Yurinsha Book News

466-127

Hirsch, M. /Smale, S. /Devaney, R.:

Differential Equations, Dynamical Systems, and An Introduction to Chaos, 3rd ed.

Hirsch, Devaney, and Smale's classic Differential Equations, Dynamical Systems, and an Introduction to Chaos has been used by professors as the primary text for undergraduate and graduate level courses covering differential equations.
It provides a theoretical approach to dynamical systems and chaos written for a diverse student population among the fields of mathematics, science, and engineering.
Prominent experts provide everything students need to know about dynamical systems as students seek to develop sufficient mathematical skills to analyze the types of differential equations that arise in their area of study.
The authors provide rigorous exercises and examples clearly and easily by slowly introducing linear systems of differential equations.
Calculus is required as specialized advanced topics not usually found in elementary differential equations courses are included, such as exploring the world of discrete dynamical systems and describing chaotic systems.

Mar. 2012 432 pp.
9780123820105 11,890.

Academic

http://www.yurinsha.com
ホームページは毎月25日更新予定です

No. 466 Apr. 2012
数理科学 友隣社 洋書専門

Graduate Studies in Mathematics,

Vol. 135: Cherrier, P. /Milani, A.: 466-114

Linear and Quasi -Linear Evolution Equations in Hilbert Spaces

This book considers evolution equations of hyperbolic and parabolic type. These equations are studied from a common point of view, using elementary methods, such as that of energy estimates, which prove to be quite versatile. The authors emphasize the Cauchy problem and present a unified theory for the treatment of these equations.
In particular, they provide local and global existence results, as well as strong well-posedness and asymptotic behavior results for the Cauchy problem for quasi-linear equations.
Solutions of linear equations are constructed explicitly, using the Galerkin method; the linear theory is then applied to quasi-linear equations, by means of a linearization and fixed-point technique.
The authors also compare hyperbolic and parabolic problems, both in terms of singular perturbations, on compact time intervals, and asymptotically, in terms of the diffusion phenomenon, with new results on decay estimates for strong solutions of homogeneous quasi-linear equations of each type.

Aug. 2012 378 pp.
9780821875766 8,920.

Mathematical Surveys and Monographs,

Vol. 182: Watson, N.: 466-165

Introduction to Heat Potential Theory

This book is the first to be devoted entirely to the potential theory of the heat equation, and thus deals with time dependent potential theory. Its purpose is to give a logical, mathematically precise introduction to a subject where previously many proofs were not written in detail, due to their similarity with those of the potential theory of Laplace's equation.
The approach to subtemperatures is a recent one, based on the Poisson integral representation of temperatures on a circular cylinder. Characterizations of subtemperatures in terms of heat balls and modified heat balls are proved, and thermal capacity is studied in detail.
The generalized Dirichlet problem on arbitrary open sets is given a treatment that reflects its distinctive nature for an equation of parabolic type.

May 2012 266 pp.
9780821849989 10,230.

Vol. 181: Leuschke, G. /Wiegand, R.: 466-080

Cohen-Macaulay Representations

This book is a comprehensive treatment of the representation theory of maximal Cohen-Macaulay (MCM) modules over local rings.
This topic is at the intersection of commutative algebra, singularity theory, and representations of groups and algebras.
Two introductory chapters treat the Krull-Remak-Schmidt Theorem on uniqueness of direct-sum decompositions and its failure for modules over local rings. Chapters 3-10 study the central problem of classifying the rings with only finitely many indecomposable MCM modules up to isomorphism, i.e., rings of finite CM type.
The fundamental material—ADE/simple singularities, the double branched cover, Auslander-Reiten theory, and the Brauer-Thrall conjectures—is covered clearly and completely.

June 2012 367 pp.
9780821875810 11,420.

