enveloping algebras.

Dec. 2015

242 pp.

9781470410230

19,460.

A. M. S.

Studies in Universal Logic

Abeles, F. / Fuller, M. (eds.): 499-001
Modern Logic 1850-1950,
 East and West

This book presents diverse topics in mathematical logic such as proof theory, meta-mathematics, and applications of logic to mathematical structures.

The collection spans the first 100 years of modern logic and is dedicated to the memory of Irving Anellis, founder of the journal 'Modern Logic', whose academic work was essential in promoting the algebraic tradition of logic, as represented by Charles Sanders Peirce.

Anellis's association with the Russian logic community introduced their school of logic to a wider audience in the USA, Canada and Western Europe.

Jan. 2016

284 pp.

9783319247540

10,000.

Avramidi, I.:

Heat Kernel Method 499-089
 and Its Applications

This book presents in depth asymptotic methods for solving parabolic partial differential equations at the level suitable for non-mathematicians. The focus is on the stochastic description.

Although this book is intended for advanced undergraduate or beginning graduate students, it should also provide a useful reference for professional physicists, applied mathematicians as well as quantitative analysts with an interest in partial differential equations, mathematical physics, differential geometry, singular perturbations and mathematical finance

Dec. 2015

390 pp.

9783319262659

19,000.

Progress in Mathematics,

Vol. 313: Llibre, J. / Ramirez, R.: 499-123
Inverse Problems in
Ordinary Differential Equations & Applications
 Solves the 16th Hilbert problem (restricted to algebraic limit cycles)
 based on generic assumptions

This book focuses on finding all ordinary differential equations that satisfy a given set of properties, thus dedicating itself to inverse problems of ordinary differential equations.

The Nambu bracket acts as the central tool to the authors' approach.

The book begins with a characterization of ordinary differential equations in \mathbb{R}^N which have a given set of $M \leq N$ partial and first integrals, before addressing planar polynomial differential systems with a given set of polynomial partial integrals.

The authors then go on to solve the 16th Hilbert problem (restricted to algebraic limit cycles) based on generic assumptions, followed by a study of the inverse problem for constrained Lagrange mechanics and Hamiltonian systems, as well as the issue of the integrability of a constrained rigid body.

The book concludes with an analysis of transpositional relations, a generalization of the Hamiltonian principle, as well as the inverse problem in vakonomic mechanics.

May 2016

280 pp.

9783319263373

17,000.

Birkhauser

Yurinsha Book News

Lecture Notes in Logic,

Vol. 43: Kechris, A. /Lowe, B. /Steel, J.: 499-029
Ordinal Definability and Recursion Theory:
The Cabal Seminar, Vol. III

The proceedings of the Los Angeles Caltech-UCLA 'Cabal Seminar' were originally published in the 1970s and 1980s. Ordinal Definability and Recursion Theory is the third in a series of four books collecting the seminal papers from the original volumes together with extensive unpublished material, new papers on related topics and discussion of research developments since the publication of the original volumes. Focusing on the subjects of 'HOD and its Local Versions' (Part V) and 'Recursion Theory' (Part VI), each of the two sections is preceded by an introductory survey putting the papers into present context. These four volumes will be a necessary part of the book collection of every set theorist.

Dec. 2015 551 pp.
9781107033405 32,440.

Cambridge Studies in Advanced Mathematics,

Vol. 154: Jurdjevic, V.: 499-085
Optimal Control and Geometry:
Integrable Systems

The synthesis of symplectic geometry, the calculus of variations and control theory offered in this book provides a crucial foundation for the understanding of many problems in applied mathematics. Focusing on the theory of integrable systems, this book introduces a class of optimal control problems on Lie groups, whose Hamiltonians, obtained through the Maximum Principle of optimality, shed new light on the theory of integrable systems. These Hamiltonians provide an original and unified account of the existing theory of integrable systems. The book particularly explains much of the mystery surrounding the Kepler problem, the Jacobi problem and the Kovalevskaya Top. It also reveals the ubiquitous presence of elastic curves in integrable systems up to the soliton solutions of the non-linear Schroedinger's equation.

June 2016 15,440.
9781107113886

Vol. 152: Paulsen, V. /Raghupathi, M.: 499-128
An Introduction to the Theory of
Reproducing Kernel Hilbert Spaces

Reproducing kernel Hilbert spaces have developed into an important tool in many areas, especially statistics and machine learning, and they play a valuable role in complex analysis, probability, group representation theory, and the theory of integral operators. This unique text offers a unified overview of the topic, providing detailed examples of applications, as well as covering the fundamental underlying theory, including chapters on interpolation and approximation, Cholesky and Schur operations on kernels, and vector-valued spaces. Self-contained and accessibly written, with exercises at the end of each chapter, this unrivalled treatment of the topic serves as an ideal introduction for graduate students across mathematics, computer science, and engineering, as well as a useful reference for researchers working in functional analysis or its applications.

