Yurinsha Book News

Graduate Studies in Mathematics,

460-067

Vol. 130: **Ene, V. /Herzog, J.:**
Grobner Bases in Commutative Algebra

This book provides a concise yet comprehensive and self-contained introduction to Grobner basis theory and its applications to various current research topics in commutative algebra.
It especially aims to help young researchers become acquainted with fundamental tools and techniques related to Grobner bases which are used in commutative algebra and to arouse their interest in exploring further topics such as toric rings, Koszul and Rees algebras, determinantal ideal theory, binomial edge ideals, and their applications to statistics.
Table of Contents: *Polynomial rings and ideals *Grobner bases *First applications *Grobner bases for modules *Grobner bases of toric ideals *Selected applications in commutative algebra and combinatorics *Bibliography

Jan. 2012 173 pp.
9780821872871 6,200.

Vol. 129: **Hastings, S. /McLeod, B.:** 詳報掲載 Page 1
Classical Methods in Ordinary Differential Equations:
With Applications to Boundary Value Problems
Jan. 2012 373 pp.
9780821846940 7,370.

A. M. S.

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ホームページは毎月25日更新予定です

No. 460 Oct. 2011

数理科学 友隣社 洋書専門

History of Mathematics,

Vol. 38: Alexander, D. /Iavernaro, F. /Rosa, A.: 460-003
Early Days in Complex Dynamics:
A History of Complex Dynamics in One Variable During 1906-1942
The theory of complex dynamics, whose roots lie in 19th-century studies of the iteration of complex function conducted by Koenigs, Schoder, and others, flourished remarkably during the first half of the 20th century, when many of the central ideas and techniques of the subject developed.
Dec. 2011 442 pp.
9780821844649 11,580.

Graduate Studies in Mathematics,

Vol. 130: Ene, V. /Herzog, J.:
Grobner Bases in Commutative Algebra
Jan. 2012 173 pp. 詳報 表紙 掲載
9780821872871 6,200.

Vol. 129: Hastings, S. /McLeod, B.: 460-123
Classical Methods in
Ordinary Differential Equations:
With Applications to Boundary Value Problems
This text emphasizes rigorous mathematical techniques for the analysis of boundary value problems for ODEs arising in applications.
The emphasis is on proving existence of solutions, but there is also a substantial chapter on uniqueness and multiplicity questions and several chapters which deal with the asymptotic behavior of solutions with respect to either the independent variable or some parameter.
These equations may give special solutions of important PDEs, such as steady state or traveling wave solutions.
Often two, or even three, approaches to the same problem are described.
The advantages and disadvantages of different methods are discussed.
The book gives complete classical proofs, while also emphasizing the importance of modern methods, especially when extensions to infinite dimensional settings are needed. There are some new results as well as new and improved proofs of known theorems.
Jan. 2012 373 pp.
9780821846940 7,370.

Fields Institute Communications,

Vol. 61: Khalkhali, M. /Yu, G. (eds.): 460-175
Perspectives on Noncommutative Geometry
Pioneered by Alain Connes starting in the late 1970s, noncommutative geometry was originally inspired by global analysis, topology, operator algebras, and quantum physics.
Its main applications were to settle some long-standing conjectures, such as the Novikov conjecture and the Baum-Connes conjecture.
Next came the impact of spectral geometry and the way the spectrum of a geometric operator, like the Laplacian, holds information about the geometry and topology of a manifold, as in the celebrated Weyl law.
This has now been vastly generalized through Connes' notion of spectral triples. Finally, recent years have witnessed the impact of number theory, algebraic geometry and the theory of motives, and quantum field theory on noncommutative geometry.
Nov. 2011 163 pp.
9780821848494 10,410.

A. M. S.

Contemporary Mathematics,

460-053

Vol. 557: **Adams, J. /Lian, B. /Sahi, S. (eds.):**
Representation Theory & Mathematical Physics
In honor of Gregg Zuckerman's 60th birthday, 2009, at Yale University

In recent years there has been a fruitful interplay between mathematics and physics, in geometric representation theory, string theory, and other areas. New developments on chiral algebras, representation theory of affine Kac-Moody algebras, and the geometric Langlands correspondence are some of the focal points of this volume.