A. M. S.

Student Mathematical Library,

Vol. 64: Sossinsky, A.:

466-042

Geometries

The book is an innovative modern exposition of geometry, or rather, of geometries; it is the first textbook in which Felix Klein's Erlangen Program (the action of transformation groups) is systematically used as the basis for defining various geometries.
The course of study presented is dedicated to the proposition that all geometries are created equal--although some, of course, remain more equal than others.

June 2012 301 pp.
9780821875711 5,710.

Vol. 63: Pereyra, M. /Ward, L.:

466-034

Harmonic Analysis: From Fourier to Wavelets

In this book, the authors convey the remarkable beauty and applicability of the ideas that have grown from Fourier theory.
They present for an advanced undergraduate and beginning graduate student audience the basics of harmonic analysis, from Fourier's study of the heat equation, and the decomposition of functions into sums of cosines and sines (frequency analysis), to dyadic harmonic analysis, and the decomposition of functions into a Haar basis (time localization).
While concentrating on the Fourier and Haar cases, the book touches on aspects of the world that lies between these two different ways of decomposing functions: time-frequency analysis (wavelets).

June 2012 411 pp.
9780821875667 6,900.

Contemporary Mathematics,

Vol. 569: Goryunov, V. /Houston, K. /Wik-Atique, R. (eds.):

Real and Complex Singularities

Articles in the first part cover pure singularity theory: invariants, classification theory, and Milnor fibres. 466-125
Articles in the second part cover singularities in topology and differential geometry, as well as algebraic geometry and bifurcation theory:
Artin-Greenberg function of a plane curve singularity, metric theory of singularities, symplectic singularities, cobordisms of fold maps, Goursat distributions, sections of analytic varieties, Vassiliev invariants, projections of hypersurfaces, and linearity of the Jacobian ideal.

June 2012 202 pp.
9780821853597 8,810.

Vol. 566: Campillo, A. /Cardona, G. /Melle-Hernandez, A. / Veys, W. / Zuniga-Galindo, W. (eds.):

Zeta Functions in Algebra and Geometry

Zeta functions can be naturally attached to several mathematical objects, including fields, groups, and algebras.
The conference focused on the following topics: arithmetic and geometric aspects of local, topological, and motivic zeta functions, Poincare series of valuations, zeta functions of groups, rings, and representations, prehomo-geneous vector spaces and their zeta functions, and height zeta functions. 466-068

This book is published in cooperation with Real Sociedad Matematica Espanola (RSME).

May 2012 347 pp.
9780821869000 12,850.

A. M. S.

Contemporary Mathematics

Vol. 568: Reich, S. /Zaslavski, A. (eds.): 466-251
Optimization Theory and Related Topics
This volume contains the proceedings of the workshop on Optimization Theory and Related Topics, held in memory of Dan Butnariu, 2010, in Haifa. An active researcher in various fields of applied mathematics, Butnariu published over 80 papers. His extensive bibliography is included in this volume. The articles in this volume cover many different areas of Optimization Theory and its applications: maximal monotone operators, sensitivity estimates via Lyapunov functions, inverse Newton transforms, infinite-horizon Pontryagin principles, singular optimal control problems with state delays, descent methods for mixed variational inequalities, games on MV-algebras, ergodic convergence in subgradient optimization, applications to economics and technology planning, the exact penalty property in constrained optimization, nonsmooth inverse problems, Bregman distances, retraction methods in Banach spaces, and iterative methods for solving equilibrium problems.
May 2012 280 pp.
9780821869086 11,540.

A. M. S.

Handbook of Statistics,

Vol. 27: Rao, C. /Chakraborty, R. /Sen, P. (eds.):
Bioinformatics 466-037
The field of statistics not only affects all areas of scientific activity, but also many other matters such as public policy. It is branching rapidly into so many different subjects that a series of handbooks is the only way of comprehensively presenting the various aspects of statistical methodology, applications, and recent developments.
The Handbook of Statistics, a series of self-contained reference books. Each volume is devoted to a particular topic in statistics with Volume 28 dealing with bioinformatics. Every chapter is written by prominent workers in the area to which the volume is devoted.
The series is addressed to the entire community of statisticians and scientists in various disciplines who use statistical methodology in their work.
Aug. 2012 << Nov. 2007 712 pp.<< 190 pp.
9780444518750 29,750.