Apr. 2016 12,970.
9781107104099

Cambridge

Encyclopedia of Mathematics and its Applications,

Vol. 163: Tomkowicz, G. /Wagon, S: 499-140
The Banach-Tarski Paradox, 2nd ed.

This new edition of a classic book unifies contemporary research on the paradox. It has been updated with many new proofs and results, and discussions of the many problems that remain unsolved. Among the new results presented are several unusual paradoxes in the hyperbolic plane, one of which involves the shapes of Escher's famous 'Angel and Devils' woodcut. A new chapter is devoted to a complete proof of the remarkable result that the circle can be squared using set theory, a problem that had been open for over sixty years.

May 2016 384 pp.
 9781107042599 20,390.

Vol. 162: Bisci, G. /Radulescu, V. /Servadei, R.: 499-093
**Variational Methods for
 Nonlocal Fractional Problems**

This book provides researchers and graduate students with a thorough introduction to the variational analysis of nonlinear problems described by nonlocal operators.

The authors give a systematic treatment of the basic mathematical theory and constructive methods for these classes of nonlinear equations, plus their application to various processes arising in the applied sciences. The equations are examined from several viewpoints, with the calculus of variations as the unifying theme.

Part I begins the book with some basic facts about fractional Sobolev spaces. Part II is dedicated to the analysis of fractional elliptic problems involving subcritical nonlinearities, via classical variational methods and other novel approaches. Finally, Part III contains a selection of recent results on critical fractional equations.

Feb. 2016 386 pp.
 9781107111943 25,950.

London Mathematical Society Student Texts,

**Vol. 84: Krivelevich, M. /Panagiotou, K. /Penrose, M. /
 McDiarmid, C. /Fountoulakis, N. /Hefetz, D.:** 499-163/164
**Random Graphs,
 Geometry and Asymptotic Structure**

The theory of random graphs is a vital part of the education of any researcher entering the fascinating world of combinatorics. However, due to their diverse nature, the geometric and structural aspects of the theory often remain an obscure part of the formative study of young combinatorialists and probabilists. Moreover, the theory itself, even in its most basic forms, is often considered too advanced to be part of undergraduate curricula, and those who are interested usually learn it mostly through self-study, covering a lot of its fundamentals but little of the more recent developments.

This book provides a self-contained and concise introduction to recent developments and techniques for classical problems in the theory of random graphs. Moreover, it covers geometric and topological aspects of the theory and introduces the reader to the diversity and depth of the methods that have been devised in this context.

Apr. 2016
 9781107136571/9781316501917 価格未定/価格未定 (Paper ed.)

Cambridge

Monographs on Statistics and Applied Probability,

Prentice, R. / Zhao, S.: 499-193

The Statistical Analysis of Multivariate Time

Though much has been written on multivariate failure time data analysis methods, a unified approach to this topic has yet to be communicated. This book aims to fill that gap through a novel focus on marginal hazard rates and cross ratio modeling.

Aug. 2016 250 pp.
9781482256574 16,580.

Watanabe Sumio : 499-197

Mathematical Foundations of Bayesian Statistics

This book introduces the mathematical foundation of Bayesian statistics. It is well known that Bayesian inference is more accurate than the maximum likelihood method in many real-world problems; however, its mathematical foundations have been left unexplained. Recently, new research on Bayesian statistics uncovered the mathematical laws by which the behavior of Bayesian inference can be estimated and the advances of Bayes estimation have been clarified.

Aug. 2016 350 pp.
9781482238068 16,580.

Monographs and Research Notes in Mathematics

Burlica, M.-D. / Necula, M. / Rosu, D. / Vrabie, I.: 499-098

**Delay Differential Evolutions
Subjected to Nonlocal Initial Conditions**

The major themes of the book consist of a systematic study of the existence, regularity and continuous dependence on the data. The main abstract results are accompanied by illuminating examples describing the evolution of various phenomena; this points out the degree of generality of the developed theory and second, clarifies why the study of these rather abstract problems is needed in applications.

June 2016 385 pp.
9781498746441 18,300.

