Silverberg, A. /Yoshida, H. (eds.):
The Collected Papers of
Goro Shimura, Volume V:
2002-2012

In 1996 the AMS awarded Goro Shimura the Steele Prize for Lifetime
Achievement: "To Goro Shimura for his important and extensive work on
arithmetical geometry and automorphic forms; concepts introduced by
him were often seminal, and fertile ground for new developments, as witnessed
by the many notations in number theory that carry his name and that have long
been familiar to workers in the field.

July 2016	278 pp.	
9783319325477		22,440.

Springer

Collected Works,

Vol. 24: Tate, J. /Mazu, B. /Serre, J.-P. (eds.):
Collected Works of John Tate:

In these volumes, a reader will find all of John Tate's published   No. 502-034/035
mathematical papers-spanning more than six decades-enriched by new
comments made by the author. Included also is a selection of his letters.
His letters give us a close view of how he works and of his ideas in
process of formation.

Part I	(1951-1975):	July 2016	9780821890929	24,780.
Part II	(1976-2006):	July 2016	9780821890936	24,780.

A. M. S.

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Contemporary Mathematics,

Vol. 667: Agranovsky, M. /Ben-Artzi, M. /Galloway, G. / Karp, L. /Khavinson, D. /Reich, S. / Weinstein, G. /Zalcman, L. (eds.):

No. 502-113

Complex Analysis and Dynamical Systems, VI: Part 2: Complex Analysis, Quasiconformal Mappings, Complex Dynamics

The papers range over a wide variety of topics in complex analysis, quasiconformal mappings, and complex dynamics.
Taken together, the articles provide the reader with a panorama of activity in these areas, drawn by a number of leading figures in the field.
They testify to the continued vitality of the interplay between classical and modern analysis.

June 2016	316 pp.	
9781470417031		17,840.

Vol. 665: Glockner, H. /Escassut, A. /Shamseddine, K. (eds.):
Advances in Non-Archimedean Analysis

No. 502-146

The articles included in this book feature recent developments in various areas of non-Archimedean analysis, non-Archimedean functional analysis, representation theory, number theory, non-Archimedean dynamical systems and applications.
Through a combination of new research articles and survey papers, this book provides the reader with an overview of current developments and techniques in non-Archimedean analysis as well as a broad knowledge of some of the sub-areas of this exciting and fast-developing research area.

June 2016	335 pp.	
9781470419882		17,840.

Vol. 662: Ibragimov, Z. /Levenberg, N. / Pinchuk, S. /Sadullaev, A. (eds.):

No. 502-153

Topics in Several Complex Variables

This volume covers a wide variety of topics in pluripotential theory, symplectic geometry and almost complex structures, integral formulas, holomorphic extension, and complex dynamics.
In particular, the reader will find articles on Lagrangian submanifolds and rational convexity, multidimensional residues, S-parabolic Stein manifolds, Segre varieties, and the theory of quasianalytic functions.

Apr. 2016	156 pp.	
9781470419271		17,840.

Graduate Studies in Mathematics,

Vol. 173: Wen, L.:

No. 502-172

Differentiable Dynamical Systems:
An Introduction to Structural Stability and Hyperbolicity.

This is a graduate text in differentiable dynamical systems. It focuses on structural stability and hyperbolicity, a topic that is central to the field.
Starting with the basic concepts of dynamical systems, analyzing the historic systems of the Smale horseshoe, Anosov toral automorphisms, and the solenoid attractor, the book develops the hyperbolic theory first for hyperbolic fixed points and then for general hyperbolic sets.
The problems of stable manifolds, structural stability, and shadowing property are investigated, which lead to a highlight of the book, the {omega}-stability theorem of Smale. While the content is rather standard, a key objective of the book is to present a thorough treatment for some tough material that has remained an obstacle to teaching and learning the subject matter.

Aug. 2016	192 pp.	
9781470427993		13,050.

A. M. S

Graduate Studies in Mathematics,

Vol. 172: Baik, J. /Deift, P. /Suidan, T.:   No. 502-057
Combinatorics and Random Matrix Theory
Over the last fifteen years a variety of problems in combinatorics have been
solved in terms of random matrix theory. More precisely, the situation is as
follows: the problems at hand are probabilistic in nature and, in an appropriate
scaling limit, it turns out that certain key quantities associated with these
problems behave statistically like the eigenvalues of a (large) random matrix.
Said differently, random matrix theory provides a "Stochastic special function
theory for a broad and growing class of problems in combinatorics.
                    July 2016   461 pp.
          9780821848418   15,220.

Mathematical Surveys and Monographs,

Vol. 212: Dodos, P. /Kanellopoulos, V.:   No. 502-076
Ramsey Theory for Product Spaces
Ramsey theory is a dynamic area of combinatorics that has various applications
in analysis, ergodic theory, logic, number theory, probability theory,
theoretical computer science, and topological dynamics.
This book is devoted to one of the most important areas of Ramsey theory
-the Ramsey theory of product spaces. It is a culmination of a series of recent
breakthroughs by the two authors and their students who were able to lift
this theory to the infinite-dimensional case. The book presents many major
results and methods in the area, such as Szemeredi's regularity method,
the hypergraph removal lemma, and the density Hales-Jewett theorem.
                    June 2016   245 pp.
          9781470428082   12,870.

Proceedings of Symposia in Pure Mathematics,

Vol. 93: Bouchard, B. /Doran, C. /
          Mendez-Diez, S. /Quigley, C. (eds.):   No. 502-180
String-Math 2014
This edition of String-Math is the first to include satellite workshops:
"String-Math Summer School, "Calabi-Yau Manifolds and their Moduli, and
"Quantum Curves and Quantum Knot Invariants.
This volume presents the proceedings of the conference and satellite workshops.
For mathematics, string theory has been a source of many significant inspirations,
ranging from Seiberg-Witten theory in four-manifolds, to enumerative geometry
and Gromov-Witten theory in algebraic geometry, to work on the Jones polyno-
mial in knot theory, to recent progress in the geometric Langlands program and
the development of derived algebraic geometry and n-category theory.
                    July 2016   396 pp.
          9781470419929   20,520.

