

# Yurinsha Book News

*Springer Undergraduate Mathematics*

**Cox,D. /Little,J. /O'Shea,D.:** 495-047

## **Ideals, Varieties, and Algoritms:**

An Introduction to Computational Algebraic Geometry  
and Commutative Algebra, 4th ed.

The first four chapters form the core of the book.

A comprehensive chart in the Preface illustrates a variety of ways to proceed with the material once these chapters are covered.

In addition to the fundamentals of algebraic geometry --- the elimination theorem, the extension theorem, the closure theorem and the Nullstellensatz --- this new edition incorporates several substantial changes, all of which are listed in the Preface.

The largest revision incorporates a new Chapter (ten), which presents some of the essentials of progress made over the last decades in computing Grobner bases.

The book also includes current computer algebra material in Appendix C and updated independent projects (Appendix D).

"I consider the book to be wonderful. ... The exposition is very clear, there are many helpful pictures and there are a great many instructive exercises, some quite challenging ... offers the heart and soul of modern commutative and algebraic geometry."

- The American Mathematical Monthly

Apr.2015  
9783319167206

641 pp.  
9,900.

**Springer**

<http://www.yurinsha.com>

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**No. 495      May - June 2015**

敬理科学 **友隣社** 洋書専門

Lehto, O.:

495-027

**Lars Ahlfors****—at the Summit of Mathematics**

Already at the age of twenty-one Ahlfors became a well-known mathematician having solved Denjoy's conjecture, and in 1936 he established his world renown when he was awarded the Fields Medal, the "Nobel Prize in mathematics".

In this book the description of his mathematics avoids technical details and concentrates on his contributions to the general development of complex analysis.

July 2015

122 pp.

9781470418465

7,100.

*Mathematical Surveys and Monographs,*

**Vol. 205: Etingof, T. / Gelaki, S. / Nikshych, D. / Ostrik, V.:**  
**Tensor Categories**

495-071

Is there a vector space whose dimension is the golden ratio?

Of course not—the golden ratio is not an integer! But this can happen for generalizations of vector spaces—objects of a tensor category.

The theory of tensor categories is a relatively new field of mathematics that generalizes the theory of group representations.

It has deep connections with many other fields, including representation theory, Hopf algebras, operator algebras, low-dimensional topology (in particular, knot theory), homotopy theory, quantum mechanics and field theory, quantum computation, theory of motives, etc.

This book gives a systematic introduction to this theory and a review of its applications. While giving a detailed overview of general tensor categories, it focuses especially on the theory of finite tensor categories and fusion categories, and discusses the main results about them with proofs. In particular, it shows how the main properties of finite-dimensional Hopf algebras may be derived from the theory of tensor categories.

July 2015

350 pp.

9781470420246

20,020.

**Vol. 202: Artstein-Avidan, S. / Giannopoulos, A. / Milman, V.:**  
**Asymptotic Geometric Analysis, Part 1**

The authors present the theory of asymptotic geometric analysis, a field which lies on the border between geometry and functional analysis.

In this field, isometric problems that are typical for geometry in low dimensions are substituted by an "isomorphic" point of view, and an asymptotic approach (as dimension tends to infinity) is introduced. Geometry and analysis meet here in a non-trivial way.

Basic examples of geometric inequalities in isomorphic form which are encountered in the book are the "isomorphic isoperimetric inequalities" which led to the discovery of the "concentration phenomenon", one of the most powerful tools of the theory, responsible for many counterintuitive results. A central theme in this book is the interaction of randomness and pattern. At first glance, life in high dimension seems to mean the existence of multiple "possibilities", so one may expect an increase in the diversity and complexity as dimension increases.

However, the concentration of measure and effects caused by convexity show that this diversity is compensated and order and patterns are created for arbitrary convex bodies in the mixture caused by high dimensionality.

June 2015

451 pp.

9781470421939

20,020.

**A. M. S.**

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*Contemporary Mathematics,*

**Vol. 639: Aravinda,C. /Goldman,W. /Gongopadhyay,K. /  
Lubotzky,A. /Mj,M. /Weaver,A. (eds.):** 495-058  
**Geometry, Groups and Dynamics**

This volume contains the proceedings of the ICTS Program: Groups, Geometry and Dynamics, held December 3-16, 2012, at CEMS, Almora, India. The activity was an academic tribute to Ravi S. Kulkarni on his turning seventy. Articles included in this volume, both introductory and advanced surveys, represent the broad area of geometry that encompasses a large portion of group theory (finite or otherwise) and dynamics in its proximity. These areas have been influenced by Kulkarni's ideas and are closely related to his work and contribution.

May 2015 369 pp. 19,110.  
9780821898826

**Vol. 638: Mashreghi,J. /Fricain,E. /Ross,W. (eds.):** 495-153  
**Invariant Subspaces of the Shift Operator**

The main theme of this volume is the invariant subspaces of the shift operator (or its adjoint) on certain function spaces, in particular, the Hardy space, Dirichlet space, and de Branges-Rovnyak spaces. These spaces, and the action of the shift operator on them, have turned out to be a precious tool in various questions in analysis such as function theory, operator theory, and systems and control theory.