Stoimenow, A.: 499-172

Diagram Genus, Generators and Applications

The book begins with an introduction to the origin of knot tables and the background details, including diagrams, surfaces, and invariants. It then derives a new description of generators using Hirasawa's algorithm and extends this description to push the compilation of knot generators one genus further to complete their classification for genus 4.

Jan. 2016 173 pp.
9781498733809 18,300.

Discrete Mathematics and Its Applications

Dehmer, M. / Shi, Y. / Gutman, I. / Li, X.: 499-046

Graph Polynomials

This book covers both theoretical and practical results for graph polynomials. Graph polynomials have been developed for measuring combinatorial graph invariants and for characterizing graphs. Various problems in pure and applied graph theory or discrete mathematics can be treated and solved efficiently by using graph polynomials.

Sep. 2016 450 pp.
9781498755900 27,170.

Chapman & Hall/CRC Press

*Seminaires et Congres,***Vol. 29: Ammari, K. (ed.):**

499-087

**Control and Stabilization of
Partial Differential Equations**

2011 CIMPA school Control and Stabilization of PDEs

Different control techniques for linear parabolic equations were presented and the deduction of the null controllability of such equations from local Carleman inequality was described.

Overall Carleman-type and Hardy type inequalities for the null controllability of degenerate parabolic equations were discussed. Current issues in the control of conservation laws, such as the control of classical solutions in singular control limits, and the control solutions with shock waves, were also highlighted during this school. Finally, different techniques and methods for the stability of evolution equations with and without delay, applicable to Navier-Stokes equations were presented.

Dec. 2015

119 pp.

9782856298176

価格未定

*Asterisque,***Vol. 373: Paulin, F. / Pollicott, M. / Schapira, B.:****Equilibrium States in Negative Curvature**

With their origin in thermodynamics and symbolic dynamics, Gibbs measures are crucial tools to study the ergodic theory of the geodesic flow on negatively curved manifolds.

499-127

We develop a framework (through Patterson-Sullivan densities) allowing us to get rid of compactness assumptions on the manifold, and prove many existence, uniqueness and finiteness results of Gibbs measures.

We give many applications, to the Variational Principle, the counting and equidistribution of orbit points and periods, the unique ergodicity of the strong unstable foliation and the classification of Gibbs densities on some Riemannian covers.

Dec. 2015

281 pp.

9782856298183

価格未定

Vol. 372: Frigerio, R. / Lafont, J.-F. / Sisto, A.:

499-052

Rigidity of High Dimensional Graph Manifolds

We define the class of high dimensional graph manifolds. These are compact smooth manifolds supporting a decomposition into finitely many pieces, each of which is diffeomorphic to the product of a torus with a finite volume hyperbolic manifold with toric cusps. The various pieces are attached together via affine maps of the boundary tori. We require all the hyperbolic factors in the pieces to have dimension 3. Our main goal is to study this class of graph manifolds from the viewpoint of rigidity theory. We show that, in dimensions 6, the Borel conjecture holds for our graph manifolds. We also show that smooth rigidity holds within the class: two graph manifolds are homotopy equivalent if and only if they are diffeomorphic.

We introduce the notion of irreducible graph manifolds.

These form a subclass which has better coarse geometric properties, in that various subgroups can be shown to be quasi-isometrically embedded inside the fundamental group. We establish some structure theory for finitely generated groups which are quasi-isometric to the fundamental group of an irreducible graph manifold: any such group has a graph of groups splitting with strong constraints on the edge and vertex groups.

Dec. 2015

177 pp.

9782856298091

価格未定

Societe Mathematique de France

Yurinsha Book News

Trends in Logic,

Vol 43: Piecha, T. /Schroeder-Heister, P. (eds.): 499-031
Advances in Proof-Theoretic Semantics

This volume is the first ever collection devoted to the field of proof-theoretic semantics.

Contributions address topics including the systematics of introduction and elimination rules and proofs of normalization, the categorial characterization of deductions, the relation between Heyting's and Gentzen's approaches to meaning, knowability paradoxes, proof-theoretic foundations of set theory, Dummett's justification of logical laws, Kreisel's theory of constructions, paradoxical reasoning, and the defence of model theory.

Nov. 2015 283 pp. 10,000.
9783319226859

Goodrich, C. /Peterson, A.:

Discrete Fractional Calculus 499-113

This text provides the first comprehensive treatment of the discrete fractional calculus. Experienced researchers will find the text useful as a reference for discrete fractional calculus and topics of current interest.

Students who are interested in learning about discrete fractional calculus will find this text to provide a useful starting point.