Dec. 2011 **388 pp.**
9780821852460 **14,620.**

Vol. 556: **Gurvits, L. /**
Pebay, P. /Rojas, M. /Thompson, D. (eds.):
Randomization, Relaxation, and Complexity in Polynomial Equation Solving
460-070
2010 in Banff, Ontario, Canada

The papers are written by leading experts in algorithmic algebraic geometry and touch upon core topics such as homotopy methods for approximating complex solutions, robust floating point methods for clusters of roots, and speed-ups for counting real solutions.
Vital related topics such as circuit complexity, random polynomials over local fields, tropical geometry, and the theory of fewnomials, amoebae, and coamoebae are treated as well.

Nov. 2011 **217 pp.**
9780821852286 **9,240.**

Vol. 555: **Corso, A. /Polini, C. (eds.):** 460-063
Commutative Algebra & Its Connections to Geometry
2009, at the Universidade Federal de Pernambuco in Olinda, Brazil

The main goal of the program was to detail recent developments in commutative algebra and interactions with such areas as algebraic geometry, combinatorics and computer algebra.
The articles in this volume concentrate on topics central to modern commutative algebra: the homological conjectures, problems in positive and mixed characteristic, tight closure and its interaction with birational geometry, integral dependence and blowup algebras, equisingularity theory, Hilbert functions and multiplicities, combinatorial commutative algebra, Grobner bases and computational algebra.

Nov. 2011 **224 pp.**
9780821849590 **9,240.**

CRM Proceedings and Lecture Notes,

Vol. 54: **Daigle, D. /Ganong, R. /Koras, M.:** 460-015
Affine Algebraic Geometry:
The Russell Festschrift
2009 at McGill University, in honour of Professor Peter Russell

It contains 19 refereed articles, essentially all in the area of affine algebraic geometry and, more specifically, in the following subjects: automorphisms and group actions, surfaces, embeddings of certain rational curves in the affine plane, and problems in positive characteristic geometry. These are also some of the themes running through the very substantial body of work done by Professor Russell in this relatively young branch of algebraic geometry.

Nov. 2011 **335 pp.**
9780821872833 **14,620.**

A. M. S.

Mathematical Surveys and Monographs,

Vol. 178: **Brass, H. /Petras, K.:** 460-104

Quadrature Theory:
The Theory of Numerical Integration on A Compact Interval

The authors of this book provide a complementary treatment of the topic by presenting a coherent theory of quadrature methods that encompasses many deep and elegant results as well as a large number of interesting (solved and open) problems.
The inclusion of the word "theory" in the title highlights the authors' emphasis on analytical questions, such as the existence and structure of quadrature methods and selection criteria based on strict error bounds for quadrature rules.
Systematic analyses of this kind rely on certain properties of the integrand, called "co-observations," which form the central organizing principle for the authors' theory, and distinguish their book from other texts on numerical integration.

Nov. 2011 363 pp.
9780821853610 10,100.

Proceedings of Symposia in Applied Mathematics,

Vol. 69: **Sigmund, K. (ed.):** 460-038

Evolutionary Game Dynamics

At the 2011 AMS Short Course on Evolutionary Game Dynamics, 2011 in New Orleans, Louisiana

Evolutionary game theory studies basic types of social interactions in populations of players. It combines the strategic viewpoint of classical game theory (independent rational players trying to outguess each other) with population dynamics (successful strategies increase their frequencies).
A substantial part of the appeal of evolutionary game theory comes from its highly diverse applications such as social dilemmas, the evolution of language, or mating behaviour in animals.
Moreover, its methods are becoming increasingly popular in computer science, engineering, and control theory.
They help to design and control multi-agent systems, often with a large number of agents (for instance, when routing drivers over highway networks or data packets over the Internet).

Nov. 2011 171 pp.
9780821853269 6,080.

Proceedings of Symposia in Pure Mathematics,

Vol. 83: **Sati, H. /Schreiber, U. (eds.):** 460-182

Mathematical Foundations of Quantum Field Theory & Perturbative String Theory

Quantum field theory (QFT) has proven to be a rich source of ideas for mathematics for a long time. However, fundamental questions such as "What is a QFT?" did not have satisfactory mathematical answers, especially on spaces with arbitrary topology, fundamental for the formulation of perturbative string theory.
This book contains a collection of papers highlighting the mathematical foundations of QFT and its relevance to perturbative string theory as well as the deep techniques that have been emerging in the last few years.
An introduction, written by the editors, provides an overview of the main underlying themes that bind together the papers in the volume.