May 2015 317 pp. 19,110.  
9781470410452

**Vol. 637: Ballet,S. /Perret,M. /Zaytsev,A. (eds.):** 495-060  
**Algorithmic Arithmetic,  
Geometry, and Coding Theory**

This volume contains the proceedings of the 14th Int'l Conference on Arithmetic, Geometry, Cryptography, and Coding Theory (AGCT), held June 3-7, 2013, at CIRM, Marseille, France. These international conferences, held every two years, have been a major event in the area of algorithmic and applied arithmetic geometry for more than 20 years. This volume contains 13 original research articles covering geometric error correcting codes, and algorithmic and explicit arithmetic geometry of curves and higher dimensional varieties. Tools used in these articles include classical algebraic geometry of curves, varieties and Jacobians, Suslin homology, Monsky-Washnitzer cohomology, and L-functions of modular forms.

May 2015 306 pp. 19,110.  
9781470414610

*Courant Lecture Notes,*

**Vol. 26: Percus,J. /Childress,S.:** 495-266  
**Mathematical Models in Developmental Biology**

These notes introduce an interleaved set of mathematical models representative of research in the last few decades, as well as the techniques that have been developed for their solution. Such models offer an effective way of incorporating reliable data in a concise form, provide an approach complementary to the techniques of molecular biology, and help to inform and direct future research.

July 2015 249 pp. 8,010.  
9781470410803

**A. M. S.**

*Atlantis Studies in Differential Equations,***Vol. 5: Cabada, A. / Tojo, A. / Adrian, F.:****Differential Equations with Involutions**

This monograph covers the existing results regarding Green's functions for differential equations with involutions (DEI).

The first part of the book is devoted to the study of the most useful aspects of involutions from an analytical point of view and the associated algebras of differential operators.

495-122

The work combines the state of the art regarding the existence and uniqueness results for DEI and new theorems describing how to obtain Green's functions, proving that the theory can be extended to operators (not necessarily involutions) of a similar nature, such as the Hilbert transform or projections, due to their analogous algebraic properties.

Oct. 2015

150 pp.

9789462391208

13,860.

**Vol. 4: Antontsev, S. / Shmarev, S.:****Evolution PDEs with****Nonstandard Growth Conditions:****Existence, Uniqueness, Localization, Blow-up**

This monograph offers the reader a treatment of the theory of evolution PDEs with nonstandard growth conditions.

This class includes parabolic and hyperbolic equations with variable or anisotropic nonlinear structure. We develop methods for the study of such equations and present a detailed account of recent results.

An overview of other approaches to the study of PDEs of this kind is provided.

July 2015

400 pp.

9789462391116

18,810.

*Atlantis Studies in Variational Geometry,***Vol. 2: Zenkov, D. (ed.):****The Inverse Problem of  
the Calculus of Variations:****Local and Global Theory**

The aim of the present book is to give a systematic treatment of the inverse problem of the calculus of variations, i.e. how to recognize whether a system of differential equations can be treated as a system for extremals of a variational functional (the Euler-Lagrange equations), using contemporary geometric methods.

Sep. 2015

250 pp.

9789462391086

16,830.

*Atlantis Series in Dynamical Systems,***Vol. 3: Duarte, P. / Klein, S.:****Lyapunov Exponents of Linear Cocycles:  
Continuity Via Large Deviations**

The aim of this monograph is to present a general method of proving continuity of Lyapunov exponents of linear cocycles.

The method uses an inductive procedure based on a general, geometric version of the Avalanche Principle.

The main assumption required by this method is the availability of appropriate large deviation type estimates for quantities related to the iterates of the base and fiber dynamics associated with the linear cocycle.

Dec. 2015

200 pp.

9789462391239

16,860.

**Atlantis**

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*Textbooks in Mathematics*

Evans, L. /Garipey, R.: 495-131

**Measure Theory and  
Fine Properties of Functions, Revised ed.**

Topics covered include a quick review of abstract measure theory, theorems and differentiation in  $\mathbb{R}^n$ , Hausdorff measures, area and coarea formulas for Lipschitz mappings and related change-of-variable formulas, and Sobolev functions as well as functions of bounded variation.

The text provides complete proofs of many key results omitted from other books, including Besicovitch's covering theorem, Rademacher's theorem (on the differentiability a.e. of Lipschitz functions), area and coarea formulas, the precise structure of Sobolev and BV functions, the precise structure of sets of finite perimeter, and Aleksandrov's theorem.

Apr. 2015 313 pp.

9781482242386 13,020.

*Chapman & Hall/CRC Texts in Statistical Science*

Bickel, P. /Doksum, K.: 495-198

**Mathematical Statistics:  
Basic Ideas and Selected Topics, Vol. II**

This book covers a number of topics that are important in current measure theory and practice.

It emphasizes nonparametric methods which can really only be implemented with modern computing power on large and complex data sets.

In addition, it includes a large number of problems with more difficult ones appearing with hints and partial solutions for the instructor.

Sep. 2015 600 pp.

9781498722681 17,720.