Dec. 2015 497 pp. 10,000.
9783319255606

Springer Monographs in Mathematics

Hirschfeld, J. /Thas, J.:

499-250

General Galois Geometries

This book is the second edition of the third and last volume of a treatise on projective spaces over a finite field, also known as Galois geometries.

This volume completes the trilogy comprised of plane case (first volume) and three dimensions (second volume).

This revised edition includes much updating and new material.

It is a mostly self-contained study of classical varieties over a finite field, related incidence structures and particular point sets in finite n-dimensional projective spaces.

General Galois Geometries is suitable for PhD students and researchers in combinatorics and geometry.

The separate chapters can be used for courses at postgraduate level.

Apr. 2016 19,000.
9781447167884

*Monographs in Theoretical Computer Science.
An EATCS Series*

Kitaev, S. /Lozin, V.:

499-057

Words and Graphs

This is the first comprehensive introduction to the theory of word-representable graphs, a generalization of several classical classes of graphs, and a new topic in discrete mathematics. After extensive introductory chapters that explain the context and consolidate the state of the art in this field, including a chapter on hereditary classes of graphs, the authors suggest a variety of problems and directions for further research, and they discuss interrelations of words and graphs in the literature by means other than word-representability.

Nov. 2015 265 pp. 17,000.
9783319258577

Springer

Yurinsha Book News

Graduate Texts in Mathematics,

Vol. 171: Petersen, P.:

499-168

Riemannian Geometry, 3rd ed.

Intended for a one year course, this text serves as a single source, introducing readers to the important techniques and theorems, while also containing enough background on advanced topics to appeal to those students wishing to specialize in Riemannian geometry.

This is one of the few Works to combine both the geometric parts of Riemannian geometry and the analytic aspects of the theory.

The book will appeal to a readership that have a basic knowledge of standard manifold theory, including tensors, forms, and Lie groups.

From reviews of the first edition:

"The book can be highly recommended to all mathematicians who want to get a more profound idea about the most interesting achievements in Riemannian geometry. It is one of the few comprehensive sources of this type." --- Bernd Wegner, ZbMATH

Jan. 2016

440 pp.

9783319266527

12,000.

Lecture Notes of the Unione Matematica Italiana,

Vol. 18: Russo, F.:

499-069

**On the Geometry of
Some Special Projective Varieties**

Providing an introduction to both classical and modern techniques in projective algebraic geometry, this monograph treats the geometrical properties of varieties embedded in projective spaces, their secant and tangent lines, the behavior of tangent linear spaces, the algebro-geometric and topological obstructions to their embedding into smaller projective spaces, and the classification of extremal cases.

It also provides a solution of Hartshorne's Conjecture on Complete Intersections for the class of quadratic manifolds and new short proofs of previously known results, using the modern tools of Mori Theory and of rationally connected manifolds.

Jan. 2016

160 pp.

9783319267647

9,000.

Terras, A.:

499-075

**Harmonic Analysis on
Symmetric Spaces-Higher Rank Spaces,
Positive Definite Matrix Space and Generalizations, 2nd Revised ed.**

This text is an introduction to harmonic analysis on symmetric spaces, focusing on advanced topics such as higher rank spaces, positive definite matrix space and generalizations.

As with the introductory book entitled "Harmonic Analysis on Symmetric Spaces - Euclidean Space, the Sphere, and the Poincare Upper Half Plane, the style is informal with an emphasis on motivation, concrete examples, history, and applications.

The symmetric spaces considered here are quotients $X=G/K$, where G is a non-compact real Lie group, such as the general linear group $GL(n, P)$ of all $n \times n$ non-singular real matrices, and $K=O(n)$, the maximal compact subgroup of orthogonal matrices. Other examples are Siegel's upper half "plane" and the quaternionic upper half "plane".

Dec. 2015

328 pp.

9781493934065

12,000.

Springer

Yurinsha Book News

Ergebnisse der Mathematik und ihrer Grenzgebiete 3 Folge

Band:** Lutkebohmert, W.:

499-064

Rigid Geometry of Curves and Their Jacobians

This book presents some of the most important aspects of rigid geometry, namely its applications to the study of smooth algebraic curves, of their Jacobians, and of abelian varieties - all of them defined over a complete non-archimedean valued field.

The text starts with a survey of the foundation of rigid geometry, and then focuses on a detailed treatment of the applications.

In the case of curves with split rational reduction there is a complete analogue to the fascinating theory of Riemann surfaces.

In the case of proper smooth group varieties the uniformization and the construction of abelian varieties are treated in detail.

