Yurinsha Book News

London Mathematical Society Lecture Note Series,

Vol. 418: Coates,J. /Raghuram,A. /
Saikia,A. /Sujatha,R.: 494-050

The Bloch-Kato Conjecture for the Riemann Zeta Function

There are still many arithmetic mysteries surrounding the values of the Riemann zeta function at the odd positive integers greater than one.
For example, the matter of their irrationality, let alone transcendence, remains largely unknown.
However, by extending ideas of Garland, Borel proved that these values are related to the higher K-theory of the ring of integers.
Shortly afterwards, Bloch and Kato proposed a Tamagawa number-type conjecture for these values, and showed that it would follow from a result in motivic cohomology which was unknown at the time.
This vital result from motivic cohomology was subsequently proven by Huber, Kings, and Wildeshaus.
Bringing together key results from K-theory, motivic cohomology, and Iwasawa theory, this book is the first to give a complete proof, accessible to graduate students, of the Bloch-Kato conjecture for odd positive integers. It includes a new account of the results from motivic cohomology by Huber and Kings.

Apr. 2015 320 pp.
9781107492967 13,040.

Cambridge

http://www.yurinsha.com
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No.494 Mar.- Apr.2015

数理科学 友隣社 洋書専門

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㈱　友　隣　社

Vol. 164: Tao,T.: 494-086

Expansion in Finite Simple Groups of Lie Type

pander graphs are an important tool in theoretical computer science, geometric group theory, probability, and number theory.
Furthermore, the techniques used to rigorously establish the expansion property of a graph draw from such diverse areas of mathematics as representation theory, algebraic geometry, and arithmetic combinatorics.
This text focuses on the latter topic in the important case of Cayley graphs on finite groups of Lie type, devcloping tools such as Kazhdan's property (T), quasirandomness, product estimates, escape from subvarieties, and the Balog-Szemeredi-Gowers lemma.
Applications to the affine sieve of Bourgain, Gamburd, and Sarnak are also given. The material is largely self-contained, with additional sections on the general theory of expanders, spectral theory, Lie theory, and the Lang-Weil bound, as well as numerous exercises and other optional material.

May 2015 308 pp.
9781470421960 14,140.

Vol. 163: Tenenbaum,G.:

Introduction to Analytic and Probabilistic Number Theory, 3rd ed.

494-087

This book provides a self contained, thorough introduction to the analytic and probabilistic methods of number theory.
The prerequisites being reduced to classical contents of under-graduate courses, it offers to students and young researchers a systematic and consistent account on the subject.
It is also a convenient tool for professional mathematicians, who may use it for basic references concerning many fundamental topics.Deliberately placing the methods before the results, the book will be of use beyond the particular material addressed directly. Each chapter is complemented with bibliographic notes, useful for descriptions of alternative viewpoints, and detailed exercises, often leading to research problems.
This third edition of a text that has become classical offers a renewed and considerably enhanced content, being expanded by more than 50 percent.

May 2015 641 pp.
9780821898543 15,650.

Vol. 162: Rassoul-Agha,F. /Seppalainen,T.: 494-212

A Course on Large Deviations with An Introduction to Gibbs Measures

This is an introductory course on the methods of computing asymptotics of probabilities of rare events: the theory of large deviations.
The book combines large deviation theory with basic statistical mechanics, namely Gibbs measures with their variational characterization and the phase transition of the Ising model, in a text intended for a one semester or quarter course.
The book begins with a straightforward approach to the key ideas and results of large deviation theory in the context of independent identically distributed random variables. This includes Cramer's theorem, relative entropy, Sanov's theorem, process level large deviations, convex duality, and change of measure arguments. Dependence is introduced through the interactions potentials of equilibrium statistical mechanics.

May 2014 314 pp.
9780821875780 13,890.