Bickel, P. /Doksum, K.: 495-199

**Mathematical Statistics:  
Basic Ideas and Selected Topics, Vol. I, 2nd ed.**

This book presents fundamental, classical statistical concepts at the doctorate level.

It covers estimation, prediction, testing, confidence sets, Bayesian analysis, and the general approach of decision theory.

This edition gives careful proofs of major results and explains how the theory sheds light on the properties of practical methods.

Feb. 2015 578 pp.

9781498723800 17,720.

Friendly, M. /Meyer, D.: 495-209

**Visualizing Categorical Data with R**

The special nature of discrete variables and frequency data vis-a-vis statistical graphics is now more widely accepted, and many of these methods (e.g., mosaic displays, fourfold plots, diagnostic plots for generalized linear models) have become, if not main stream, then at least more widely used in research and teaching.

This book provides an accessible introduction to the major methods of categorical data analysis for data exploration, statistical testing and statistical models. As opposed to more theoretical books, the goal here is to help the reader to translate theory into practical application, by providing skills and software tools for carrying out these methods.

Nov. 2015 504 pp.

9781498725835 17,720.

**Chapman & Hall**

*Monographs on Statistics and Applied Probability,*

Evans, M.: **Measuring Statistical Evidence  
Using Relative Belief** 495-208

Most approaches to statistical inference refer to the evidence of something being true or false.

But no theory exists that defines what this evidence is as an explicit quantity, which can lead to a lack of confidence in the conclusions.

This book presents a theory of statistical inference based on a definition of statistical evidence via "relative belief." It offers a new framework for conducting statistical analyses in important practical problems.

June 2015 248 pp.  
9781482242799 16,060.

Hastie, T. / Tibshirani, R. / Wainwright, M.: **Statistical Learning with Sparsity:  
The Lasso and Generalizations** 495-213

Written by leading experts, this book discusses new methods for dealing with high-dimensional data.

It summarizes the actively developing field of statistical learning with sparsity.

Covering matrix decomposition, graphical models, compressed sensing, and more, it will be of interest to people analyzing data in many scientific disciplines.

June 2015 349 pp.  
9781498712163 16,060.

Liu, C. / Martin, R.: **Inferential Models:  
Reasoning with Uncertainty** 495-223

This book delves into the authors' work toward deeper understanding of statistical inference in terms of reasoning with uncertainty and meaningfulness of probabilistic inferential output. Focusing on a valid, prior-free probabilistic inferential framework called inferential models, the authors explain how to first identify the underlying source of uncertainty as an integral part of statistical modeling and then make probabilistic inference by calculating the predictable quantity in a statistically accurate way.

Sep. 2015 350 pp.  
9781439886489 16,060.

Gail, M. / Pfeiffer, R.: **Absolute or Crude Risk:  
Applications in Disease Prevention** 495-210

Absolute risk is the probability of developing a specific disease over a specified time interval in the presence of competing causes of mortality. Although absolute risk is arguably more relevant to clinical decision making than "pure" risk, the development of appropriate statistical methods for estimating and applying absolute risk has lagged behind those for pure risk.

Dec. 2015 300 pp.  
9781466561656 10,800.

*Vol. 139:* Giraud, C.: **Introduction to High-Dimensional Statistics** 495-212

This book is a concise guide to state-of-the-art models, techniques, and approaches for handling high-dimensional data.

Jan. 2015 255 pp.  
9781482237948 12,460.

**Chapman & Hall**

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*Surveys in Differential Geometry,*

**Vol. 19: Cao, H.-D. / Schoen, R. / Yau, S.-T. (eds.):** 495-124  
**Regularity and Evolution of Nonlinear Equations:**  
Essays dedicated to

**Richard Hamilton, Leon Simon, and Karen Uhlenbeck**

This volume of *Surveys in Differential Geometry* is dedicated to the three most eminent contributors to the subject of regularity and existence of nonlinear partial differential equations, which has played such an important role in geometry.

These are Richard Hamilton, Leon Simon, and Karen Uhlenbeck. Presented topics include: analysis related to minimal submanifolds, Yang-Mills theory, Kahler metrics, Monge-Ampere equations, curve flows, and general relativity.

Apr. 2015 310 pp.  
9781571463036 15,470.

*Advanced Lectures in Mathematics,*

**Vol. 31: Ji, L. / Papadopoulos, A. / Yau, S.-T.:** 495-023  
**Handbooks of Group Actions, Vol. 1**

Groups and group actions are probably the most central objects in mathematics. Comprising volumes 31 and 32 of the ALM series (with further volumes forthcoming), the Handbook of Group Actions presents survey articles on the topic of group actions and how they appear in several mathematical contexts.

The general subject matter is organized under the following sections: geometry, mapping class groups, knot groups, topology, representation theory, deformation theory, and discrete groups. The various articles deal with both classical material and modern developments.

They are written by specialists in their respective subject areas, and addressed to graduate students who want to learn the theory, as well as to specialists as a reference.

This is the first volume of the Handbook of Group Actions.

Mar. 2015 624 pp.  
9781571463005 16,380.