Rigid geometry was established by John Tate and was enriched by a formal algebraic approach launched by Michel Raynaud.

It has proved as a means to illustrate the geometric ideas behind the abstract methods of formal algebraic geometry as used by Mumford and Faltings.

This book should be of great use to students wishing to enter this field, as well as those already working in it.

Feb. 2016

388 pp.

9783319273693

19,000.

Universitext,

Zorich, V.:

499-144

Mathematical Analysis I, 2nd ed.

This second English edition of a very popular two-volume work presents a thorough first course in analysis, leading from real numbers to such advanced topics as differential forms on manifolds; asymptotic methods; Fourier, Laplace, and Legendre transforms; elliptic functions; and distributions.

Especially notable in this course are the clearly expressed orientation toward the natural sciences and the informal exploration of the essence and the roots of the basic concepts and theorems of calculus.

Clarity of exposition is matched by a wealth of instructive exercises, problems, and fresh applications to areas seldom touched on in textbooks on real analysis.

Jan. 2016

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9783662487907

10,000.

Zorich, V.:

499-145

Mathematical Analysis II, 2nd ed.

The main difference between the second and first English editions is the addition of a series of appendices to each volume.

There are six of them in the first volume and five in the second.

The subjects of these appendices are diverse.

They are meant to be useful to both students (in mathematics and physics) and teachers, who may be motivated by different goals.

The final survey establishes important conceptual connections between analysis and other parts of mathematics.

This second volume presents classical analysis in its current form as part of a unified mathematics. It shows how analysis interacts with other modern fields of mathematics such as algebra, differential geometry, differential equations, complex analysis, and functional analysis.

Mar. 2016

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9783662489918

10,000.

Springer

Bergeron, N.:

499-092

The Spectrum of Hyperbolic Surfaces

This text is an introduction to the spectral theory of the Laplacian on compact or finite area hyperbolic surfaces.

For some of these surfaces, called "arithmetic hyperbolic surfaces", the eigenfunctions are of arithmetic nature, and one may use analytic tools as well as powerful methods in number theory to study them.

After an introduction to the hyperbolic geometry of surfaces, with a special emphasis on those of arithmetic type, and then an introduction to spectral analytic methods on the Laplace operator on these surfaces, the author develops the analogy between geometry (closed geodesics) and arithmetic (prime numbers) in proving the Selberg trace formula.

Feb. 2016

364 pp.

9783319276649

12,000.

Shapiro, J.:

499-133

A Fixed-Point Farrago

Acts as a perfect book for Graduate-level Fixed-Point Theory

Covers all major Fixed-Point theories in detail

This text provides an introduction to some of the best-known fixed-point theorems, with an emphasis on their interactions with topics in analysis.

The level of exposition increases gradually throughout the book, building from a basic requirement of undergraduate proficiency to graduate-level sophistication.

Appendices provide an introduction to (or refresher on) some of the prerequisite material and exercises are integrated into the text, contributing to the volume's ability to be used as a self-contained text. Readers will find the presentation especially useful for independent study or as a supplement to a graduate course in fixed-point theory.

Feb. 2016

220 pp.

9783319279763

10,000.

Jensen, G. / Musso, E.:

499-160

Surfaces in Classical Geometries:

A Treatment by Moving Frames

Designed for intermediate graduate studies, this text will broaden students' core knowledge of differential geometry providing foundational material to relevant topics in classical differential geometry.

The method of moving frames, a natural means for discovering and proving important results, provides the basis of treatment for topics discussed.

Its application in many areas helps to connect the various geometries and to uncover many deep relationships, such as the Lawson correspondence.

The nearly 300 problems and exercises range from simple applications to open problems. Exercises are embedded in the text as essential parts of the exposition. Problems are collected at the end of each chapter; solutions to select problems are given at the end of the book.

MathematicaR, Matlab, and Xfig are used to illustrate selected concepts and results.

The careful selection of results serves to show the reader how to prove the most important theorems in the subject, which may become the foundation of future progress.

Jan. 2016

538 pp.

9783319270746

12,000.

Springer

Yurinsba Book News

Corduneanu, C. / Li, Y. / Mahdavi, M.: 499-108
**Applied Functional Differential Equations:
Advances and Applications**

Introducing the various classes of functional differential equations, *Applied Functional Differential Equations: Advances and Applications* presents the needed tools and topics to study the various classes of functional differential equations and is primarily concerned with the existence, uniqueness, and estimates of solutions to specific problems. The book focuses on the general theory of functional differential equations, provides the requisite mathematical background, and details the qualitative behavior of solutions to functional differential equations. The book addresses problems of stability, particularly for ordinary differential equations in which the theory can provide models for other classes of functional differential equations, and the stability of solutions is useful for the application of results within various fields of science, engineering, and economics.