Dec. 2011 357 pp.
9780821851951 11,110.

A. M. S.

Oberwolfach Seminars,

Vol. 43: **Benson, D. /Iyengar, S. /Krause, H.:** 460-058

Representations of Finite Groups: Local Cohomology and Support

The seminar focuses on a recent solution, by the authors, of a long standing problem concerning the stable module category (of not necessarily finite dimensional representations) of a finite group.
The proof draws on ideas from commutative algebra, cohomology of groups, and stable homotopy theory.
The unifying theme is a notion of support which provides a geometric approach for studying various algebraic structures.
The prototype for this has been Daniel Quillen's description of the algebraic variety corresponding to the cohomology ring of a finite group, based on which Jon Carlson introduced support varieties for modular representations.
This has made it possible to apply methods of algebraic geometry to obtain representation theoretic information.
Their work has inspired the development of analogous theories in various contexts, notably modules over commutative complete intersection rings and over cocommutative Hopf algebras.

Dec. 2011 **155 pp.**
9783034802598 **4,190.**

Progress in Mathematics,

Vol. 297: **Dai, X. /Rong, X. (ed.):** 460-064

Metric and Differential Geometry: The Jeff Cheeger Anniversary Volume

Metric and Differential Geometry grew out of a similarly named conference held at Chern Institute of Mathematics, Tianjin and Capital Normal University, Beijing.
The various contributions to this volume cover a broad range of topics in metric and differential geometry, including metric spaces, Ricci flow, Einstein manifolds, Kahler geometry, index theory, hypoelliptic Laplacian and analytic torsion.
It offers the most recent advances as well as surveys the new developments.
Contributors: M.T. Anderson J.-M. Bismut X. Chen X. Dai R. Harvey P. Koskela B. Lawson X. Ma R. Melrose W. Muller A. Naor J. Simons C. Sormani D. Sullivan S. Sun G. Tian K. Wildrick W. Zhang

Mar. 2012 **420 pp.**
9783034802567 **18,470.**

Probability and its Applications,

Prakasa Rao, B.: 460-216

Associated Sequences, Semimartingales and Nonparametric Inference

This book gives a comprehensive review of results for associated sequences and demimartingales developed so far, with special emphasis on demimartingales and related processes.
Probabilistic properties of associated sequences, demimartingales and related processes are discussed in the first six chapters.
Applications of some of these results to some problems in nonparametric statistical inference for such processes are investigated in the last three chapters.

Dec. 2011 **300 pp.**
9783034802390 **15,110.**

Birkhauser

Negri, S. /von Plato, J.: 460-051

Proof Analysis:
A Contribution to Hilbert's Last Problem

It presents an extension of the methods of analysis of proofs in pure logic to elementary axiomatic systems and to what is known as philosophical logic.
A self-contained brief introduction to the proof theory of pure logic is included that serves both the mathematically and philosophically oriented reader.
The method is built up gradually, with examples drawn from theories of order, lattice theory and elementary geometry.
The aim is, in each of the examples, to help the reader grasp the combinatorial behaviour of an axiom system, which typically leads to decidability results.
The last part presents, as an application and extension of all that precedes it, a proof-theoretical approach to the Kripke semantics of modal and related logics, with a great number of new results, providing essential reading for mathematical and philosophical logicians.

Nov. 2011 272 pp.
9781107008953 9,540.

Cappelli, A. (ed.): 460-160

The Birth of String Theory

String theory is currently the best candidate for a unified theory of all forces and all forms of matter in nature.
As such, it has become a focal point for physical and philosophical discussions.
This unique book explores the history of the theory's early stages of development, as told by its main protagonists.
The book journeys from the first version of the theory (the so-called dual resonance model) in the late sixties, as an attempt to describe the physics of strong interactions outside the framework of quantum field theory, to its reinterpretation around the mid-seventies as a quantum theory of gravity unified with the other forces, and its successive developments up to the superstring revolution in 1984.
Providing important background information to current debates on the theory, this book is essential reading for students and researchers in physics, as well as historians and philosophers of science.

Nov. 2011 550 pp.
9780521197908 9,540.