**Vol. 32: Ji, L. / Papadopoulos, A. / Yau, S.-T.:** 495-024  
**Handbooks of Group Actions, Vol. 2**

This is the second volume of the Handbook of Group Actions.

Mar. 2015 591 pp.  
9781571463012 16,380.

**International Press**

*Banach Center Publication,*

**Vol. 103: Przytycki, J. / Traczyk, P. (eds.):** 495-188  
**Knots in Poland III: Part I**

This is the first of three volumes containing the proceedings of "Knots in Poland III", conference on Knot Theory and its Ramifications that took place from July 18 until August 4, 2010, in Warsaw and Bedlewo.

Contributors include: C. Caprau, M. W. Chrisman, D. Futer, N. Geer, M. Hirasawa, D. P. Hyatt, A. Kaestner, U. Kaiser, E. Kalfagianni, L. H. Kauffman, P. -V. Koseleff, D. J. LaFountain, V. O. Manturov, W. W. Menasco, K. Murasugi, S. Nelson, I. M. Nikonov, D. Pecker, J. S. Purcell, S. Suzuki, K. Valencia, V. V. Vershinin.

Dec. 2014 387 pp.  
9788386806263 11,650.

**P. W. N.**

**Vol. 2145: Guo,K. /Huang,H.: 495-140**  
**Multiplication Operators on the Bergman Space**

\*Presents the latest developments on commutants and reducing subspaces of multiplication operators on the Bergman space \*Reveals von Neumann algebras generated by multiplication operators on the Bergman space \*Establishes a fascinating connection between operator theory and von Neumann algebra

This book deals with various aspects of commutants and reducing subspaces of multiplication operators on the Bergman space, along with relevant von Neumann algebras generated by these operators, which have been the focus of considerable attention from the authors and other experts in recent years.

Aug. 2015 290 pp.  
9783662468449 17,820.

**Vol. 2142: Alvarado,R. /Mitreá,M.: 495-112**  
**Hardy Spaces on**  
**Ahlfors-Regular Quasi Metric Spaces:**  
**A Sharp Theory**

Systematically building an optimal theory, this monograph develops and explores several approaches to Hardy spaces in the setting of Ahlfors-regular quasi-metric spaces. The text is broadly divided into two main parts.

The first part gives atomic, molecular, and grand maximal function characterizations of Hardy spaces and formulates sharp versions of basic analytical tools for quasi-metric spaces, such as a Lebesgue differentiation theorem with minimal demands on the underlying measure, a maximally smooth approximation to the identity and a Calderon-Zygmund decomposition for distributions. These results are of independent interest.

The second part establishes very general criteria guaranteeing that a linear operator acts continuously from a Hardy space into a topological vector space, emphasizing the role of the action of the operator on atoms

July 2015 416 pp.  
9783319181318 13,860.

**Vol. 2143: Gayrard,V. /Kistler,N. (eds.): 495-211**  
**Correlated Random Systems**  
**-Five Different Methods:**  
**CIRM, Jean-Morlet Chair 2013 (1)**

This volume presents five different methods recently developed to tackle the large scale behavior of highly correlated random systems, such as spin glasses, random polymers, local times and loop soups, and random matrices. These methods, presented in a series of lectures delivered within the Jean-Morlet initiative (Spring 2013), play a fundamental role in the current development of probability theory and statistical mechanics.

The lectures were: Random Polymers by E. Bolthausen, Spontaneous Replica Symmetry Breaking and Interpolation Methods by F. Guerra, Derrida's Random Energy Models by N. Kistler, Isomorphism Theorems by J. Rosen and Spectral Properties of Wigner Matrices by B. Schlein.

This book is the first in a co-edition between the Jean-Morlet Chair at CIRM and the Springer Lecture Notes in Mathematics which aims to collect together courses and lectures on cutting-edge subjects given during the term of the Jean-Morlet Chair, as well as new material produced in its wake.

Aug. 2015 215 pp.  
9783319176734 8,910.

**Springer**



Yurinsha Book News

*Lecture Notes in Mathematics,*

**Vol. \*\*\*\*: Kumar,P. /Wainwright,M. /Zecchina,R. /  
Fagnani,F. /Fosson,S. /Ravazzi,C. (eds.):  
Mathematical Foundations of**

**Complex Networked Information Systems**

Introducing the reader to the mathematics beyond complex networked systems, these lecture notes investigate graph theory, graphical models, and methods from statistical physics.

Complex networked systems play a fundamental role in our society, both in everyday life and in scientific research, with applications ranging from physics and biology to economics and finance.

June 2015 130 pp. 495-257  
9783319169668 6,930.

**Vol. 2140: Kirschner,T.:** 495-084

**Period Mappings with  
Applications to Symplectic Complex Spaces**

The text consists in three parts. The first part develops a theory of period mappings of "Hodge-de Rham type" for families of complex manifolds, the essential argument being that the manifolds in question need neither be compact nor Kahler. For compact Kahler manifolds we fall back on Griffiths's classical theory of period mappings.

The second part investigates the degeneration behavior of the relative Frolicher spectral sequence associated to a submersive morphism of complex manifolds, the main point again being that the fibers of the morphism in question need neither be compact nor Kahler.