May 2016 352 pp.
9781119189473 23,120.

Pure and Applied Mathematics

Lucarini, V. / Faranda, D.: 499-221
**Extremes and Recurrence in
Dynamical Systems**

Written by a team of international experts, *Extremes and Recurrence in Dynamical Systems* presents a unique point of view on the mathematical theory of extremes and how it relates to applications in the natural and social sciences.

Featuring an interdisciplinary approach to new concepts in pure and applied mathematical research, the book skillfully combines the areas of statistical mechanics, probability theory, measure theory, dynamical systems, statistical inference, geophysics, and software application.

Emphasizing statistical mechanics, the book introduces robust theoretical embedding for the application of extreme value theory and modeling through dynamical systems, statistical inference, geophysics, and software application. Emphasizing statistical mechanics, the book introduces robust theoretical embedding for the application of extreme value theory and modeling through dynamical systems.

Mar. 2016 304 pp.
9781118632192 20,350.

Wiley Series in Probability and Statistics

Wiedermann, W. / von Eye, A. (eds.): 499-199
**Statistics and Causality:
Methods for Applied Empirical Research**

The book is divided into five accessible and independent parts. The first part introduces the foundations of causal structures and discusses issues associated with standard mechanistic and difference-making theories of causality. The second part features novel generalizations of methods designed to make statements concerning the direction of effects. The third part illustrates advances in Granger-causality testing and related issues. The fourth section focuses on counterfactual approaches and propensity score analysis. Finally, the fifth part presents designs for causal inference with an overview of the research designs commonly used in epidemiology.

May 2016 448 pp.
9781118947043 21,260.

Wiley

Shibata, M.:

499-299/300

**Numerical Relativity:
100 Years of General Relativity**

This book is composed of two parts: First part describes basics in numerical relativity, that is, the formulations and methods for a solution of Einstein's equation and general relativistic matter field equations. This part will be helpful for beginners of numerical relativity who would like to understand the content of numerical relativity and its background. The second part focuses on the application of numerical relativity. A wide variety of scientific numerical results are introduced focusing in particular on the merger of binary neutron stars and black holes.

Sep. 2015

850 pp.

9789814699716/9789814699723

27,380. /14,430 (Paper ed.)

Series on Concrete and Applicable Mathematics

Anastassiou, G.:

499-088

Frontiers in Time Scales and Inequalities

This monograph contains the author's work of the last four years in discrete and fractional analysis. It introduces the right delta and right nabla fractional calculus on time scales and continues with the right delta and right nabla discrete fractional calculus in the Caputo sense. Then, it shows representation formulae of functions on time scales and presents Ostrowski type inequalities, Landau type inequalities, Grüss type and comparison of means inequalities, all these over time scales. The volume continues with integral operator inequalities and their multivariate vectorial versions using convexity of functions, again all these over time scales.

Aug. 2015

288 pp.

9789814704434

16,280.

Adachi Toshiaki/Hashimoto Hideya/Hristov, M. (eds.):

499-146

**Differential Geometry and Its Related Fields:
Proceedings of the 4th International Colloquium on
Differential Geometry and its Related Fields**

This volume contains contributions by the main participants of the 4th Int'l Colloquium on Differential Geometry and its Related Fields (ICDG2014). These articles cover recent developments and are devoted mainly to the study of some geometric structures on manifolds and graphs. Readers will find a broad overview of differential geometry and its relationship to other fields in mathematics and physics.

Oct. 2015

256 pp.

9789814713788

21,830.

Sun, Y.-S. /Zhou, L.-Y.:

499-233

**From Ordered to Chaotic Motion in
Celestial Mechanics**

This book provides a brief introduction to some basic but important problems in celestial mechanics, and particularly in the few-body problem, such as the permissible and forbidden region of motion, the evolution of moment of inertia of a system, and the orbital stability of asteroids in the solar system. All these are based on some main results in the authors' research works, which are related to the qualitative method of celestial mechanics and nonlinear dynamics.

Sep. 2015

250 pp.

9789814630542

17,570.

World Scientific Publishing

Yurinsha Book News

de Gruyter Studies in Mathematics,

Vol. 54 Ishikawa Yasushi : 499-119

Stochastic Calculus of Variations:

For Jump Processes 2016 Printing

This monograph is a concise introduction to the stochastic calculus of variations for processes with jumps.