Vol. 92: Misra, K. /Nakano, D. /Parshall, B. (eds.):   No. 502-093
Lie Algebras, Lie Superalgebras,
Vertex Algebras and Related Topics
This book contains the proceedings of the 2012-2014 Southeastern Lie Theory
Workshop Series held at North Carolina State University in April 2012,
at College of Charleston in December 2012, at Louisiana State University in
May 2013, and at University of Georgia in May 2014.
Some of the articles by experts in the field survey recent developments while
others include new results in representations of Lie algebras, and
quantum groups, vertex (operator) algebras and Lie superalgebras.
                    July 2016   355 pp.
          9781470418441   20,520.
A. M. S.

Proceedings of Symposia in Applied Mathematics,

Vol. 73: Okoudjou, K. (ed.):   No. 502-164
Finite Frame Theory:
A Complete Introduction to Overcompleteness
Frames are overcomplete sets of vectors that can be used to stably and faithfully
decompose and reconstruct vectors in the underlying vector space.
Frame theory stands at the intersection of many areas in mathematics such as
functional and harmonic analysis, numerical analysis, matrix theory,
numerical linear algebra, algebraic and differential geometry, probability,
statistics, and convex geometry. At the same time its applications in
engineering, medicine, computer science, and quantum computing are motivating
new research problems in applied and pure mathematics.

            July 2016   ....
        9781470420192   16,930.

University Lecture Series,

Vol. 65: Olevskii, A. /Ulanovskii, A.:   No. 502-165
Functions with Disconnected Spectrum:
Sampling, Interpolation, Translates
The classical sampling problem is to reconstruct entire functions with given
spectrum SS from their values on a discrete set LL.
From the geometric point of view, the possibility of such reconstruction is
equivalent to determining for which sets LL the exponential system with
frequencies in LL forms a frame in the space L2(S)L2(S).
The book also treats the problem of interpolation of discrete functions by analytic
ones with spectrum in SS and the problem of completeness of discrete translates.
The size and arithmetic structure of both the spectrum SS and the discrete set
LL play a crucial role in these problems.

            Aug. 2016   ....
        9781470428891   7,520.

Vol. 64: Guth,L.:   No. 502-082
Polynomial Methods in Combinatorics
This book explains some recent progress in combinatorial geometry that
comesfrom an unexpected connection with polynomials and algebraic geometry.
Oneof the early results in this story is a two-page solution of a problem called
thefinite field Kakeya problem, which experts had believed was extremely deep.
Themost well-known result in this book is an essentially sharp estimate for
the distinctdistance problem in the plane, a famous problem raised by
Paul Erdos in the 1940s.

            July 2016   273 pp.
        9781470428907   8,210.
A. M. S.

A publication of Hindustan Book Agency,

Vol. 71: Corvaja, P.:   No. 502-070
Integral Points on Algebraic Varieties:
An Introduction to Diophantine Geometry.
The text rapidly introduces problems in Diophantine geometry, especially those
involving integral points, assuming a geometrical perspective.
In some instances, proofs have been replaced by a detailed analysis of
particular cases. Siegel's finiteness theorem for integral points on
curves plays a central role.

            Aug. 2016   84 pp.
        9789380250830   4,790.
Hindustan

Cisneros-Molina, J. /Trang Le, D. /Oka, M. /Snoussi, J. (eds.):
Singularities in Geometry,
Topology, Foliations and Dynamics:
No. 502-068
A Celebration of the 60th Birthday of Jose Seade, 2014

This book features state-of-the-art research on singularities in geometry,
topology, foliations and dynamics and provides an overview of the current state
of singularity theory in these settings.Singularity theory is at the crossroad of
various branches of mathematics and science in general.
In recent years there have been remarkable developments, both in
the theory itself and in its relations with other areas.
The contributions in this volume originate from the "Workshop on
Singularities in Geometry, Topology, Foliations and Dynamics", held in Merida,
Mexico, in December 2014, in celebration of Jose Seade's 60th Birthday.
It is intended for researchers and graduate students interested in }singularity
theory and its impact on other fields.

Sep. 2016 ....
9783319393384 22,440.

Bolsinov, A. /Morales-Ruiz, J. /Zung, N.:
No. 502-123
Geometry and Dynamics of Integrable Systems

This book contains an elaborated version of the lecture notes given at
the Advanced Course on Geometry and Dynamics of Integrable Systems,
held at the CRM in Barcelona.
Native to actual problem-solving problems in mechanics, the topic of
Integrable Systems is currently on the crossroad of different disciplines in
pure and applied mathematics, and it has important interactions with physics.
The study of integrable systems has had special impact and also actively uses
methods of Differential Geometry. It is extremely important in
Symplectic Geometry and Hamiltonian Dynamics, and has strong correlations
with Mathematical Physics, Lie Theory and Algebraic Geometry (including
Mirror Symmetry). Nov. 2016 ....
9783319335025 4,670.

Vol. 318: Borthwick, D.:
No. 502-124
Spectral Theory of Infinite-Area Hyperbolic Surfaces, 2nd ed.

This text introduces geometric spectral theory in the context of infinite-area
Riemann surfaces, providing a comprehensive account of the most recent
developments in the field. For the second edition the context has been extended to
general surfaces with hyperbolic ends, which provides a natural setting
for development of the spectral theory while still keeping technical
difficulties to a minimum.
All of the material from the first edition is included and updated, and new
sections have been added.
Topics covered include an introduction to the geometry of hyperbolic surfaces,
analysis of the resolvent of the Laplacian, scattering theory, resonances and
scattering poles, the Selberg zeta function, the Poisson formula, distribution of
resonances, the inverse scattering problem, Patterson-Sullivan theory, and the
dynamical approach to the zeta function.
The new sections cover the latest developments in the field, including
the spectral gap, resonance asymptotics near the critical line, and
sharp geometric constants for resonance bounds.