Cambridge

De Gruyter Studies in Mathematical Physics,

Vol. 1: Mironovsky, L. /Slaev, V.: 460-294

Strip-Method for Image and Signal Transformation

This work deals with the matrix methods of continuous signal and image processing according to which strip-transformation is used.
The authors suggest ways to solve a problem of evaluating potential noise immunity and synthesis of an optimal filter for the case of pulse noises, of applying the two-dimensional strip-transformation for storage and noise immune transmission of images.
The strip-transformation of images is illustrated by examples and classes of images invariant relative to symmetrical orthogonal transformations.
The monograph is intended for scientists and specialists whose activities are connected with computer signals and images processing, instrumentation and metrology.

Nov. 2011 160 pp.
9783110251920 15,110.

de Gruyter

EMS Series of Congress Report

Skowronski, A. /Yamagata Kunio (eds.): 460-086

Representations of Algebras and Related Topics

This book is concerned with recent trends in the representation theory of algebras and its exciting interaction with geometry, topology, commutative algebra, Lie algebras, combinatorics, quantum algebras, & theoretical physics. The collection of articles, written by leading researchers in the field, is conceived as a sort of handbook providing easy access to the present state of knowledge and stimulating further development.

The topics under discussion include quivers, quivers with potential, bound quiver algebras, Jacobian algebras, cluster algebras and categories, Calabi-Yau algebras and categories, triangulated and derived categories, quantum loop algebras, Nakajima quiver varieties, Yang-Baxter equations, T-systems and Y-systems, dilogarithm and quantum dilogarithm identities, stable module categories, localizing and colocalizing subcategories, cohomologies of groups, support varieties, fusion systems, Hochschild cohomologies, weighted projective lines, coherent sheaves, Kleinian and Fuchsian singularities, stable categories of vector bundles, nilpotent operators, Artin-Schelter regular algebras, Fano algebras, deformations of algebras, module varieties, degenerations of modules, ... algebras of small homological dimensions, Auslander-Reiten theory.

Sep. 2011 740 pp.
9783037191019 16,460.

Zurich Lectures in Advanced Mathematics

Nakanishi Kenji /Schlag, W.: 460-139

Invariant Manifolds and Dispersive Hamiltonian Evolution Equations

The notion of an invariant manifold arises naturally in the asymptotic stability analysis of stationary or standing wave solutions of unstable dispersive Hamiltonian evolution equations such as the focusing semilinear Klein-Gordon and Schrodinger equations.

This is due to the fact that the linearized operators about such special solutions typically exhibit negative eigenvalues (a single one for the ground state), which lead to exponential instability of the linearized flow and allows for ideas from hyperbolic dynamics to enter.

One of the main results proved here for energy subcritical equations is that the center-stable manifold associated with the ground state appears as a hypersurface which separates a region of finite-time blowup in forward time from one which exhibits global existence and scattering to zero in forward time.

Sep. 2011 258 pp.
9783037190951 6,380.

EMS Series of Lectures in Mathematics,

Vol. 15: **Carmeli, C. /Caston, L. /Fioresi, R.:** 460-107

Mathematical Foundations of Supesymmetry

The purpose of the book is to lay down the foundations of the subject, providing the reader with a comprehensive introduction to the language and techniques, as well as detailed proofs and many clarifying examples.

This book is aimed ideally at second-year graduate students.

After the first three introductory chapters, the text is divided into two parts: the theory of smooth supermanifolds and Lie supergroups, including the Frobenius theorem, and the theory of algebraic superschemes and supergroups.

Aug. 2011 300 pp.
9783037190975 7,060.

The European Mathematical Society

Stabilization of the Trace Formula, Shimura Varieties, and Arithmetic Applications,

Vol. 1: **Clozel, L. /Harris, M. /Labesse, J.-P. /Ngo, V.-C. (eds.):**
On the Stabilization of the Trace Formula

This is the first volume of a projected series of two or three collections of mainly expository articles on the arithmetic theory of automorphic forms. The books are intended primarily for two groups of readers. The first group is interested in the structure of automorphic forms on reductive groups over number fields, and specifically in qualitative information about the multiplicities of automorphic representations. The second group is interested in the problem of classifying l-adic representations of Galois groups of number fields. Langlands' conjectures elaborate on the notion that these two problems overlap to a considerable degree.