It is written for researchers and graduate students who are interested in Malliavin calculus for jump processes.

The author provides many results on this topic in a self-contained way.

The book also contains some applications of the stochastic calculus for processes with jumps to the control theory and mathematical finance.

June 2016 300 pp. 25,990.
9783110377767

Inverse and Ill-Posed Problems Series,

Vol. 60: Cheng, J. / Yamamoto Masahiro : 499-103

Complex Methods for Inverse Problems

This book illustrates how to use complex methods to study inverse problems for partial differential equations in two dimensions and in higher dimensions, e.g. Calderon problems.

Both theoretical aspects and numerical algorithms in inverse problems study are discussed.

It is well-suited for researchers specialized in inverse problems and graduate students in applied mathematics.

June 2016 220 pp. 19,990.
9783110402414

Vol. **: Boichuk, A. / Samoilenko, A.: 499-095

Generalized Inverse Operators:

With An Introduction to Fredholm Boundary-Value Problems, 2nd ed.

The book is devoted to the theory of generalized inverses of operators in a Banach space and its applications to linear and weakly nonlinear boundary-value problems for various classes of functional-differential equations, including systems of ordinary differential and difference equations, systems of differential equations with delay, systems with impulse action, and integro-differential systems.

May 2016 320 pp. 25,990.
9783110378399

de Gruyter Textbook

Ibragimov, N.: 499-159

Tensors and Riemannian Geometry

*Presents Riemannian geometry and Lie group analysis in partial differential equations and modeling

*Designed for developing analytical skills in classical and new methods
This book is based on the experience of teaching the subject by the author in Russia, France, South Africa and Sweden.

The author provides students and teachers with an easy to follow textbook spanning a variety of topics on tensors, Riemannian geometry and geometric approach to partial differential equations.

Application of approximate transformation groups to the equations of general relativity in the de Sitter space simplifies the subject significantly.

Aug. 2015 197 pp. 8,990.
9783110379495

de Gruyter

Yurinsha Book News

Mathematical Notes,

Vol. **: Tretkoff, P. (With an appendix by Hans-Christoph Im Hof):

**Complex Ball Quotients and
Line Arrangements in the Projective Plane**

This book introduces the theory of complex surfaces through a comprehensive look at finite covers of the projective plane branched along line arrangements. Paula Tretkoff emphasizes those finite covers that are free quotients of the complex two-dimensional ball.

Tretkoff also includes background on the classical Gauss hypergeometric function of one variable, and a chapter on the Appell two-variable F_1 hypergeometric function. 499-076

The material in this book began as a set of lecture notes, taken by Tretkoff, of a course given by Friedrich Hirzebruch at ETH Zurich in 1996.

The lecture notes were then considerably expanded by Hirzebruch and Tretkoff over a number of years.

In this book, Tretkoff has expanded those notes even further, still stressing examples offered by finite covers of line arrangements.

The book is largely self-contained and foundational material is introduced and explained as needed, but not treated in full detail.

References to omitted material are provided for interested readers.

Mar. 2016 232 pp. 10,200.
9780691144771

Annals of Mathematics Studies,

Vol. ***: Ikromov, I. / Muller, D.: 499-060/061

**Fourier Restriction for
Hypersurfaces in Three Dimensions and
Newton Polyhedra**

This is the first book to present a complete characterization of Stein-Tomas type Fourier restriction estimates for large classes of smooth hypersurfaces in three dimensions, including all real-analytic hypersurfaces.

The range of Lebesgue spaces for which these estimates are valid is described in terms of Newton polyhedra associated to the given surface. Isroil Ikromov and Detlef Muller begin with Elias M. Stein's concept of Fourier restriction and some relations between the decay of the Fourier transform of the surface measure and Stein-Tomas type restriction estimates. Varchenko's ideas relating Fourier decay to associated Newton polyhedra are briefly explained, particularly the concept of adapted coordinates and the notion of height.

It turns out that these classical tools essentially suffice already to treat the case where there exist linear adapted coordinates, and thus Ikromov and Muller concentrate on the remaining case.

Here the notion of r -height is introduced, which proves to be the right new concept.

They then describe decomposition techniques and related stopping time algorithms that allow to partition the given surface into various pieces, which can eventually be handled by means of oscillatory integral estimates. Different interpolation techniques are presented and used, from complex to more recent real methods by Balk and Seeger.

Fourier restriction plays an important role in several fields, in particular in real and harmonic analysis, number theory, and PDEs.