A. M. S.

Graduate Studies in Mathematics,

Vol. 161: **Maclagan,D. /Sturmfels,B.:** 494-068
Introduction to Tropical Geometry

Tropical geometry is a combinatorial shadow of algebraic geometry, offering new polyhedral tools to compute invariants of algebraic varieties.
It is based on tropical algebra, where the sum of two numbers is their minimum and the product is their sum. This turns polynomials into piecewise-linear functions, and their zero sets into polyhedral complexes.
These tropical varieties retain a surprising amount of information about their classical counterparts. Tropical geometry is a young subject that has undergone a rapid development since the beginning of the 21st century.
While establishing itself as an area in its own right, deep connections have been made to many branches of pure and applied mathematics.
This book offers a self-contained introduction to tropical geometry, suitable as a course text for beginning graduate students. Proofs are provided for the main results, such as the Fundamental Theorem and the Structure Theorem.

May 2015 364 pp.
9780821851982 13,890.

Proceedings of Symposia in Pure Mathematics,

Vol. 89: **Dolgopyat,D. /Pesin,Y. /**
Pollicott,M. /Stoyanov,L. (eds.): 494-292
Hyperbolic Dynamics,
Fluctuations and Large Deviations

This volume contains the proceedings of the semester long special program on Hyperbolic Dynamics, Large Deviations and Fluctuations, which was held from January-June 2013, at the Center Interfacultaire Bernoulli, Ecole Polytechnique Federale de Lausanne, Switzerland.
The broad theme of the program was the long term behavior of dynamical systems and their statistical behavior.
During the last 50 years, the statistical properties of dynamical systems of many different types have been the subject of extensive study in statistical mechanics and thermodynamics, ergodic and probability theories, and some areas of mathematical physics.
The results of this study have had a profound effect on many different areas in mathematics, physics, engineering and biology.

Apr. 2015 337 pp.
9781470411121 21,480.

Pure and Applied Undergraduate Texts,

Vol. 23: **Ovchinnikov,S.:** 494-075
Number Systems:
An Introduction to Algebra and Analysis

The book starts with the development of Peano arithmetic in the first chapter which includes mathematical induction and elements of recursion theory.
It proceeds to an examination of integers that also covers rings and ordered integral domains. The presentation of rational numbers includes material on ordered fields and convergence of sequences in these fields.
Cauchy and Dedekind completeness properties of the field of real numbers are established, together with some properties of real continuous functions.
An elementary proof of the Fundamental Theorem of Algebra is the highest point of the chapter on complex numbers.

May 2015 146 pp.
9781470420185 10,720.

A. M. S.

CBMS Regional Conference Series in Mathematics,

Vol. 121: Poltoratski,A.: 494-142
Toeplitz Approach to Problems of the Uncertainty Principle

The Uncertainty Principle in Harmonic Analysis (UP) is a classical, yet rapidly developing, area of modern mathematics.
Its first significant results and open problems date back to the work of Norbert Wiener, Andrei Kolmogorov, Mark Krein and Arne Beurling.
At present, it encompasses a large part of mathematics, from Fourier analysis, frames and completeness problems for various systems of functions to spectral problems for differential operators and canonical systems.
These notes are devoted to the so-called Toeplitz approach to UP which recently brought solutions to some of the long-standing problems posed by the classics. After a short overview of the general area of UP the discussion turns to the outline of the new approach and its results.

Apr. 2015 216 pp.
9781470420178 8,770.

Contemporary Mathematics,

Vol. 634: Dougherty,S. /Facchini,A. / 494-052
Leroy,A. /Puczylowski,E. /Sole,P. (eds.):
Noncommutative Rings and Their Applications

This volume presents recent developments in the theories of non-commutative rings and modules over such rings as well as applications of these to coding theory, enveloping algebras, and Leavitt path algebras.
Material from the course "Foundations of Algebraic Coding Theory", given by Steven Dougherty, is included and provides the reader with the history and background of coding theory as well as the interplay between coding theory and algebra.
In module theory, many new results related to (almost) injective modules, injective hulls and automorphism-invariant modules are presented.

Apr. 2015 265 pp.
9781470410322 18,790.

494-059
Vol. 633: Kahrobaei,D. /Shpilrain,V. (eds.):
Algorithmic Problems of Group Theory, Their Complexity, and Applications to Cryptography

Over the past few years the field of group-based cryptography has attracted attention from both group theorists and cryptographers.
The new techniques inspired by algorithmic problems in non-commutative group theory and their complexity have offered promising ideas for developing new cryptographic protocols.