June 2011 **527 pp.** **460-060**
9781571462275 **12,100.**

Surveys in Differential Geometry,

Vol. 15: **Mrowka, T. /Yau, S.-T(eds.):**
Surveys in Differential Geometry, Vol. XV: Perspectives in Mathematics and Physics: Essays dedicated to Isadore Singer's 85th birthday

Table of Contents: *A shifted view of fundamental physics (Michael Atiyah and Gregory W. Moore) *Subgroups of depth three (Sebastian Burciu and Lars Kadison) *Yukawa couplings in F-theory and non-commutative geometry (Sergio Cecotti, Miranda C.N. Cheng, Jonathan J. Heckman, and Cumrun Vafa) *Operator traces and holography (Michael R. Douglas) *A loop of SU(2) gauge fields stable under the Yang-Mills flow (Daniel Friedan) *Automorphisms of graded super symplectic manifolds (Joshua Leslie) *The signature of the Seiberg-Witten surface (Andreas Malmendier) *Eta forms and the odd pseudodifferential families index (Richard Melrose and Frederic Rochon) *Anomaly constraints and string/F-theory geometry in 6D quantum gravity (Washington Taylor) *A new look at the path integral of quantum mechanics (Edward Witten) *Quasi-local mass in general relativity (Shing-Tung Yau) 459-224

Aug. 2011 **401 pp.**
9781571461452 **9,940.** **460-179**

Akbulut, S. /Auroux, D. /Onder, T. (eds.): **460-002**
Proceedings of the Gokova Geomtry-Topology Conference 2010

Lively and engaging articles from the lecturers and the participants of the 17th Gokova Geometry-Topology Conference, held on the shores of Gokova Bay, Turkey, in May of 2010.
This volume contains Bourgeois' notes from his mini-course on contact homology, and an expository article on the solution of the celebrated Arf-Kerviere invariant problem by Hill, Hopkins, and Ravenel, as well as some new research articles.

Table of Contents: Lectures on Symplectic and Contact Homology (F. Bourgeois) A solution to the Arf-Kervaire invariant problem (M. A. Hill, M. J. Hopkins and D. C. Ravenel) Degree one cohomology with twisted coefficients of the mapping class group (J. E. Andersen and R. Villemoes) Linear ordinary differential equations and Schubert calculus (B. Shapiro and M. Shapiro) Alexandrov meets Kirszbraun (S. Alexander, V. Kapovitch and A. Petrunin) On real determinantal quartics (A. Degtyarev and I. Itenberg) On the curvature of the real amoeba (M. Passare and J.-J. Risler) Nash homotopy spheres are standard (S. Akbulut)

May 2011 **148 pp.**
9781571462268 **6,430.**

International Press

Balaji, V. /Lakshmibai, V. /Murthy, P. /Nori, M. (eds.):
Collected Papers of C. S. Seshadri, Vol. 1 and 2

For the past fifty years, C.S. Seshadri has been a towering figure in the mathematical world, and his contributions have been central to the development of moduli problems and geometric invariant theory as well as representation theory of algebraic groups.
These two volumes of his collected papers have been organized in accordance with the subject matter, faithfully reflecting the diversity of his mathematical contributions.
Table of Contents *Volume 1: Vector Bundles and Invariant Theory
*Volume 2: Schubert Geometry and Representation Theory

Nov. 2011 1632 pp.
9789380250175 22,810.

Hindustan

Publications of the Scuola Normale Superiore /Lecture Notes,

Vol. 10: **Ambrosio, L. /Da Prato, G. /Mennucci, A.:**
Introduction to Measure Theory and Integration

The course was taught by the authors to undergraduate students of the Scuola Normale Superiore, in the years 2000-2011.
The goal of the course was to present, in a quick but rigorous way, the modern point of view on measure theory and integration, putting Lebesgue's Euclidean space theory into a more general context and presenting the basic applications to Fourier series, calculus and real analysis.
The text can also pave the way to more advanced courses in probability, stochastic processes or geometric measure theory.
Prerequisites for the book are a basic knowledge of calculus in one and several variables, metric spaces and linear algebra.
All results presented here, as well as their proofs, are classical.

Aug. 2011 198 pp.
9788876423857 4,030.