North Holland/Academic

Ernst, T.: 466-072
A Comprehensive Treatment of q -Calculus
Generally, the bulky Gasper-Rahman notation was used, but the published works on q-calculus looked different depending on where and by whom they were written.
This confusion of tongues not only complicated the theoretical development but also contributed to q-calculus remaining a neglected mathematical field.
This book overcomes these problems by introducing a new and interesting notation for q-calculus based on logarithms.
For instance, q-hypergeometric functions are now visually clear and easy to trace back to their hypergeometric parents.
With this new notation it is also easy to see the connection between q-hypergeometric functions and the q-gamma function, something that until now has been overlooked.
July 2012 490 pp.
9783034804301 15,000.

Birkhauser

Science Networks, Historical Studies,

Vol. 45: Hinkis, A.: 466-021

Proofs of the Cantor-Bernstein Theorem: A Mathematical Excursion

The scenic route passes through some 40 papers, published between the 1870s to the 1970s, on proofs of the Cantor-Bernstein theorem and the related Bernstein division theorem.
While the emphasis is placed on providing accurate proofs, similar to the originals, the discussion is broadened to include aspects that pertain to the methodology of the development of mathematics and to the philosophy of mathematics.

June 2012 398 pp.
9783034802239 14,280.

Kubrusly, C.: 466-131

Spectral Theory of Operators on Hilbert Space

This work is intended to provide a concise introduction to spectral theory of Hilbert space operators. With an emphasis on recent aspects of theory and detailed proofs, it can serve as a modern textbook for a first graduate course in the subject. The coverage of topics is thorough, exploring various intricate points and hidden features often left untreated.
The book begins with a primer on Hilbert space theory, summarizing the basics required for the remainder of the book and establishing unified notation and terminology. After this, standard spectral results for operators on Banach and Hilbert spaces, including the classical partition of the spectrum and spectral properties for specific classes of operators, are discussed.

June 2012 200 pp.
9780817683276 7,890.

Advanced Courses in Mathematics - CRM Barcelona

Citti, G. /Grafakos, L. /Perez, C. /Sarti, A. /Zhong, X.:

Harmonic and Geometric Analysis

The first one is an application of harmonic analysis and the Heisenberg group to understand human vision. 466-116
The second and third series of lectures cover some of the main topics on linear and multilinear harmonic analysis.
The last one is a nice introduction to a deep result of De Giorgi, Moser and Nash on regularity of elliptic partial differential equations in divergence form.

Sep. 2012 190 pp.
9783034804073 3,940.

Advances in Mathematical Fluid Mechanics

Necasova, S. /Pokorny, M. /Sverak, V. (eds.): 466-147

Selected Works of J. Necas: PDE, Continuum Mechanics and Regularity

The book will contain the most significant published papers which wee written by outstanding Czech mathematician Jindrich Necas.
First paper will be devoted to the linear theory of partial differential equations. Second part will be concerned with the regularity for nonlinear partial differential equations. Third part will be devoted to the nonlinear functional analysis and last part will contain mathematical theory of models describing mechanics of solids and fluids.

July 2012 700 pp.
9783034802307 20,530.

Birkhauser

Kythe, D. /Kythe, K.: 466-203

Algebraic and Stochastic Coding Theory

Using a simple yet rigorous approach, this book makes the subject of coding theory easy to understand for readers with a thorough knowledge of digital arithmetic, Boolean and modern algebra, and probability theory.
It explains the underlying principles of coding theory and offers a clear, detailed description of each code.
More advanced readers will appreciate its coverage of recent developments in coding theory and stochastic processes.
After a brief review of coding history and Boolean algebra, the book introduces linear codes, including Hamming and Golay codes.
It then examines codes based on the Galois field theory as well as their application in BCH and especially the Reed-Solomon codes that have been used for error correction of data transmissions in space missions.