Aug. 2015 240 pp. 8,900.  
9783319175201

**Vol. 2137: Donati-Martin,C. /Lejay,A. /Rouault,A. (eds.):  
In Memoriam Marc Yor  
- Seminaire de Probabilites XLVII**

This volume is dedicated to the memory of Marc Yor, who passed away in 2014. 495-204

The invited contributions by his collaborators and former students bear testament to the value and diversity of his work and of his research focus, which covered broad areas of probability theory.

The volume also provides personal recollections about him, and an article on his essential role concerning the Doebelin documents.

Sep. 2015 540 pp. 17,810.  
9783319185842

**Vol. 2134: Heymann,M.:** 495-179

**Minimum Action Curves in  
Degenerate Finsler Metrics**

Presenting a study of geometric action functionals (i.e., non-negative functionals on the space of unparameterized oriented rectifiable curves), this monograph focuses on the subclass of those functionals whose local action is a degenerate type of Finsler metric that may vanish in certain directions, allowing for curves with positive Euclidean length but with zero action. For such functionals, criteria are developed under which there exists a minimum action curve leading from one given set to another. Then the properties of this curve are studied, and the non-existence of minimizers is established in some settings.

Aug. 2015 190 pp. 6,920.  
9783319177526

**Springer**

*Lecture Notes in Mathematics,***Vol. 2129: Bodine, S. /Lutz, D.:** 495-120**Asymptotic Integration of  
Differential and Difference Equations**

This book presents the theory of asymptotic integration for both linear differential and difference equations.

This type of asymptotic analysis is based on some fundamental principles by Norman Levinson.

While he applied them to a special class of differential equations, subsequent work has shown that the same principles lead to asymptotic results for much wider classes of differential and also difference equations.

July 2015

365 pp.

9783319182476

13,860.

*Undergraduate Texts in Mathematics***Little, C. /Kee, T. /van Brunt, B.:** 495-151**Real Analysis via Sequences and Series**

This text gives a rigorous treatment of the foundations of calculus. In contrast to more traditional approaches, infinite sequences and series are placed at the forefront.

The approach taken has not only the merit of simplicity, but students are well placed to understand and appreciate more sophisticated concepts in advanced mathematics.

June 2015

434 pp.

9781493926503

11,880.

**Abbott, S.:** 495-108**Understanding Analysis, 2nd ed.**

This lively introductory text exposes the student to the rich rewards of a rigorous study of functions of a real variable.

In each chapter, informal discussions of questions that give analysis its inherent fascination are followed by precise, but not overly formal, developments of the techniques needed to make sense of them.

July 2015

302 pp.

9781493927111

8,910.

*Algorithms and Combinatorics,***Vol. 29: Brazil, M. /Zachariasen, M.:****Optimal Interconnection Trees in the Plane:  
Theory, Algorithms and Applications**

This book explores fundamental aspects of geometric network optimisation with applications to a variety of real world problems. 495-065

It presents, for the first time in the literature, a cohesive mathematical framework within which the properties of such optimal interconnection networks can be understood across a wide range of metrics and cost functions.

The book makes use of this mathematical theory to develop efficient algorithms for constructing such networks, with an emphasis on exact solutions.

Marcus Brazil and Martin Zachariasen focus principally on the geometric structure of optimal interconnection networks, also known as Steiner trees, in the plane. They show readers how an understanding of this structure can lead to practical exact algorithms for constructing such trees.

May 2015

400 pp.

9783319139142

11,880.

**Springer**

Yurinsha Book News

*Graduate Texts in Mathematics,*

**Vol. 272: Eisner, T. / Farkas, B. / Haase, M. / Nagel, R.:  
Operator Theoretic Aspects of Ergodic Theory**

Stunning recent results by Host-Kra, Green-Tao, and others, highlight the timeliness of this systematic introduction to classical ergodic theory using the tools of operator theory. Assuming no prior exposure to ergodic theory, this book provides a modern foundation for introductory courses on ergodic theory, especially for students or researchers with an interest in functional analysis.

While basic analytic notions and results are reviewed in several appendices, more advanced operator theoretic topics are developed in detail, even beyond their immediate connection with ergodic theory.

Aug. 2015 584 pp. 495-130  
9783319168975 13,260.

**Vol. 222: Hall, B.:  
Lie Groups, Lie Algebras, and Representations:  
An Elementary Introduction, 2nd ed.**

This second edition of the book contains many substantial improvements and additions, among them: an entirely new part devoted to the structure and representation theory of compact Lie groups; a complete derivation of the main properties of root systems; the construction of finite-dimensional representations of semisimple Lie algebras has been elaborated; a treatment of universal enveloping algebras, including a proof of the Poincaré-Birkhoff-Witt theorem and the existence of Verma modules; complete proofs of the Weyl character formula, the Weyl dimension formula and the Kostant multiplicity formula.

May 2015 449 pp. 495-078  
9783319134666 11,880.