Publications of the Scuola Normale Superiore/CRM Series,

Vol. 12-2: **Costin, O, /**
Fauvet, F. /Menous, F. /Sauzin, D. (eds.):
Asymptotics in Dynamics, Geometry and PDEs:
Generalized Borel Summation;
Proceedings of the conference held in CRM Pisa, Vol. 2

These are the proceedings of a one-week international conference centered on asymptotic analysis and its applications.
They contain major contributions dealing with: mathematical physics: PT symmetry, perturbative quantum field theory, WKB analysis, local dynamics: parabolic systems, small denominator questions, new aspects in mould calculus, with related combinatorial Hopf algebras and application to multizeta values, a new family of resurgent functions related to knot theory.

Aug. 2011 274 pp.
9788876423765 4,870.

Vol. 12-1: **Costin, O. /**
Fauvet, F. /Menous, F. /Sauzin, D. (eds.):
Asymptotics in Dynamics, Geometry and PDEs:
Generalized Borel Simulation;
Proceedings of the conference held in CRM Pisa, 2009

Apr. 2011 258 pp.
9788876423741 4,870.

The Scuola Normale Superiore

Lecture Notes in Mathematics,

Vol. 2043: Otway, T.: 460-141

The Dirichlet Problem for Elliptic-Hyperbolic Equations of Keldysh Type

Partial differential equations of mixed elliptic-hyperbolic type arise in diverse areas of physics and geometry, including fluid and plasma dynamics, optics, cosmology, traffic engineering, projective geometry, geometric variational theory, and the theory of isometric embeddings. And yet even the linear theory of these equations is at a very early stage. This text examines various Dirichlet problems that can be formulated for Keldysh-type equations, one of the two main classes of linear elliptic-hyperbolic equations.
Open boundary conditions (in which data are prescribed on only part of the boundary) and closed boundary conditions (in which data are prescribed on the entire boundary) are both considered.
Emphasis is placed on the formulation of boundary conditions for which solutions can be shown to exist in an appropriate function space, and specific applications to plasma physics, optics, and analysis on projective spaces are discussed.

Dec. 2011 206 pp.
9783642244148 7,550.

Vol. 2042: Layton, W. /Rebholz, L.: 460-134

Approximate Deconvolution Models of Turbulence: Analysis, Phenomenology and Numerical Analysis

This volume presents a mathematical development of a recent approach to the modeling and simulation of turbulent flows based on methods for the approximate solution of inverse problems.
The resulting Approximate Deconvolution Models or ADMs have some advantages over more commonly used turbulence models - as well as some disadvantages.
Our goal in this book is to provide a clear and complete mathematical development of ADMs, while pointing out the difficulties that remain.
In order to do so, we present the analytical theory of ADMs, along with its connections, motivations and complements in the phenomenology of and algorithms for ADMs.

Dec. 2011 178 pp.
9783642244087 5,870.

Vol. 2040: Bertoluzza, S. /Nochetto, R. /Quarteroni, A. / Siebert, K. /Veeser, A. /Naldi, G. /Russo, G. (eds.):

Multiscale and Adaptivity: Modeling, Numerics and Applications; C.I.M.E.Summer School, Cetraro, Italy 2009 460-101

This book is a collection of lecture notes for the CIME course on "Multiscale and Adaptivity" held in Cetraro (Italy), in July 2009.
Complex systems arise in several physical, chemical, and biological processes, in which length and time scales may span several orders of magnitude. Traditionally, scientists have focused on methods that are particularly applicable in only one regime, and knowledge of the system on one scale has been transferred to another scale only indirectly.
Even with modern computer power, the complexity of such systems precludes their being treated directly with traditional tools, and new mathematical and computational instruments have had to be developed to tackle such problems.

Dec. 2011 318 pp.
9783642240782 11,750.

Springer

Goldfeld, D. /Jorgenson, J. /Jones, P. /
Ramakrishnan, D. /Ribet, K. /Tate, J. (eds.):
Number Theory, Analysis and Geometry:
In Memory of Serge Lang 460-068

Serge Lang was an iconic figure in mathematics, both for his own important work and for the indelible impact he left on the field of mathematics, on his students, and on his colleagues.
Over the course of his career, Lang traversed a tremendous amount of mathematical ground.
As he moved from subject to subject, he found analogies that led to important questions in such areas as number theory, arithmetic geometry and the theory of negatively curved spaces.
Lang's conjectures will keep many mathematicians occupied far into the future. In the spirit of Lang's vast contribution to mathematics, this memorial volume contains articles by prominent mathematicians in a variety of areas, namely number theory, analysis and geometry, representing Lang's own breadth of interests.
A special introduction by John Tate includes a brief and engaging account of Serge Lang's life.