Apr. 2015 123 pp.
9780821898598 18,790.

Vol. 632: Kyureghyan,G. /Mullen,G. /Pott,A. (eds.):
Topics in Finite Fields 494-063

Finite Fields are fundamental structures in mathematics.
They lead to interesting deep problems in number theory, play a major role in combinatorics and finite geometry, and have a vast amount of applications in computer science.
Papers in this volume cover these aspects of finite fields as well as applications in coding theory and cryptography.

Mar. 2015 371 pp.
9780821898604 18,460.

A. M. S.

Progress in Mathematics,

Vol. 309: **Kellendonk,J. /Lenz,D. /Savinien,J. (eds.):**
Mathematics of Aperiodic Order 494-122

What is order which is not based on simple repetition, that is, periodicity? How must atoms be arranged in a material so that it diffracts like a quasi-crystal? How can we describe aperiodically ordered systems mathematically? Originally triggered by the - later nobel prize winning - discovery of quasicrystals, the investigation of aperiodic order has by now become a well-established and strongly evolving field of mathematical research. It is closely tied to a surprising variety of branches of mathematics and physics.
The book offers an overview over the state of the art in the field of aperiodic order.
It comprises carefully selected surveys which are written by leading researchers.
Since the book is written for a readership of non-experts which have a general background in mathematics, theoretical physics or computer science, it will serve as a highly accessible first hand source of information to anybody interested in this rich and exciting field.

June 2015 **450 pp.**
9783034809023 **21,180.**

Khamsi,M. /Kozlowski,W.:
Fixed Point Theory in Modular Function Spaces 494-123

This monograph provides a concise introduction to the main results and methods of the fixed point theory in modular function spaces.
Modular function spaces are natural generalizations of both function and sequence variants of many important spaces like Lebesgue, Orlicz, Musielak-Orlicz, Lorentz, Orlicz-Lorentz, Calderon-Lozanovskii spaces, and others.
In most cases, particularly in applications to integral operators, approximation and fixed point results, modular type conditions are much more natural and can be more easily verified than their metric or norm counterparts.
There are also important results that can be proved only using the apparatus of modular function spaces.
The material is presented in a systematic and rigorous manner that allows readers to grasp the key ideas and to gain a working knowledge of the theory.

Feb. 2015 **254 pp.**
9783319140506 **18,700.**

Progress in Probability,

*Vol. **:* **Dalang,R. /Dozzi,M. /Flandoli,F. /Russo,F. (eds.):**
Stochastic Analysis: 494-190
A Series of Lectures: Centre Interfacultaire Bernoulli, 2012, Ecole Polytechnique Federale de Lausanne, Switzerland

This book collects lectures and research results in stochastic analysis by distinguished researchers, invited on the occasion of a thematic semester organized by the Bernoulli Center of the Ecole Polytechnique at Lausanne, Switzerland, from January to June 2012.
Contributions by: S. Albeverio M. Arnaudon V. Bally V. Barbu H. Bessaih Z. Brzezniak K. Burdzy A.B. Cruzeiro F. Flandoli A. Kohatsu-Higa S. Mazzucchi C. Mueller J. van Neerven M. Ondrejat S. Peszat M. Veraar L. Weis J.C. Zambrini

Sep. 2015 **300 pp.**
9783034809085 **26,750.**

Birkhauser

Cambridge Studies in Advanced Mathematics,

Vol. 150: Mattila,P.: 494-133

The Fourier Transform and Hausdorff Dimension

During the past two decades there has been active interplay between geometric measure theory and Fourier analysis.
This book describes part of that development, concentrating on the relationship between the Fourier transform and Hausdorff dimension.
The main topics concern applications of the Fourier transform to geometric problems involving Hausdorff dimension, such as Marstrand type projection theorems and Falconer's distance set problem, and the role of Hausdorff dimension in modern Fourier analysis, especially in Kakeya methods and Fourier restriction phenomena.
The discussion includes both classical results and recent developments in the area.
The author emphasises partial results of important open problems, for example, Falconer's distance set conjecture, the Kakeya conjecture and the Fourier restriction conjecture.
Essentially self-contained, this book is suitable for graduate students and researchers in mathematics.