July 2016 446 pp.
9783319338750 20,570.

Birkhauser

Gratzer, G.: No. 502-043
The Congruences of A Finite Lattice:
A Proof-By-Picture Approach

"The book is self-contained, with many detailed proofs presented that can be
followed step-by-step.
[I]n addition to giving the full formal details of the proofs, the author chooses
a somehow more pedagogical way that he calls Proof-by-Picture, somehow
related to the combinatorial (as opposed to algebraic) nature of many of
the presented results.
I believe that this book is a much-needed tool for any mathematician wishing
a gentle introduction to the field of congruences representations of finite lattices,
with emphasis on the more 'Geometric'aspects.' --- Mathematical Reviews

July 2016 346 pp.
9783319387963 12,530.

Advanced Courses in Mathematics - CRM Barcelona

Bolsinov, A. /Morales-Ruiz, J. /Zung, N.: No. 502-123
Geometry and Dynamics of Integrable Systems

This book contains an elaborated version of the lecture notes given at
the Advanced Course on Geometry and Dynamics of Integrable Systems,
held at the CRM in Barcelona.
Native to actual problem-solving problems in mechanics,
the topic of Integrable Systems is currently on the crossroad of
different disciplines in pure and applied mathematics, and it has important
interactions with physics.
The study of integrable systems has had special impact and also actively uses
methods of Differential Geometry.
It is extremely important in Symplectic Geometry and Hamiltonian Dynamics,
and has strong correlations with Mathematical Physics,
Lie Theory and Algebraic Geometry (including Mirror Symmetry).
Therefore, these notes will attract experts from different backgrounds.
These notes concentrate on three different aspects of integrable systems:
obstructions to integrability coming from Differential Galois theory,
description of singularities of integrable systems using their relation to
bi-Hamiltonian systems, and generalization of integrable systems to
the non-Hamiltonian settings.
The three parts are written by top experts in these fields.

Nov. 2016 ....
9783319335025 4,670.

Khoshnevisan, D. /Schilling, R.: No. 502-156
From Levy-Type Processes to Parabolic SPDEs The
course by Davar Khoshnevisan deals with some problems in the field of
stochastic partial differential equations of parabolic type.
More precisely, the main objective is to establish an Invariance Principle for
those equations in a rather general setting, and also deduce, as
an application, comparison-type results.
The framework in which these problems are addressed go beyond
the classical setting, in the sense that the driving noise is assumed to be
a multiplicative space-time white noise on a group, and the underlying
elliptic operator corresponds to a generator of a Levy process on that group.
This implies that stochastic integration with respect to the above noise,
as well as existence and uniqueness of solution for the corresponding equation,
become relevant on their own.
These aspects are also developed, in parallel with a lot of illustrative examples.

Oct. 2016 ....
9783319341194 4,670.
Birkhauser

Cambridge Studies in Advanced Mathematics,

Vol. 160: Borodin, A. /Olshanski, G.:   No. 502-200

Representations of the Infinite Symmetric Group Representation theory of big groups is an important and quickly developing part of
modern mathematics, giving rise to a variety of important applications in probability and mathematical physics.
This book provides the first concise and self-contained introduction to the theory on the simplest yet very nontrivial example of the infinite symmetric group, focusing on its deep connections to probability, mathematical physics, and algebraic combinatorics. Following a discussion of the classical Thoma's theorem which describes the characters of the infinite symmetric group, the authors describe explicit constructions of an important class of representations, including both the irreducible and generalized ones.
Complete with detailed proofs, as well as numerous examples and exercises which help to summarize recent developments in the field, this book will enable graduates to enhance their understanding of the topic, while also aiding lecturers and researchers in related areas.

Dec. 2016	166 pp.	
9781107175556		10,730.

Vol. *** Huybrechts, D.:

Lectures on K3 Surfaces   No. 502-242

K3 surfaces are central objects in modern algebraic geometry.
This book examines this important class of Calabi?Yau manifolds from various perspectives in eighteen self-contained chapters.
It starts with the basics and guides the reader to recent breakthroughs, such as the proof of the Tate conjecture for K3 surfaces and structural results on Chow groups.
Powerful general techniques are introduced to study the many facets of K3 surfaces, including arithmetic, homological, and differential geometric aspects. In this context, the book covers Hodge structures, moduli spaces, periods, derived categories, birational techniques, Chow rings, and deformation theory. Famous open conjectures, for example the conjectures of Calabi, Weil, and Artin-Tate, are discussed in general and for K3 surfaces in particular, and each chapter ends with questions and open problems.
Based on lectures at the advanced graduate level, this book is suitable for courses and as a reference for researchers.

Nov. 2016	504 pp.	
9781107153042		12,390.

Vol. ***: Matsumoto Hiroyuki /Taniguchi Setsuo :   No. 502-056
Stochastic Analysis:
Ito and Malliavin Calculus in Tandem

Thanks to the driving forces of the Ito calculus and the Malliavin calculus, stochastic analysis has expanded into numerous fields including partial differential equations, physics, and mathematical finance.
This book is a compact, graduate-level text that develops the two calculi in tandem, laying out a balanced toolbox for researchers and students in mathematics and mathematical finance.
The book explores foundations and applications of the two calculi, including stochastic integrals and differential equations, and the distribution theory on Wiener space developed by the Japanese school of probability.
Uniquely, the book then delves into the possibilities that arise by using the two flavors of calculus together. Taking a distinctive, path-space-oriented approach, this book crystallizes modern day stochastic analysis into a single volume.

Oct. 2016	....	
9781107140516		11,560.