Mar. 2012 512 pp.
9781439881811 11,130.

Argyros, I. /Cho, Y. /Hilout, S.: 466-102

Numerical Methods for Equations and Its Applications

This book introduces advanced numerical-functional analysis to beginning computer science researchers. The reader is assumed to have had basic courses in numerical analysis, computer programming, computational linear algebra, and an introduction to real, complex, and functional analysis.
Although the book is of a theoretical nature, each chapter contains several new theoretical results and important applications in engineering, in dynamic economics systems, in input-output system, in the solution of nonlinear and linear differential equations, and optimization problem.

June 2012 475 pp.
9781578087532 11,130.

Chapman & Hall/CRC Finance Series

Wang, H.: 466-221

Monte Carlo Simulation with Applications to Finance

Exploring the use of Monte Carlo simulation in finance, this text reviews the essential mathematics and presents simple financial models.
Beginning with the basics of Monte Carlo, the author gradually introduces advanced variance reduction techniques, covering such topics as importance sampling and stratified sampling.

June 2012 296 pp.
9781439858240 9,600.

Discrete Mathematics and Its Applications

Mansour, T.: 466-081

Combinatorics of Set Partitions

It presents a complete survey of the field, open problems, and recent results in set partitions and pattern matching.
The book examines the advantages and drawbacks of various solution techniques and approaches.
It includes exercises, applications, and Maple and C++ code.
Ideal for researchers and students in combinatorics, the book is also suitable for computer science researchers who are involved in discrete mathematics applications.

Sep. 2012 606 pp.
9781439863336 12,290.

C R C Press

Cambridge Tracts in Mathematics,

Vol. ***: **Bugeaud, Y.:** 466-066

Distribution Modulo One and Diophantine Approximation

This book presents state-of-the-art research on the distribution modulo one of sequences of integral powers of real numbers and related topics. Most of the results have never before appeared in one book and many of them were proved only during the last decade.
Topics covered include the distribution modulo one of the integral powers of 3/2 and the frequency of occurrence of each digit in the decimal expansion of the square root of two.
The author takes a point of view from combinatorics on words and introduces a variety of techniques, including explicit constructions of normal numbers, Schmidt's games, Riesz product measures and transcendence results.

Sep. 2012 **320 pp.**
9780521111690 **8,560.**

Vol. 135: **Miwa, T. /Jimbo, M. /Date, E.:** Translated by Reid, M.:
Solitons: (Now in Paperback ed.)
Differential Equations, Symmetries and Infinite Dimensional Algebras
Apr. 2012 **118 pp.** 詳報掲載 **No. 143**
9781107404199 **3,750.**
(Hardback) 9780521561617 Dec. 1999 8,880.

Cambridge Studies in Advanced Mathematics,

Vol. 135: **Maggi, F.:** 466-141

Sets of Finite Perimeter and Geometric Variational Problems

The marriage of analytic power to geometric intuition drives many of today's mathematical advances, yet books that build the connection from an elementary level remain scarce.
This engaging introduction to geometric measure theory bridges analysis and geometry, taking readers from basic theory to some of the most celebrated results in modern analysis.
The theory of sets of finite perimeter provides a simple and effective framework.
Topics covered include existence, regularity, analysis of singularities, characterization and symmetry results for minimizers in geometric variational problems, starting from the basics about Hausdorff measures in Euclidean spaces and ending with complete proofs of the regularity of area-minimizing hypersurfaces up to singular sets of codimension 8.

Sep. 2012 **456 pp.**
9781107021037 **8,030.**

Perea, A.: 466-032/033

Epistemic Game Theory

In everyday life we must often reach decisions while knowing that the outcome will not only depend on our own choice, but also on the choices of others. These situations are the focus of epistemic game theory.
Unlike classical game theory, it explores how people may reason about their opponents before they make their final choice in a game.
Packed with examples and practical problems based on stories from everyday life, this is the first textbook to explain the principles of epistemic game theory. Each chapter is dedicated to one particular, natural way of reasoning.