June 2016 312 pp. 22,440./10,200. (Paper ed.)
9780691170541/9780691170558

Princeton University

Yurinsha Book News

Annals of Mathematics Studies,

Vol. ***: Hrushovski, E. / Loeser, F.: 499-058/059

Non-Archimedean Tame Topology and Stably Dominated Types

Over the field of real numbers, analytic geometry has long been in deep interaction with algebraic geometry, bringing the latter subject many of its topological insights.

In recent decades, model theory has joined this work through the theory of o-minimality, providing finiteness and uniformity statements and new structural tools.

For non-archimedean fields, such as the p-adics, the Berkovich analytification provides a connected topology with many thoroughgoing analogies to the real topology on the set of complex points, and it has become an important tool in algebraic dynamics and many other areas of geometry. This book lays down model-theoretic foundations for non-archimedean geometry.

The methods combine o-minimality and stability theory. Definable types play a central role, serving first to define the notion of a point and then properties such as definable compactness. Beyond the foundations, the main theorem constructs a deformation retraction from the full non-archimedean space of an algebraic variety to a rational polytope. This generalizes previous results of V. Berkovich, who used resolution of singularities methods.

Mar. 2016

232 pp.

9780691161686 / 9780691161693

22,440./10,200. (Paper ed.)

Vol. ***: Abbes, A. / Gros, M. / Tsuji Takeshi : 499-033/034

The P-Adic Simpson Correspondence

The p-adic Simpson correspondence, recently initiated by Gerd Faltings, aims at describing all p-adic representations of the fundamental group of a proper smooth variety over a p-adic field in terms of linear algebra—namely Higgs bundles.

This book undertakes a systematic development of the theory following two new approaches, one by Ahmed Abbes and Michel Gros, the other by Takeshi Tsuji.

The authors mainly focus on generalized representations of the fundamental group that are p-adically close to the trivial representation. The first approach relies on a new family of period rings built from the torsor of deformations of the variety over a universal p-adic thickening defined by J. M. Fontaine.

The second approach introduces a crystalline-type topos and replaces the notion of Higgs bundles with that of Higgs isocrystals.

The authors show the compatibility of the two constructions and the compatibility of the correspondence with the natural cohomologies.

The last part of the volume contains results of wider interest in p-adic Hodge theory.

The reader will find a concise introduction to Faltings' theory of almost étale extensions and a chapter devoted to the Faltings topos.

Though this topos is the general framework for Faltings' approach in p-adic Hodge theory, it remains relatively unexplored.

The authors present a new approach based on a generalization of P. Deligne's covanishing topos.

Apr. 2016

616 pp.

9780691170282 / 9780691170299

22,440./10,200. (Paper ed.)

Princeton University



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An Introduction to Numerical Computation

by Wen Shen (*Penn State University, USA*)

Developed during ten years of teaching experience, this book serves as a set of lecture notes for an introductory course on numerical computation, at the senior undergraduate level. These notes contain the material that can be covered in a semester, together with a few optional sections for additional reading. Rather than surveying a large number of algorithms, the book presents the most important computational methods and emphasizes the underlying mathematical ideas. In most chapters, graphs and drawings are relied on, to build up intuition.

268pp
978-981-4730-06-8

Dec 2015

Functional Analysis (2nd Edition)

Entering Hilbert Space

by Vagn Lundsgaard Hansen (*Technical University of Denmark*)

This book presents basic elements of the theory of Hilbert spaces and operators on Hilbert spaces, culminating in a proof of the spectral theorem for compact, self-adjoint operators on separable Hilbert spaces. It exhibits a construction of the space of p^{th} power Lebesgue integrable functions by a completion procedure with respect to a suitable norm in a space of continuous functions, including proofs of the basic inequalities of Hölder and Minkowski. The L^p -spaces thereby emerges in direct analogy with a construction of the real numbers from the rational numbers. Other important Banach spaces arising from function spaces and sequence spaces are also treated.

192pp
978-981-4733-92-2

Jan 2015

Linear Algebra as an Introduction to Abstract Mathematics

by Bruno Nachtergaele, Anne Schilling (*UC Davis*),
Isaiah Lankham (*California State University, USA*)

This is an introductory textbook designed for undergraduate mathematics majors with an emphasis on abstraction and in particular, the concept of proofs in the setting of linear algebra. The book begins with systems of linear equations and complex numbers, then relates these to the abstract notion of linear maps on finite-dimensional vector spaces, and covers diagonalization, eigenspaces, determinants, and the Spectral Theorem. Each chapter concludes with both proof-writing and computational exercises.

208pp
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