Cambridge

London Mathematical Society Lecture Note Series,

Vol. 437: Badziahin, D. /Gorodnik, A. /Peyerimhoff, N.: Dynamics and Analytic Number Theory

No. 502-056

Written by leading experts, this book explores several directions of current research at the interface between dynamics and analytic number theory. Topics include Diophantine approximation, exponential sums, Ramsey theory, ergodic theory and homogeneous dynamics. The origins of this material lie in the 'Dynamics and Analytic Number Theory' Easter School held at Durham University in 2014. Key concepts, cutting-edge results, and modern techniques that play an essential role in contemporary research are presented in a manner accessible to young researchers, including PhD students.
The areas discussed include ubiquitous systems and Cantor-type sets in Diophantine approximation, flows on nilmanifolds and their connections with exponential sums, multiple recurrence and Ramsey theory, counting and equidistribution problems in homogeneous dynamics, and applications of thin groups in number theory.

Nov. 2016   342 pp.
9781107552371   14,870.

Vol. 436: Ceccherini-Silberstein, T. / Salvatori, M. /Sava-Huss, E.: Groups, Graphs and Random Walks

No. 502-066

An accessible and panoramic account of the theory of random walks on groups and graphs, stressing the strong connections of the theory with other branches of mathematics, including geometric and combinatorial group theory, potential analysis, and theoretical computer science.
This volume brings together original surveys and research-expository papers from renowned and leading experts, many of whom spoke at the workshop 'Groups, Graphs and Random Walks' celebrating the sixtieth birthday of Wolfgang Woess in Cortona, Italy.
Topics include: growth and amenability of groups; Schrodinger operators and symbolic dynamics; ergodic theorems; Thompson's group F;
Poisson boundaries; probability theory on buildings and groups of Lie type; structure trees for edge cuts in networks; and mathematical crystallography.

Nov. 2016   630 pp.
9781316604403   21,470.

London Mathematical Society Student Texts,

Vol. 87: Cavalieri, R. /Miles, E.: Riemann Surfaces and Algebraic Curves: A First Course in Hurwitz Theory

No. 502-186/187

Hurwitz theory, the study of analytic functions among Riemann surfaces, is a classical field and active research area in algebraic geometry.
The subject's interplay between algebra, geometry, topology and analysis is a beautiful example of the interconnectedness of mathematics.
This book introduces students to this increasingly important field, covering key topics such as manifolds, monodromy representations and the Hurwitz potential. Designed for undergraduate study, this classroom-tested text includes over 100 exercises to provide motivation for the reader.
Also included are short essays by guest writers on how they use Hurwitz theory in their work, which ranges from string theory to non-Archimedean geometry.

Nov. 2016   ....
9781107149243/9781316603529   18,970./7,420. (Paper ed.)

Cambridge

Mathematical Science Research Institute Publications

Vol. ****:** Ellamy, G. /Rogalski, D.:   No. 502-077/078
Noncommutative Algebraic Geometry

There are many interactions between noncommutative algebra and representation theory on the one hand and classical algebraic geometry on the other, with important applications in both directions.
The aim of this book is to provide a comprehensive introduction to some of the most significant topics in this area, including noncommutative projective algebraic geometry, deformation theory, symplectic reflection algebras, and noncommutative resolutions of singularities.
The book is based on lecture courses in Noncommutative Algebraic Geometry given by the authors at a Summer Graduate School at MSRI in 2012 and, as such, is suitable for advanced graduate students and those undertaking early post-doctorate research.

<div align="center">

May 2016   ....
9781107129542/9781107570030   16,930./6,840. (Paper ed.)

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Cambridge Series in Statistical and Probabilistic Mathematics,

Lyons, R. /Peres, Y.:
Probability on Trees and Networks   No. 502-240

Starting around the late 1950s, several research communities started relating the geometry of graphs to the stochastic processes on these graphs.
This book, 20 years in the making, ties together the research in the field, bringing together work on percolation, isoperimetric inequalities, eigenvalues, transition probabilities, and random walks.
Written by two leading researchers, the text emphasizes intuition, while giving complete proofs and more than 800 exercises.
Many recent developments, in which the authors have played a leading role, are discussed, including percolation on trees and Cayley graphs, uniform spanning forests, the mass-transport technique, and connections on random walks on graphs to embedding in Hilbert space.
This state-of-the-art account of probability on networks will be indispensable for graduate students and researchers alike.

<div align="center">

Dec. 2016   ....
9781107160156   13,210.

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Cambridge Classical Texts and Commentaries

Jacobs, B.:
Introduction to Coalgebra: No. 502-088
Towards Mathematics of States and Observation

The area of coalgebra has emerged within theoretical computer science with a unifying claim: to be the mathematics of computational dynamics.
It combines ideas from the theory of dynamical systems and from the theory of state-based computation. Although still in its infancy, it is an active area of research that generates wide interest. Written by one of the founders of the field, this book acts as the first mature and accessible introduction to coalgebra.
It provides clear mathematical explanations, with many examples and exercises involving deterministic and non-deterministic automata, transition systems, streams, Markov chains and weighted automata.
The theory is expressed in the language of category theory, which provides the right abstraction to make the similarity and duality between algebra and coalgebra explicit, and which the reader is introduced to in a hands-on manner.
The book will be useful to mathematicians and (theoretical) computer scientists and will also be of interest to mathematical physicists, biologists and economists.

<div align="center">

Jan. 2017   ....
9781107177895   25,600.

Cambridge

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Monographs and Research Notes in Mathematics

Tam, T.-Y. /Liu, X.: No. 502-104
Matrix Inequalities and Their Extensions in Lie Groups
Matrix Inequalities and Their Extensions in Lie Groups gives a systematic and
updated account of recent important extensions of classical matrix results,
especially matrix inequalities, in the context of Lie groups.
It is the first systematic work in the area and will appeal to linear algebraists
and Lie group researchers.