June 2012 **450 pp.**
9781107008915/9781107401396 **12,300./5,030. (Paper ed.)**

Cambridge

EMS Series of Lectures in Mathematics,

Vol. 16: **Triebel, H.:** 466-163

Faber Systems and Their Use in Sampling, Discrepancy, Numerical Integration

This book deals first with Haar bases, Faber bases and Faber frames for weighted function spaces on the real line and the plane.
It extends results in the author's book, "Bases in Function Spaces, Sampling, Discrepancy, Numerical Integration," (EMS, 2010) from unweighted spaces (preferably in cubes) to weighted spaces.
The obtained assertions are used to study sampling and numerical integration in weighted spaces on the real line and weighted spaces with dominating mixed smoothness in the plane.
A short chapter deals with the discrepancy for spaces on intervals.
Table of Contents: *Introduction, definitions, basic assertions *Spaces on intervals *Spaces on the real line *Spaces on the plane *Bibliography *Symbols *Index

May 2012 **115 pp.**
9783037191071 **4,420.**

New Series: *The QGM Master Class Series*

Vol. 2: **Mazorchuk, V.:** 466-082

Lectures on Algebraic Categorification

The term "categorification" was introduced by Louis Crane in 1995 and refers to the process of replacing set-theoretic notions by the corresponding category-theoretic analogues.
This text mostly concentrates on algebraical aspects of the theory, presented in the historical perspective, but also contains several topological applications, in particular, an algebraic (or, more precisely, representation-theoretical) approach to categorification.
It consists of fifteen sections corresponding to fifteen one-hour lectures given during a Master Class at Aarhus University, Denmark in October 2010.
There are some exercises collected at the end of the text and a rather extensive list of references.

Mar. 2012 **128 pp.**
9783037191088 **4,420.**

Vol. 1: **Penner, R.:**

Decorated Teichmuller Theory

Jan. 2012 *380 pp.* *9783037190753* *9,160.*

The European Mathematical Society

Silverman, J.: 466-094

A Friendly Introduction to Number Theory, 4th ed.

This book is designed to introduce readers to the overall themes and methodology of mathematics through the detailed study of one particular facet-number theory.
Starting with nothing more than basic high school algebra, readers are gradually led to the point of actively performing mathematical research while getting a glimpse of current mathematical frontiers.
The writing is appropriate for the undergraduate audience and includes many numerical examples, which are analyzed for patterns and used to make conjectures. Emphasis is on the methods used for proving theorems rather than on specific results.

Jan. 2012 **409 pp.**
9780321816191 **15,760.**

Prentice Hall

New Series: *Differential-Algebraic Equations Forum*

Lamour, R. /Marz, R. /Tischendorf, C.: 466-134

Differential-Algebraic Equations: A Projector Based Analysis

Differential algebraic equations (DAEs), including so-called descriptor systems, began to attract significant research interest in applied and numerical mathematics in the early 1980's, no more than about three decades ago.
In this relatively short time, DAEs have become a widely acknowledged tool to model processes subjected to constraints, in order to simulate and to control processes in various application fields such as network simulation, chemical kinematics, mechanical engineering, system biology.
DAEs and their more abstract versions in infinite-dimensional spaces comprise a great potential for future mathematical modeling of complex coupled processes.
The purpose of the book is to expose the impressive complexity of general DAEs from an analytical point of view, to describe the state of the art as well as open problems and so to motivate further research to this versatile, extra-ordinary topic from a broader mathematical perspective.