*Universitext*

**Fuhrmann, P. / Helmke, U.:  
The Mathematics of Networks of Linear Systems**

This includes a thorough treatment of questions of controllability, observability, realization theory, as well as feedback control and observer theory. The potential of networks for linear systems in controlling large-scale networks of interconnected dynamical systems could provide insight into a diversity of scientific and technological disciplines.

The scope of the book is quite extensive, ranging from introductory material to advanced topics of current research, making it a suitable reference for graduate students and researchers in the field of networks of linear systems.

June 2015 643 pp. 495-076  
9783319166452 13,860.

**Godement, R.:  
Analysis IV**

As in volumes I to III, the inimitable style of the author is recognizable here too, not only because of his refusal to write in the compact style used nowadays in many textbooks.

The first part (Integration), a wise combination of mathematics said to be modern and classical, is universally useful whereas the second part leads the reader towards a very active and specialized field of research, with possibly broad generalizations.

May 2015 363 pp. 495-136  
9783319169064 11,880.

**Springer**

Manetti, M.:

495-185

**Topology**

This textbook offers a primer in general topology (point-set topology), together with an introduction to algebraic topology. It's meant primarily for students with the mathematical background that's usually taught in the first year of undergraduate degrees in Mathematics and Physics.

Around 500 exercises are included in the text: trying to solve them with dedication is the best way to attain a firm hold on the matter, adapt it to your own way of thinking and also learn to develop original ideas.

Some exercises are solved directly in the text, either in full or almost.

July 2015

320 pp.

9783319169576

9,900.

Cannarsa, P. / D'Aprile, T.:

495-123

**Introduction to****Measure Theory and Functional Analysis**

This book introduces readers to theories that play a crucial role in modern mathematics, such as integration and functional analysis, employing a unifying approach that views these two subjects as being deeply intertwined.

This feature is particularly evident in the broad range of problems examined, the solutions of which are often supported by generous hints.

If the material is split into two courses, it can be supplemented by additional topics from the third part of the book, such as functions of bounded variation, absolutely continuous functions, and signed measures.

July 2015

320 pp.

9783319170183

9,900.

*Interdisciplinary Applied Mathematics,*

Vol. 39: Leimkuhler, B. / Matthews, C.:

495-258

**Molecular Dynamics:****With Deterministic and Stochastic Numerical Methods**

This book describes the mathematical underpinnings of algorithms used for molecular dynamics simulation, including both deterministic and stochastic numerical methods.

Molecular dynamics is one of the most versatile and powerful methods of modern computational science and engineering and is used widely in chemistry, physics, materials science and biology.

Understanding the foundations of numerical methods means knowing how to select the best one for a given problem and how to create new, efficient methods to address particular challenges as they arise in complex applications.

June 2015

420 pp.

9783319163741

11,880.

*SpringerBriefs in Statistics*Sakata Toshio : **Applied Matrix and  
Tensor Variate Data Analysis**

495-231

This book provides comprehensive reviews of recent progress in matrix variate and tensor variate data analysis from applied points of view. Matrix and tensor approaches for data analysis are known to be extremely useful for recently emerging complex and high-dimensional data in various applied fields.

June 2015

120 pp.

9784431553861

9,900.

**Springer**

Yurinsha Book News

*Pure and Applied Mathematics*

**Koshy, T.:** **Fibonacci & Lucas Numbers with Applications, 2nd ed.** 495-087

This Second Edition continues to be the largest comprehensive study in the field and reflects a user-friendly and historical approach to the myriad of properties of both Fibonacci and Lucas numbers. Fibonacci and Lucas numbers have intrigued amateurs and professionals for centuries, and this book offers analysis of these famous integers, complete with a wealth of exciting applications, enlightening examples, and fun exercises that provide numerous opportunities for exploration and experimentation.

Oct. 2015 672 pp. 22,750.  
9781118742129

*Wiley Classics Library Series,*

**Cressie, N.:** **Statistics for Spatial Data, Revised ed.** 495-201

Spatial statistics --- analyzing spatial data through statistical models --- has proven exceptionally versatile, encompassing problems ranging from the microscopic to the astronomic. However, for the scientist and engineer faced only with scattered and uneven treatments of the subject in the scientific literature, learning how to make practical use of spatial statistics in day-to-day analytical work is very difficult.

May 2015 928 pp. 14,550.  
9781119114611

*Wiley Series in Probability and Statistics*

**Dryden, I. / Kent, J.:** **Geometry Driven Statistics** 495-205

This book celebrates Kanti V. Mardia's long & influential career in statistics. A common theme unifying much of Mardia's work is the importance of geometry in statistics, and to highlight the areas emphasized in his research this book brings together 16 contributions from high-profile researchers in the field.

Sep. 2015 448 pp. 21,830.  
9781118866573

**Lewinter, M. / Meyer, J.:** **Elementary Number Theory with Programming** 495-089

This book features comprehensive coverage of the methodology and applications of the most well-known theorems, problems, and concepts in number theory. Using standard mathematical applications within the programming field, the book presents triangle numbers and prime decomposition, which are the basis of the public-private key system of cryptography.