Mar. 2017	200 pp.	
9781498796163		20,010.

de Graaf, W.: No. 502-112
Computation with Linear Algebraic Groups
This book gives a reasonably self-contained account of a number of
algorithmic problems and their solutions for linear algebraic groups.
The theory underpinning the algorithms is described as well. Topics include
closed sets in affine space, lie algebras, linear algebraic groups-basic
constructions, algebraic groups and their lie algebras in characteristic zero,
arithmetic groups, reductive algebraic groups, and ?-groups.

Apr. 2017	300 pp.	
9781498722902		14,150.

Gil, M.: No. 502-145
Bounds for Determinants of
Linear Operators and Their Applications
This book deals with the determinants of linear operators in Euclidean,
Hilbert and Banach spaces. Determinants of operators give us an important tool
for solving linear equations and invertibility conditions for linear operators,
enable us to describe the spectra, to evaluate the multiplicities of eigenvalues, etc.
We derive upper and lower bounds, and perturbation results for determinants,
and discuss applications of our theoretical results to spectrum perturbations,
matrix equations, two parameter eigenvalue problems, as well as to differential,
difference and functional-differential equations.

Mar. 2017	250 pp.	
9781498796903		20,010.

Riksen, E. /Arnfinn Laudal, O. /Siqveland, A.: No. 502-100
Noncommutative Deformation Theory
Deformation theory is used as a tool for studying the structure of
moduli schemes in geometry by many mathematicians and physicists.
Mainly, the structure of the obstruction groups and their vanishing is used for
smoothness properties, but there is a need to find the structure of
the singularities in moduli spaces as well.

Feb. 2017	325 pp.	
9781498796019		23,180.

Corry, S.: No. 502-069
Symmetry and Quantum Mechanics
This book offers an introduction to quantum mechanics for professionals,
students, and others in the field of mathematics who have a minimal background
in physics with an understanding of linear algebra and group theory. It covers
such topics as Lie groups, algebras and their representations, and analysis.
The book emphasizes the role of symmetry and is useful to physicists as
it provides a mathematical introduction to the topic.

Dec. 2016	248 pp.	
9781498701167		21,720.

Chapman and Hall

de Gruyter Studies in Mathematics,

Vol. 64: Mitrea, D. /Mitrea, I. /Mitrea, M. /Taylor, M.: No. 502-163
The Hodge-Laplacian:
Boundary Value Problems on Riemannian Manifolds
The core of this monograph is the development of tools to derive well-posedness
results in very general geometric settings for elliptic differential operators.
A new generation of Calderon-Zygmund theory is developed for variable
coefficient singular integral operators.
At the intersection of PDEs, harmonic analysis and differential geometry this text
is suitable for a wide range of PhD students, researchers and professionals.

| Sep. 2016 | 580 pp. |
| 9783110482669 | 22,430. |

de Gruyter

Surveys of Modern Mathematics,

Vol. 10: Serre, J.-P.: No. 502-101
Finite Groups: An Introduction
Finite group theory is remarkable for the simplicity of its statements and
the difficulty of their proofs. It is essential in several branches of mathematics,
notably number theory.Finite Groups: An Introduction is an elementary
textbook on finite group theory.
Written by the eminent French mathematician Jean-Pierre Serre (a principal
contributor to algebraic geometry, group theory, and number theory), this
brand-new textbook is based upon a course given by Serre at
l'Ecole Normale Supeieure de Jeunes Filles, Paris in 1978

| June 2016 | 194 pp. |
| 9781571463203 | 6,270. |

Proceedings of Gokova Geometry-Topology Conference,

Vol. 2015: Akbulut, S. /Auroux, D. /Onder, T. (eds.): No. 502-174
Proceedings of the Gokova Geometry
- Topology Conference 2015
This volume presents lively and engaging articles from the lecturers and
the participants of the 22nd Gokova Geometry-Topology Conference, held on
the shores of Gokova Bay, Turkey, in May of 2015.
Topics include high-dimensional geometric, symplectic and contact topology,
low-dimensional manifolds, the triangulation theorem, the higher-dimensional
contact geometry, and more.

| May 2016 | 246 pp. |
| 9781571463210 | 11,550. |

Cao, H.-D. /Yau, S.-T. (eds.): No. 502-184
Advances in Geometry and Mathematical Physics:
Lectures given at the Geometry and Topology conference at
Harvard University in 2014
This volume consists of articles by speakers at the Conference on Geometry and
Topology held at Harvard University in 2014.
Included are: Camillo De Lellis, on the size of the singular set of area-minimizing
currents; Simon Donaldson, on Kahler-Einstein metrics and algebraic structures
on limit spaces; Mark Gross, on theta functions and mirror symmetry;
Nigel Hitchin, on Higgs bundles and diffeomorphism groups; Fernando Marques,
on topology of the space of cycles and existence of minimal varieties; William
Meeks, on constant mean curvature surfaces; etc. July 2016

360 pp.

| 9781571463227 | 14,020. |

International Press

Lecture Notes in Mathematics,

Vol. 2165: Damon, J. /Giblin, P. /Haslinger, G.: No. 502-193
Local Features in
Natural Images via Singularity Theory

This monograph considers a basic problem in the computer analysis of
natural images, which are images of scenes involving multiple objects that are
obtained by a camera lens or a viewer's eye.
The goal is to detect geometric features of objects in the image and to separate
regions of the objects with distinct visual properties.
When the scene is illuminated by a single principal light source, we further
include the visual clues resulting from the interaction of the geometric features of
objects, the shade/shadow regions on the objects, and the "apparent contours".
We do so by a mathematical analysis using a repertoire of methods in
singularity theory.
This is applied for generic light directions of both
the "stable configurations" for these interactions, whose features remain
unchanged under small viewer movement, and the generic changes which
occur under changes of view directions.