Apr. 2012 **600 pp.**
9783642275548 **14,060.**

Lecture Notes in Mathematics,

Vol. 2052: **Morel, F.:** 466-084

A 1 Algebraic Topology over a Field

This volume deals with A 1-homotopy theory over a base field.
It is a natural sequel to the foundational paper on A 1-homotopy theory written together with V. Voevodsky.
Inspired by classical algebraic topology, we present new techniques, new results and applications related to A 1-homotopy sheaves, A 1-homology sheaves, sheaves with generalized transfers and algebraic vector bundles.
Table of contents: 1 Introduction.- 2 Unramified sheaves and strongly A1-invariant-sheaves.- 3 Unramified Milnor-Witt K-theories.- 4 Geometric versus canonical transfers.- 5 The Rost-Schmid complex of a strongly A1-invariant sheaf.- 6 A1-homotopy sheaves and A1-homology sheaves.- 7 A1-coverings.- 8 A1-homotopy and algebraic vector bundles.- 9 The affine B.G. property for the linear groups and the Grassmanian

July 2012 **310 pp.**
9783642295133 **7,100.**

Vol. 2051: **Rivasseau, V. /Seiringer, R. /** 466-296
Solovej, J. /Spencer, T. (eds.):

Quantum Many Body Systems: Cetraro, Italy 2010

The book is based on the lectures given at the CIME school "Quantum many body systems" held in the summer of 2010.
It provides a tutorial introduction to recent advances in the mathematics of interacting systems, written by four leading experts in the field: V. Rivasseau illustrates the applications of constructive Quantum Field Theory to 2D interacting electrons and their relation to quantum gravity; R. Seiringer describes a proof of Bose-Einstein condensation in the Gross-Pitaevski limit and explains the effects of rotating traps and the emergence of lattices of quantized vortices; J.-P. Solovej gives an introduction to the theory of quantum Coulomb systems and to the functional analytic methods used to prove their thermodynamic stability; finally, T. Spencer explains the supersymmetric approach to Anderson localization and its relation to the theory of random matrices.

July 2012 **190 pp.**
9783642295102 **6,310.**

Springer

Universitext

Bordelles, O.: (Originally published by Edition Marketing S.A, 2006)

Arithmetic Tales

466-064

Classical methods in analytic theory such as Mertens' theorem and Chebyshev's inequalities and the celebrated Prime Number Theorem give estimates for the distribution of prime numbers.
Later on, multiplicative structure of integers leads to multiplicative arithmetical functions for which there are many important examples in number theory. Their theory involves the Dirichlet convolution product which arises with the inclusion of several summation techniques and a survey of classical results such as Hall and Tenenbaum's theorem and the Mobius Inversion Formula.
Another topic is the counting integer points close to smooth curves and its relation to the distribution of squarefree numbers, which is rarely covered in existing texts.
Final chapters focus on exponential sums and algebraic number fields.

July 2012 **520 pp.**
9781447140955 **9,470.**

Coleman, R.: 466-117

Calculus on Normed Vector Spaces

This book serves as an introduction to calculus on normed vector spaces at a higher undergraduate or beginning graduate level.
The prerequisites include basic calculus and linear algebra, as well as a certain mathematical maturity.
All the important topology and functional analysis topics are introduced where necessary.
In its attempt to show how calculus on normed vector spaces extends the basic calculus of functions of several variables, this book is one of the few textbooks to bridge the gap between the available elementary texts and high level texts.
The inclusion of many non-trivial applications of the theory and interesting exercises provides motivation for the reader.

July 2012 **178 pp.**
9781461438939 **6,310.**

Springer Undergraduate Mathematics

Barreira, L. /Valls, C.: Original Portugese edition published by IST Press, Portugal (2010)

Complex Analysis and Differential Equations

This text provides an accessible, self-contained and rigorous introduction to complex analysis and differential equations. 466-106
Topics covered include holomorphic functions, Fourier series, ordinary and partial differential equations.
The text is divided into two parts: part one focuses on complex analysis and part two on differential equations.
Each part can be read independently, so in essence this text offers two books in one.
In the second part of the book, some emphasis is given to the application of complex analysis to differential equations.
Half of the book consists of approximately 200 worked out problems, carefully prepared for each part of theory, plus 200 exercises of variable levels of difficulty.
Tailored to any course giving the first introduction to complex analysis or differential equations, this text assumes only a basic knowledge of linear algebra and differential and integral calculus.