Dec. 2011 683 pp.
9781461412595 26,870.

Universitext

Benenti, S.:
Hamiltonian Structures and Generating Families

This book is an enhanced version of an earlier Russian edition.
Besides thorough revisions, more emphasis was put on reordering the topics according to a category-theoretical view.
This allows the mathematical results to be stated, proved, and understood in a much easier and elegant way.
Sergio Benenti is a professor of mathematical physics at Universita di Torino.
His current fields of research include symplectic geometry with applications to physical theories, Riemannian geometry with applications to the theory of the separation of variables in the Hamilton-Jacobi equation and in other relevant differential equations of physics, and mathematical models of the dynamics of non-holonomic systems.

Oct. 2011 258 pp.
9781461414988 8,390. 460-100

Arapura, D.:
Algebraic Geometry Over the Complex Numbers

This textbook is a strong addition to existing introductory literature on algebraic geometry.
The author's treatment combines the study of algebraic geometry with differential and complex geometry and unifies these subjects using sheaf-theoretic ideas. 460-054
It is also an ideal text for showing students the connections between algebraic geometry, complex geometry, and topology, and brings the reader close to the forefront of research in Hodge theory and related fields.
Unique features of this textbook: - Contains a rapid introduction to complex algebraic geometry - Includes background material on topology, manifold theory and sheaf theory - Analytic and algebraic approaches are developed somewhat in parallel The presentation is easy going, elementary, and well illustrated with examples.

Feb. 2012 322 pp.
9781461418085 9,570.

Springer

Algebra and Applications,

Vol. 17: **Johnson, F.:** 460-075

Syzygies and Homotopy Theory

Syzygies and Homotopy Theory explores the problem of nonsimply connected homotopy in the first nontrivial cases and presents, for the first time, a systematic rehabilitation of Hilbert's method of syzygies in the context of non-simply connected homotopy theory.
The first part of the book is theoretical, formulated to allow a general finitely presented group as a fundamental group.
The innovation here is to regard syzygies as stable modules rather than minimal modules.

Dec. 2011 **281 pp.**
9781447122937 **13,430.**

Sengupta, A.: 460-085

Representing Finite Groups

This graduate textbook presents the basics of representation theory for finite groups from the point of view of semisimple algebras and modules over them.
The presentation interweaves insights from specific examples with development of general and powerful tools based on the notion of semisimplicity.
The elegant ideas of commutant duality are introduced, along with an introduction to representations of unitary groups.
The text progresses systematically and the presentation is friendly and inviting.

Dec. 2011 **366 pp.**
9781461412304 **10,070.**

Springer Monographs in Mathematics

DiBenedetto, E. /Gianazza, U. /Vespri, V.: 460-117

Harnack's Inequality for Degenerate and Singular Parabolic Equations

The authors give a comprehensive treatment of the Harnack inequality for nonnegative solutions to p-Laplace and porous medium type equations, both in the degenerate and in the singular range, starting from the notion of solution and building all the necessary technical tools.
The work is solely mathematical in nature and its aim is to introduce a novel set of tools and techniques that provide a better understanding of the notion of degeneracy and/or singularity in partial differential equations.

Dec. 2011 **278 pp.**
9781461415831 **12,590.**

SpringerBriefs in Mathematics

Dragomir, S.: 460-118

Operator Inequalities of the Jensen, Cebysev and Gruss Type

The main aim of this book is to present recent results concerning inequalities of the Jensen, Cebysev and Gruss type for continuous functions of bounded selfadjoint operators on complex Hilbert spaces.
In the introductory chapter, the author portrays fundamental facts concerning bounded selfadjoint operators on complex Hilbert spaces.
The generalized Schwarz's inequality for positive selfadjoint operators as well as some results for the spectrum of this class of operators are presented.

Nov. 2011 **128 pp.**
9781461415206 **8,390.**

Springer

Cvetkovski, Z.: 460-014

Inequalities:
Theorems, Techniques and Selected Problems

This work is about inequalities which play an important role with mathematical olympiads.
It contains 150 solved problems given as exercises and, in addition, 308 solved problems.
This book also covers the theoretical background of the most important theorems and techniques required to solve inequalities.