<p style="text-align:center">Nov. 2016 ....
9783319414706 8,410.</p>

Vol. 2163: Barbu, V. /Da Prato, G. /Rockner, M.: No. 502-116
Stochastic Porous Media Equations

Focusing on stochastic porous media equations, this book places
an emphasis on existence theorems, asymptotic behavior and
ergodic properties of the associated transition semigroup.
Stochastic perturbations of the porous media equation have reviously been
considered by physicists, but rigorous mathematical existence results
have only recently been found. The porous media equation models a number of
different physical phenomena, including the flow of an ideal gas and
the diffusion of a compressible fluid through porous media, and also
thermal propagation in plasma and plasma radiation. Another important
application is to a model of the standard self-organized criticality process, called
the "sand-pile model" or the "Bak-Tang-Wiesenfeld model".

<p style="text-align:center">Dec. 2016 ....
9783319410685 8,410.</p>

Vol. 2160: Jorgensen, P. /Pedersen, S. /Tian, F.: No. 502-154
Extensions of Positive Definite Functions:
Applications and Their Harmonic Analysis

This monograph deals with the mathematics of extending given partial
data-sets obtained from experiments; Experimentalists frequently gather
spectral data when the observed data is limited, e.g., by the precision of
instruments; or by other limiting external factors.
Here the limited information is a restriction, and the extensions take the form of
full positive definite function on some prescribed group.
It is therefore both an art and a science to produce solid conclusions from
restricted or limited data. While the theory of is important in many areas of
pure and applied mathematics, it is difficult for students and for the novice to
the field, to find accessible presentations which cover all relevant points of view,
as well as stressing common ideas and interconnections.
We have aimed at filling this gap, and we have stressed hands-on-examples.

<p style="text-align:center">Aug. 2016 222 pp.
9783319397795 8,410.</p>

Springer

Alt, W.:   No. 502-115
Linear Functional Analysis:
An Application-Oriented Introduction

This book gives an introduction to Linear Functional Analysis, a synthesis of
algebra, topology, and analysis. In addition to the basic theory it explains
operator theory, distributions, Sobolev spaces, and many other things.
The text is self-contained and includes all proofs, as well as many exercises,
most of them with solutions. Moreover, there are a number of appendices, for
example on Lebesgue integration theory.
A complete introduction to the subject, Linear Functional Analysis will be
particularly useful to readers who want to quickly get to the key statements and
who are interested in applications to differential equations.

| July 2016 | 437 pp. |
| 9781447172796 | 12,530. |

No. 502-221
Cekanavicius, V.:
Approximation Methods in Probability Theory

This book presents a wide range of well-known and less common methods
used for estimating the accuracy of probabilistic approximations,
including the Esseen type inversion formulas, the Stein method as well as
the methods of convolutions and triangle function.
Emphasising the correct usage of the methods presented, each step
required for the proofs is examined in detail.
As a result, this textbook provides valuable tools for proving
approximation theorems.
While Approximation Methods in Probability Theory will appeal to
everyone interested in limit theorems of probability theory, the book is
particularly aimed at graduate students who have completed a standard
intermediate course in probability theory.

| July 2016 | 240 pp. |
| 9783319340715 | 10,660. |

Bouchard, B. /Chassagneux, J.-F.:   No. 502-125
Fundamentals and Advanced Techniques in
Derivatives Hedging

This book covers the theory of derivatives pricing and hedging as well as
techniques used in mathematical finance.
The authors use a top-down approach, starting with fundamentals before
moving to applications, and present theoretical development
alongside various exercises, providing many examples of practical interest.
A large spectrum of concepts and mathematical tools that are usually found in
separate monographs are presented here.
In addition to the no-arbitrage theory in full generality, this book also explores
models and practical hedging and pricing issues.
Fundamentals and Advanced Techniques in Derivatives Hedging further introduces
advanced methods in probability and analysis, including Malliavin calculus and
the theory of viscosity solutions, as well as the recent theory of stochastic targets
and its use in risk management, making it the first textbook covering this topic.
Graduate students in applied mathematics with an understanding of probability
theory and stochastic calculus will find this book useful to gain a deeper
nderstanding of fundamental concepts and methods in mathematical finance.

| July 2016 | 258 pp. |
| 9783319389882 | 8,410. |

Springer

Algebra and Applications,

Vol. 21: Lazda, C. /Pal, A.:   No. 502-089

Rigid Cohomology Over Laurent Series Fields

In this monograph, the authors develop a new theory of p-adic cohomology for
varieties over Laurent series fields in positive characteristic,
based on Berthelot's theory of rigid cohomology.
Many major fundamental properties of these cohomology groups are
proven, such as finite dimensionality and cohomological descent, as well as
interpretations in terms of Monsky-Washnitzer cohomology and
Le Stum's overconvergent site.
Applications of this new theory to arithmetic questions, such as l-independence
and the weight monodromy conjecture, are also discussed.

| May 2016 | 267 pp. |
| 9783319309507 | 17,760. |

Abel Symposia,

Vol. 12: Carlsen, T. /Larsen, N. /Neshveyev, S. /Skau, C. (eds.):

Operator Algebras and Applications: No. 502-126

The Abel Symposium 2015

Like the first Abel Symposium, held in 2004, the Abel Symposium 2015
focused on operator algebras.
It is interesting to see the remarkable advances that have been made in operator
algebras over these years, which strikingly illustrate the vitality of the field.
A total of 26 talks were given at the symposium on a variety of themes,
all highlighting the richness of the subject.
The field of operator algebras was created in the 1930s and was motivated by
problems of quantum mechanics.
It has subsequently developed well beyond its initial intended realm of
applications and expanded into such diverse areas of mathematics as
representation theory, dynamical systems, differential geometry,
number theory and quantum algebra.
One branch, known as "Noncommutative geometry has become a powerful tool
for studying phenomena that are beyond the reach of classical analysis.

| Aug. 2016 | 310 pp. |
| 9783319392844 | 27,110. |

New Series:
Pathways in Mathematics

Konig, W.:

The Parabolic Anderson Model: No. 502-236

Random Walk in Random Potential.