May 2012 **394 pp.**
9781447140078 **5,520.**

Springer

Applied Mathematical Sciences,

Vol. 181: Han, M. /Yu, P.:
Normal Forms, Melnikov Functions and Bifurcations of Limit Cycles
466-126

Hopf bifurcation from a center or a focus is integral to the theory of bifurcation of limit cycles, for which normal form theory is a central tool. Although Hopf bifurcation has been studied for more than half a century, and normal form theory for over 100 years, efficient computation in this area is still a challenge with implications for Hilbert's 16th problem. This book introduces the most recent developments in this field and provides major advances in fundamental theory of limit cycles.
Split into two parts, the first focuses on the study of limit cycles bifurcating from Hopf singularity using normal form theory with later application to Hilbert's 16th problem, while the second considers near Hamiltonian systems using Melnikov function as the main mathematical tool.

May 2012 376 pp.
9781447129172 15,000.

Springer Series in Statistics

Aoki Satoshi /Hara Hisayuki /Takemura Akimichi :
Markov Bases in Algebraic Statistics

Algebraic statistics is a rapidly developing field, where ideas from statistics and algebra meet and stimulate new research directions. One of the origins of algebraic statistics is the work by Diaconis and Sturmfels in 1998 on the use of Grobner bases for constructing a connected Markov chain for performing conditional tests of a discrete exponential family. 466-059
In this book we take up this topic and present a detailed summary of developments following the seminal work of Diaconis and Sturmfels. This book is intended for statisticians with minimal backgrounds in algebra. As we ourselves learned algebraic notions through working on statistical problems and collaborating with notable algebraists, we hope that this book with many practical statistical problems is useful for statisticians to start working on the field.

June 2012 290 pp.
9781461437185 12,630.

Int'l Series in Operations Research & Management Science,

Vol. 171: Borkar, V. /Ejov, V. /Filar, J. /Nguyen, G.:
Hamiltonian Cycle Problem and Markov Chains

This research monograph summarizes a line of research that maps certain classical problems of discrete mathematics and operations research - such as the Hamiltonian cycle and the Travelling Salesman problems - into convex domains where continuum analysis can be carried out.
Arguably, the inherent difficulty of these, now classical, 466-192
problems stems precisely from the discrete nature of domains in which these problems are posed.
The convexification of domains underpinning the reported results is achieved by assigning probabilistic interpretation to key elements of the original deterministic problems.
In particular, approaches summarized here build on a technique that embeds Hamiltonian Cycle and Traveling Salesman problems in a structured singularly perturbed Markov decision process.

Mar. 2012 199 pp.
9781461432319 15,790.

Springer

Pure and Applied Mathematics

Bridger, M.: 466-110

Real Analysis: A Constructive Approach

This innovative text sets forth a thoroughly rigorous modern account of the theoretical underpinnings of calculus: continuity, differentiability, and convergence.
Using a constructive approach, every proof of every result is direct and ultimately computationally verifiable.
In particular, existence is never established by showing that the assumption of non-existence leads to a contradiction.
The ultimate consequence of this method is that it makes sense --- not just to math majors but also to students from all branches of the sciences.
Examples throughout the text demonstrate the application of new concepts.
Readers can test their own skills with problems and projects ranging in difficulty from basic to challenging.

Apr. 2012 **320 pp.**
9781118357064 **7,130.**

Wiley Series in Probability and Statistics

Rencher, A.: 466-213

Methods of Multivariate Analysis, 3rd ed.