June 2015 224 pp. 16,370.  
9781119062769

**Morris, C. / Stark, R.:** **Fundamentals of Calculus** 495-159

Fundamentals of Calculus encourages students to use power, quotient, and product rules for solutions as well as stresses the importance of modeling skills. In addition to core integral and differential calculus coverage, the book features finite calculus, which lends itself to modeling and spreadsheets.

May 2015 348 pp. 22,750.  
9781119015260

**Wiley**

Felix, Y. /Halperin, S. /Thomas, J.-C.: 495-073

**Rational Homotopy Theory II**

This research monograph is a detailed account with complete proofs of rational homotopy theory for general non-simply connected spaces, based on the minimal models introduced by Sullivan in his original seminal article. Much of the content consists of new results, including generalizations of known results in the simply connected case.

The monograph also includes an expanded version of recently published results about the growth and structure of the rational homotopy groups of finite dimensional CW complexes, and concludes with a number of open questions.

Contents: \*Basic Definitions and Constructions \*Homotopy Lie Algebras and Sullivan Lie Algebras \*Fibrations and  $f \wedge$ -Extensions \*Holonomy \*The Model of the Fibre is the Fibre of the Model \*Loop Spaces and Loop Space Actions \*Sullivan Spaces \*Examples \*Lusternik-Schnirelmann Category \*Depth of a Sullivan Algebra and of a Sullivan Lie Algebra \*Depth of a Connected Graded Lie Algebra of Finite Type \*Trichotomy \*Exponential Growth \*Structure of a Graded Lie Algebra of Finite Depth \*Weight Decompositions of a Sullivan Lie Algebra \*Problems

Mar. 2015

440 pp.

9789814651424

25,120.

*Nankai Tracts in Mathematics,*

Vol. 14: Fu, L.:

495-075

**Etale Cohomology Theory, Revised ed.**

Etale cohomology is an important branch in arithmetic geometry.

This book covers the main materials in SGA 1, SGA 4, SGA 4 1/2 and SGA 5 on etale cohomology theory, which includes decent theory, etale fundamental groups, Galois cohomology, etale cohomology, derived categories, base change theorems, duality, and  $p$ -adic cohomology. The prerequisites for reading this book are basic algebraic geometry and advanced commutative algebra.

Apr. 2015

624 pp.

9789814675086

22,750.

Knudson, K.:

495-181

**Morse Theory:  
Smooth and Discrete**

Morse Theory: Smooth and Discrete serves as an introduction to classical smooth Morse theory and to Forman's discrete Morse theory, highlighting the parallels between the two subjects.

This is the first time both smooth and discrete Morse theory have been treated in a single volume.

This makes the book a valuable resource for students and professionals working in topology and discrete mathematics.

With a strong focus on examples, the text is suitable for advanced undergraduates or beginning graduate students.

Dec. 2015

196 pp.

9789814630962

11,830.

Soltan, V.:

495-190/191

**Lectures on Convex Sets**

This book provides a systematic treatment of algebraic and topological properties of convex sets in the  $n$ -dimensional Euclidean space.

Topics under consideration include general properties of convex sets and convex hulls, cones and conic hulls, polyhedral sets, the extreme structure, support and separation properties of convex sets.

Mar. 2015 420 pp.

9789814656689/9789814656696

20,930./10,560. (Paper ed.)

**World Scientific Publishing**

Yurinsha Book News

Steeb,W.-H. /Hardy,Y.:

495-316/317

**Bose, Spin and Fermi Systems:  
Problems and Solutions**

This book provides a comprehensive collection of problems together with their detailed solutions for Bose, Spin, Fermi systems and also interacting systems. Supplementary problems are also provided.

Exercises for representations of Lie groups and Lie algebras are also covered as well as computer algebra implementations.

It is the only book which summarizes these topics from the quantum theory aspect in the form of exercises and solutions. The book is also self-contained.

Jan. 2015

400 pp.

9789814630108/9789814667340

14,200./8,740. (Paper ed.)

*Series in Real Analysis,*

Tyrdy,M. /Antunes Monteiro,G. /Slavik,A.:

495-170

**Kurzweil Stieltjes Integral Theory and Applications**

The book is primarily devoted to the theory of the Kurzweil Stieltjes integral and its important applications in functional analysis and the theory of various kinds of generalized differential equations, including the dynamical equations on time scales.

It continues the research that was paved out by some of the previous volumes in the Series in Real Analysis.

Moreover, it presents results in a thoroughly updated form and, simultaneously, it is written in a widely understandable way, so that it can be used as a textbook for advanced university or PhD courses covering the theory of integration or differential equations.

Aug. 2015

350 pp.

9789814641777

20,020.

Dai,D. /Dai,H.-H. /Yang,T. /Zhou,D.-X. (eds.):

495-012

**The Selected Works of Roderick S C Wong** 3 Vols. Set

This collection, in three volumes, presents the scientific achievements of Roderick S C Wong, spanning 45 years of his career.

It provides a comprehensive overview of the author's work which includes significant discoveries and pioneering contributions, such as his deep analysis on asymptotic approximations of integrals and uniform asymptotic expansions of orthogonal polynomials and special functions; his important contributions to perturbation methods for ordinary differential equations and difference equations; and his advocacy of the Riemann-Hilbert approach for global asymptotics of orthogonal polynomials.