This is a comprehensive survey on the research on the parabolic Anderson
model - the heat equation with random potential or the random walk in
random potential ? of the years 1990 - 2015.
The investigation of this model requires a combination of tools from probability
(large deviations, extreme-value theory, e.g.) and analysis (spectral theory for
the Laplace operator with potential, variational analysis, e.g.).
We explain the background, the applications, the questions and
the connections with other models and formulate the most
relevant results on the long-time behavior of the solution, like quenched and
annealed asymptotics for the total mass, intermittency, confinement and
concentration properties and mass flow.

| June 2016 | 192 pp. |
| 9783319335957 | 14,400. |

Springer

Series on University Mathematics

Hsiang, W.-Y.:   No. 502-085/086
Lectures on Lie Groups, 2nd ed.
This volume consists of nine lectures on selected topics of Lie group theory.
We provide the readers a concise introduction as well as a comprehensive
"tour of revisiting" the remarkable achievements of S Lie, W Killing, E Cartan
and H Weyl on structural and classification theory of semi-simple Lie groups,
Lie algebras and their representations; and also the wonderful duet of
Cartans's theory on Lie groups and symmetric spaces.
With the benefit of retrospective hindsight, mainly inspired by the outstanding
contribution of H Weyl in the special case of compact connected Lie groups,
we develop the above theory via a route quite different from
the original methods engaged by most other books.

| Oct. 2016 | 170 pp. |
| 9789814740708/9789814740715 | 11,220./6,270. (Paper ed.) |

Lecture Notes Series, Insititute for Mathematical Sciences, National University of Singapore,

Vol. 31: Han, F. /Xu, X. /Zhang, W. (eds.):   No. 502-150
Geometric Analysis Around Scalar Curvatures
The first chapter surveys the recent developments on the fourth-order equations
with negative exponent from geometric points of view such as positive mass
theorem and uniqueness results.
The next chapter deals with the recent important progress on several conjectures
such as the existence of non-flat smooth hyper-surfaces and Serrin's over-
determined problem.
And the final chapter induces a new technique to handle the equation with
critical index and the sign change coefficient as well as the negative index term.

| July 2016 | 250 pp. |
| 9789813100541 | 17,490. |

LTCC Advanced Mathematics Series,

Vol. 5: Bullett, S. /Fearn, T. /Smith, F. (eds.):   No. 502-259
Dynamical and Complex Systems
This book is a guide to advanced techniques used widely in applied mathematical
sciences research. Chapter by chapter, readers will be led from a foundation
level understanding to advanced level understanding. This is the perfect text for
graduate or PhD mathematical-science students looking for support in techniques
such as practical analytical methods, finite elements and symmetry methods for
differential equations. Dynamical and Complex Systems is the fifth volume of
the LTCC Advanced Mathematics Series.
This series is the first to provide advanced introductions to mathematical science
topics to advanced students of mathematics.

| Mar. 2017 | 200 pp. |
| 9781786341020 | 14,520. |

No. 502-063
Vol. 4: Bullett, S. /Fearn, T. /Smith, F. (eds.):
Geometry in Advanced Pure Mathematics
This book is a guide to advanced techniques used widely in applied mathematical
sciences research. Chapter by chapter, readers will be led from a foundation
level understanding to advanced level understanding.
This is the perfect text for graduate or PhD mathematical-science students
looking for support in techniques such as practical analytical methods,
finite elements and symmetry methods for differential equations.

| Mar. 2017 | 200 pp. |
| 9781786341068 | 14,520. |

World Scientific Pub.

New Series:
Aurora: Dover Modern Math Originals

Beutelspacher, A.:
No. 502-003

Numbers:
Histories, Mysteries, Theories

Posing the question "What exactly is a number?" a distinguished
German mathematician presents this intriguing and accessible survey.
Albrecht Beutelspacher — founder of the renowned interactive mathematics
museum, Mathematikum — characterizes the wealth of experiences that
numbers have to offer. In addition, he considers the many things that can be
described by numbers and discusses which numbers possess special fascinations
and pose lasting mysteries.Starting with natural numbers, the book examines
representations of numbers, rational and irrational numbers, transcendental
numbers, and imaginary and complex numbers.
Readers will explore the history of numbers from Pythagoras to Fermat and
discover such practical applications as cryptography and barcodes.

Dec. 2015   144 pp.
9780486803487   21,520.

Shahshahani, S.:
No. 502-211

An Introductory Course on Differentiable Manifolds

Based on author Siavash Shahshahani's extensive teaching experience, this
volume presents a thorough, rigorous course on the theory of
differentiable manifolds. Geared toward advanced undergraduates and graduate
students in mathematics, the treatment's prerequisites include a strong
background in undergraduate mathematics, including multivariable calculus,
linear algebra, elementary abstract algebra, and point set topology.
More than 200 exercises offer students ample opportunity to gauge their skills
and gain additional insights.
The four-part treatment begins with a single chapter devoted to
the tensor algebra of linear spaces and their mappings. Part II brings in neigh-
boring points to explore integrating vector fields, Lie bracket, exterior derivative,
and Lie derivative. Part III, involving manifolds and vector bundles, develops
the main body of the course. The final chapter provides a glimpse into geometric
structures by introducing connections on the tangent bundle as a tool to implant
the second derivative and the derivative of vector fields on the base manifold.

June 2016   352 pp.
9780486807065   4,980.

Sasane, A.:
No. 502-281

Optimization in Function Spaces

This highly readable volume on optimization in function spaces is
based on author Amol Sasane's lecture notes, which he developed over
several years while teaching a course for third-year undergraduates at
the London School of Economics.
The classroom-tested text is written in an informal but precise style that
emphasizes clarity and detail, taking students step by step through each subject.
Numerous examples throughout the text clarify methods, and a substantial
number of exercises provide reinforcement.
Detailed solutions to all of the exercises make this book ideal for self-study.
The topics are relevant to students in engineering and economics as well as
mathematics majors. Prerequisites include multivariable calculus and basic
linear algebra.
The necessary background in differential equations and elementary functional
analysis is developed within the text, offering students a self-contained treatment.