Dec. 2011 370 pp.
9783642237911 6,710.

Gupta, A. /Parikh, R. /van Benthem, J. /Pacuit, E. (eds.):

Logic at the Crossroads: 460-099
Proof, Computation and Agency Games, Norms and Reasons 2 Vols. Set

This book provides an overview of Logic and its relationship with other disciplines, and some of the emerging areas in terms.
The volume brings out an inspiring paradigm, called 'Social Software', the study of patterns of social interaction by means of techniques from logic and computer science.
Besides, it demonstrates how an extended view of logic can join forces with the social sciences, game theory or social choice theory, in studying patterns and procedures in social agency, and systematizing this field.

Sep. 2011 650 pp.
9789400709201 43,510.

Lagarias, J. (ed.):

The Kepler Conjecture: 460-177
The Hales-Ferguson Proof

This book centers around six papers, presenting the detailed proof of the Kepler conjecture given by Hales and Ferguson, published in 2006 in a special issue of Discrete & Computational Geometry.
Further supporting material is also presented: a follow-up paper of Hales et al (2010) revising the proof, and describing progress towards a formal proof of the Kepler conjecture.
For historical reasons, this book also includes two early papers of Hales that indicate his original approach to the conjecture.

Sep. 2011 456 pp.
9781461411284 10,070.

Algorithms and Combinatorics,

Vol. 27: Jukna, S.: 460-174

Boolean Function Complexity:
Advances and Frontiers

This book is a comprehensive description of basic lower bound arguments, covering many of the gems of this "complexity Waterloo" that have been discovered over the past several decades, right up to results from the last year or two. Many open problems, marked as Research Problems, are mentioned along the way.
The problems are mainly of combinatorial flavor but their solutions could have great consequences in circuit complexity and computer science.
The book will be of interest to graduate students and researchers in the fields of computer science and discrete mathematics.

Dec. 2011 621 pp.
9783642245077 10,910.

Springer

Joseph, A. /Kumar, S. /Vergne, M. (eds.): 460-027
Collected Papers of
Bertram Kostant, Vol. II: 1965-1975

For more than five decades Bertram Kostant has been one of the major architects of modern Lie theory. Virtually all his papers are pioneering with deep consequences, many giving rise to whole new fields of activities.
His interests span a tremendous range of Lie theory, from differential geometry to representation theory, abstract algebra, and mathematical physics.
Some specific topics cover algebraic groups and invariant theory, the geometry of homogeneous spaces, representation theory, geometric quantization and symplectic geometry, Lie algebra cohomology, Hamiltonian mechanics, modular forms, Whittaker theory, Toda lattice, and much more.

Apr. 2012 645 pp.
9780387095844 12,810.

Mathematiques et Applications,

Vol. 69: **Di Pietro, D. /Ern, A.:** 460-116
Mathematical Aspects of
Discontinuous Galerkin Methods

This book introduces the basic ideas for building discontinuous Galerkin methods and, at the same time, incorporates several recent mathematical developments. It is to a large extent self-contained and is intended for graduate students and researchers in numerical analysis.
The material covers a wide range of model problems, both steady and unsteady, elaborating from advection-reaction and diffusion problems up to the Navier-Stokes equations and Friedrichs' systems.
Both finite-element and finite-volume viewpoints are utilized to convey the main ideas underlying the design of the approximation.

Oct. 2011 390 pp.
9783642229794 15,110.

Selected Works in Probability and Statistics

Dudoit, S. (ed.): 460-202
Selected Works of Terry Speed

The purpose of this volume is to provide an overview of Terry Speed's contributions to statistics and beyond.
Each of the fifteen chapters concerns a particular area of research and consists of a commentary by a subject-matter expert and selection of representative papers. The chapters, organized more or less chronologically in terms of Terry's career, encompass a wide variety of mathematical and statistical domains, along with their application to biology and medicine.

Dec. 2011 600 pp.
9781461413462 25,190.

van de Geer, S. /Wegkamp, M. (eds.):
Selected Works of Willem van Zwet

With this collections volume, some of the important works of Willem van Zwet are moved to the front layers of modern statistics.
The selection was based on discussions with Willem, and aims at a representative sample.
The result is a collection of papers that the new generations of statisticians should not be denied. 460-227

Dec. 2011 460 pp.
9781461413134 13,430.

Springer