Aug. 2015

1540 pp.

9789814656047

71,890.

Korhonen,R. /Laine,I. /Tohge Kazuya:

**Tropical Value Distribution Theory and  
Ultra-Discrete Equations**

495-149

It provides a detailed introduction of the tropical version of the Nevanlinna theory, describing growth and value distribution analysis of continuous, piecewise real function on the real axis.

The book also includes applications of this theory to ultra-discrete equations.

Three appendices are given to compare the contents of the theory with the classical counterparts in complex analysis. Detailed presentation of the proofs makes the book accessible for lecture courses and independent studies at the graduate and post-doctoral level.

Aug. 2015

280 pp.

9789814632799

17,290.

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Yurinsha Book News

*EMS Textbooks in Mathematics*

**Vol. 17: Lablee, O.:**

**Spectral Theory in Riemannian Geometry**

Spectral theory is a diverse area of mathematics that derives its motivations, goals and impetus from several sources.

In particular, the spectral theory of the Laplacian on a compact Riemannian manifold is a central object in differential geometry.

From a physical point a view, the Laplacian on a compact Riemannian manifold is a fundamental linear operator which describes numerous propagation phenomena: heat propagation, wave propagation, quantum dynamics, etc.

Moreover, the spectrum of the Laplacian contains vast information about the geometry of the manifold.

The topics presented include direct and inverse problems.

Direct problems are concerned with computing or finding properties on the eigenvalues while the main issue in inverse problems is

“knowing the spectrum of the Laplacian, can we determine the geometry of the manifold?”

Feb. 2015

197 pp.

9783037191514

7,750.

*Zurich Lectures in Advanced Mathematics*

**Serfaty, S.:**

**Coulomb Gases and Ginzburg-Landau Vortices**

This book describes these two systems and explores the similarity between them. It presents the mathematical tools developed to analyze the interaction between the Coulomb particles or the vortices, at the microscopic scale, and describes a “renormalized energy” governing the point patterns.

This is believed to measure the disorder of a point configuration, and to be minimized by the Abrikosov lattice in dimension 2.

The book gives a self-contained presentation of results on the mean field limit of the Coulomb gas system, with or without temperature, and of the derivation of the renormalized energy.

It also provides a streamlined presentation of the similar analysis that can be performed for the Ginzburg-Landau model, including a review of the vortex-specific tools and the derivation of the critical fields, the mean-field limit and the renormalized energy.

Mar. 2015

165 pp.

9783037191521

6,940.

*Heritage of European Mathematics*

**Dumbaugh, D. /Schwermer, J.:**

**Emil Artin and Beyond**

**- Class Field Theory and L-functions**

This book explores the development of number theory, and, in particular, class field theory, as it passed through the hands of Emil Artin, Claude Chevalley and Robert Langlands in the middle of the twentieth century.

Four archival documents - three letters and one thesis in mathematics - form the core of the book.

These previously unpublished documents, individually and collectively, call attention to critical moments in the history of mathematics in the 20th century.

Mar. 2015

245 pp.

9783037191460

13,870.

**The European Mathematical Society**

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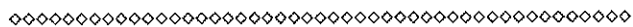
Ronald S. Calinger

**Leonhard Euler:**

**Mathematical Genius in the Enlightenment**

Aug 2015 704 p. 9780691119274 Hardback ¥7,340

This is the first full-scale biography of Leonhard Euler (1707–83), one of the greatest mathematicians and theoretical physicists of all time. In this comprehensive and authoritative account, Ronald Calinger connects the story of Euler's eventful life to the astonishing achievements that place him in the company of Archimedes, Newton, and Gauss. Drawing chiefly on Euler's massive published works and correspondence, which fill more than eighty volumes so far, this biography sets Euler's work in its multilayered context—personal, intellectual, institutional, political, cultural, religious, and social. It is a story of nearly incessant accomplishment, from Euler's fundamental contributions to almost every area of pure and applied mathematics—especially calculus, number theory, notation, optics, and celestial, rational, and fluid mechanics—to his advancements in shipbuilding, telescopes, ballistics, cartography, chronology, and music theory.



Arno Berger & Theodore P. Hill

**An Introduction to Benford's Law**

May 2015 256 p. 9780691163062 Hardback ¥10,010

*An Introduction to Benford's Law* begins with basic facts about significant digits, Benford functions, sequences, and random variables, including tools from the theory of uniform distribution. After introducing the scale-, base-, and sum-invariance characterizations of the law, the book develops the significant-digit properties of both deterministic and stochastic processes, such as iterations of functions, powers of matrices, differential equations, and products, powers, and mixtures of random variables. Two concluding chapters survey the finitely additive theory and the flourishing applications of Benford's law.

Carefully selected diagrams, tables, and close to 150 examples illuminate the main concepts throughout. The text includes many open problems, in addition to dozens of new basic theorems and all the main references. A distinguishing feature is the emphasis on the surprising ubiquity and robustness of the significant-digit law. This text can serve as both a primary reference and a basis for seminars and courses.



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Apr 2014



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