Dec. 2015   256 pp.
9780486789453   4,980.
Dover

IRMA - Lecture Notes in Mathematics and Theoretical Physics,

Vol. 27: Papadopoulos, A.:   No. 502-020
Handbook of Teichmuller Theory, Vol. VI

The topics surveyed include Grothendieck's construction of
the analytic structure of Teichmuller space, identities on the geodesic length
spectrum of hyperbolic surfaces (including Mirzakhani's application to
the computation of Weil-Petersson volumes), moduli spaces of configurations
spaces, the Teichmuller tower with the action of the Galois group on
dessins d'enfants, and several others actions related to surfaces.
The last part contains three papers by Teichmuller, translated into
English with mathematical commentaries, and a document that contains
H. Grotzsch's comments on Teichmuller's famous paper Extremale
quasikonforme Abbildungen und quadratische Differentiale.

          May 2016   652 pp.
     9783037191613   16,460.

EMS Series of Lectures in Mathematics,

*Vol. **:* Cavicchioli, A. /Hegenbarth, F.:   No. 502-188
Higher-Dimensional Generalized Manifolds:
Surgery and Constructions

This is the first book to systematically collect the most important material on
higher-dimensional generalized manifolds and controlled surgery.
It is self-contained and its extensive list of references reflects
the historic development.
The book is based on our graduate courses and seminars, as well as our talks
given at various meetings, and is suitable for advanced graduate students and
researchers in algebraic and geometric topology.

          May 2016   154 pp.
     9783037191569   5,980.

Europeam Mathematical Society

Asterisque,

Vol. 379: Baues, O. /Cortes, V.:   No. 502-059
Symplectic Lie Groups

We develop the structure theory of symplectic Lie groups based on
the study of their isotropic normal subgroups.
The article consists of three main parts.
In the first part we show that every symplectic Lie group admits a sequence of
subsequent symplectic reductions to a unique irreducible symplectic Lie group.
The second part concerns the symplectic geometry of cotangent symplectic
Lie groups and the theory of Lagrangian extensions of flat Lie groups.
In the third part of the article we analyze the existence problem for
Lagrangian normal subgroups in nilpotent symplectic Lie groups.

          Aug. 2016   96 pp.
     9782856298343   価格未定

Vol. 378: Castel, F.:
Geometric Representations of the Braid Groups
     Aug. 2016   *175 pp.*   *9782856298350*   価格未定

Vol. 377: Hurder, S. /Rechtman, A.:
The Dynamics of Generic Kuperberg Flows
     June 2016   *250 pp.*   *9782856298312*   11,640.

Societe Mathematique de France

MSJ Memoirs,

Vol. 34: Barlow, M. /Jordan, T. /Zuk, A.:
No. 502-001
Discrete Geometric Analysis

This is a volume of lecture notes based on three series of lectures given by three
visiting professors of RIMS, Kyoto University during the year long project
research "Discrete Geometric Analysis" in the Japanese academic year 2012.
The aim of the project research was to make comprehensive research on topics
related to discreteness in geometry, analysis and optimization. The goal is to
expand and make a new stream of discrete geometric analysis by exchanging
ideas in each area. The main themes during the project and also of this volume
are threefold: i) Discrete probability theory and analysis on graphs, ii) Discrete
convex analysis and its applications, iii) Geometric group theory.
We had five conferences at Kyoto University in the project research.
The three visiting professors gave the series of lectures on the following topics.
(I) Loop Erased Walks and Uniform Spanning Trees,   by Martin T. Barlow.
(II) Combinatorial Rigidity: Graphs and Matroids in

   the Theory of Rigid Frameworks,   by Tibor Jordan.
(III) Analysis and Geometry on Groups,   by by Andrzej Zuk.

June 2016   157 pp.
9784864970358   2,920.

Mathematical Society of Japan

RIMS Kokyuroku Bessatsu,

B 54: Nakazawa Takashi :
No. 502-209
Topology Optimization Theory and
Applications Toward Wide Fields of Natural Sciences

この講究録別冊は，形状モデリングの現実問題への応用を目的として
2014 年 5 月に京都大学数理解析研究所において開催された共同研究
「連続体のトポロジー最適化理論の現実問題への応用」の報告集である．
K. Matsue, N. Yamanaka, T. Nakazawa, S. Yanase, E. Katamine といった
数学・物理・工学を専門とする方々から寄稿された論文 6 編を収録している．
論じられているテーマは，形状モデリングを基礎として渋滞学，機械工学，
臨床工学，材料科学への応用や，精度保証付き計算まで多岐に亘っている．

Oct. 2015   98 pp.
9781000023428   1,000.

B 53: Ochiai Tadashi /Tsuji Takeshi /Kimura Iwao :
No. 502-096
Algebraic Number Theory and
Related Topics 2013

２０１３年１２月に京都大学数理解析研究所で開催された研究集会
「代数的整数論とその周辺」の講演者による査読付きの論文集である．
l 進コホモロジー、p 進コホモロジー，数論的体上の多様体の有理点や
Chow 群，岩澤理論，保型表現や保型 L 函数，重ゼータ値など，整数論に
関連した幅広い分野にわたる個別の研究成果についての１７編の論文に加え，
p 進ソリトン理論，前田予想，計算機数論，Goldbach 予想，Stark 予想，
p 進局所 Langlands 対応 (2 編) に関する 7 編の入門的な概説論文が収められ
ている．整数論の最新の進展状況を知るのに役立つ文献となっている．

Sep. 2015   442 pp.
9781000023411   2,300.

京都大学数理解析研究所