This new edition, now with a co-author, offers a complete and up-to-date examination of the field.
The authors have streamlined previously tedious topics, such as multivariate regression and MANOVA techniques, to add newer, more timely content.
Each chapter contains exercises, providing readers with the opportunity to test and extend their understanding.
The new edition also presents several expanded topics in Kronecker product; prediction errors; maximum likelihood estimation; and selective key, but accessible proofs.
This resource meets the needs of both statistics majors and those of students and professionals in other fields.
Review "... a systematic, well-written text...there is much practical wisdom in this book that is hard to find elsewhere. It belongs in serious data analysts' libraries..."
(IIE Transactions-Quality and Reliability Engineering, November 2005)

Sep. 2012 **800 pp.**
9780470178966 **14,280.**

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de Rocquigny, E.: 466-224

Modelling Under Risk and Uncertainty: An Introduction to Statistical, Phenomenological and Computational Methods

Modelling Under Risk and Uncertainty goes beyond the 'black-box' view that some risk analysts or statisticians develop the underlying phenomenology of the environmental or industrial processes, without valuing enough their physical properties and inner modelling potential; conversely it is also to attract environmental or engineering modellers to more elaborate statistical and risk analysis material beyond for example, elementary variance analysis, taking advantage of advanced scientific computing, to face new regulations departing from deterministic design or decision-making.
Modelling Under Risk and Uncertainty: *Addresses a concern of growing interest for large industries or environmentalists: risk and uncertainty in complex systems.

May 2012 **488 pp.**
9780470695142 **13,680.**

Wiley

Suwa Tatsuo : 466-219

Complex Analytic Geometry

Complex Analytic Geometry is one of the most important fields of Mathematics. It has a long history that culminated in the Cauchy integral formula in the 19th century. The theory was vastly developed and closely related to many other fields of Mathematics as well as the Sciences, where numerous applications have been found.
This book starts off with the basic material, introducing characteristic classes mainly via the Chern-Weil theory, explaining the idea of localization of characteristic classes and presenting the aforementioned invariants and relations in a unified way from this perspective.
Its exposition is carried out in a self-containing manner. Recent developments are also discussed. The profound consequences of this subject will make the book useful for mathematical students on fields as diverse as Algebraic Geometry, Differential Geometry, Topology, Complex Dynamical Systems and Mathematical Physics.

June 2012 **300 pp.**
9789814374705 **13,090.**

Hibi Takayuki (ed.): 466-076

Harmony of Grobner Bases and the Modern Industrial Society: The Second CREST- SBM International Conference

This volume consists of research papers and expository survey articles presented by the invited speakers of the conference on Harmony of Grobner Bases and the Modern Industrial Society .
Topics include computational commutative algebra, algebraic statistics, algorithms of D-modules and combinatorics.
Contents: Polyhedral Approach to Statistical Learning Graphical Models Implementation of a Primary Decomposition Package Computing Tropical Resultants Running Markov Chain Without Markov Basis Incomplete A-Hypergeometric Systems Degree Bounds for a Minimal Markov Basis for the Three-State Toric Homogeneous Markov Chain Model

Mar. 2012 **500 PP.**
9789814383455 **21,420.**

World Scientific Series on Nonlinear Science Series, A:

Avrutin, V. /Gardini, L. / 466-103
Schanz, M. /Sushko, I. /Tramontana, F.:

Continuous and Discontinuous Piecewise - Smooth One -Dimensional Maps: Invariant Sets and Bifurcation Structures

Although the dynamic behavior of piecewise-smooth systems is still far from being understood completely, some significant results in this field have been achieved in the last twenty years.
The investigation of these systems is important not only because they represent adequate models for many applications ranging from mechanical and electrical engineering up to financial markets, but also due to the importance of the phenomena observed in other types of dynamical systems as well.
It is natural, therefore, to begin the analysis with the most simple subclass of piecewise-smooth systems (namely one-dimensional maps) for which many phenomena can be investigated much more easily than for higher-dimensional systems.

Aug. 2012 **400 pp.**
9789814368827 **14,280.**

World Scientific Publishing

466-177

Leung, N. /Yau, S.-T. (eds.):
Surveys in Differential Geometry, Vol. 2011: Geometry of special holonomy and related topics

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