Sep. 2015 ....
9781107107359 13,040.

New Mathematical Monographs,

Fricain,E. /Mashreghi,J.: 494-110

The Theory of H(b) Spaces, Vol. 2

An H(b) space is defined as a collection of analytic functions that are in the image of an operator.
The theory of H(b) spaces bridges two classical subjects, complex analysis and operator theory, which makes it both appealing and demanding.
Volume 1 of this comprehensive treatment is devoted to the preliminary subjects required to understand the foundation of H(b) spaces, such as Hardy spaces, Fourier analysis, integral representation theorems, Carleson measures, Toeplitz and Hankel operators, various types of shift operators and Clark measures. Volume 2 focuses on the central theory.
Both books are accessible to graduate students as well as researchers: each volume contains numerous exercises and hints, and figures are included throughout to illustrate the theory.

Oct. 2015 700 pp.
9781107027787 24,450.

Munson,B. /Volic,I.: 494-176

Cubical Homotopy Theory

494-041

Graduate students and researchers alike will benefit from this treatment of classical and modern topics in homotopy theory of topological spaces with an emphasis on cubical diagrams.
The book contains more than 300 examples and provides detailed explanations of many fundamental results.
Part I focuses on foundational material on homotopy theory, viewed through the lens of cubical diagrams: fibrations and cofibrations, homotopy pullbacks and pushouts, and the Blakers-Massey Theorem.
Part II includes a brief example-driven introduction to categories, limits and colimits, an accessible account of homotopy limits and colimits of diagrams of spaces, and a treatment of cosimplicial spaces.

Nov. 2015 625 pp.
9781107030251 21,190.

Cambridge

London Mathematical Society Lecture Note Series,

Vol. 420: **Dieulefait,L. /Heath-Brown,D. /Faltings,G. / Manin,Y. /Moroz,B. /Wintenberger,J.-P.: Arithmetic and Geometry** 494-167

The 'Arithmetic and Geometry' trimester, held at the Hausdorff Research Institute for Mathematics in Bonn, focussed on recent work on Serre's conjecture and on rational points on algebraic varieties.
The resulting proceedings volume provides a modern overview of the subject for graduate students in arithmetic geometry and Diophantine geometry. It is also essential reading for any researcher wishing to keep abreast of the latest developments in the field.
Highlights include Tim Browning's survey on applications of the circle method to rational points on algebraic varieties and Per Salberger's chapter on rational points on cubic hypersurfaces.

July 2015 550 pp.
9781107462540 13,040.

Vol. 419: **Meyer,J. /Needham,D.: The Cauchy Problem for Non-Lipschitz Semi-Linear Parabolic Partial Differential Equations** 494-135

Reaction-diffusion theory is a topic which has developed rapidly over the last thirty years, particularly with regards to applications in chemistry and life sciences. Of particular importance is the analysis of semi-linear parabolic PDEs. This monograph provides a general approach to the study of semi-linear parabolic equations when the nonlinearity, while failing to be Lipschitz continuous, is Holder and/or upper Lipschitz continuous, a scenario that is not well studied, despite occurring often in models.
The text presents new existence, uniqueness and continuous dependence results, leading to global and uniformly global well-posedness results. Extensions of classical maximum/minimum principles, comparison theorems and derivative (Schauder-type) estimates are developed and employed. Detailed specific applications are presented in the later stages of the monograph.

June 2015 170 pp.
9781107477391 11,270.

London Mathematical Society Student Texts,

Vol. 72: **Ball,S.: Finite Geometry and Combinatorial Applications** 494-037

The projective and polar geometries that arise from a vector space over a finite field are particularly useful in the construction of combinatorial objects, such as latin squares, designs, codes and graphs.
This book provides an introduction to these geometries and their many applications to other areas of combinatorics. Coverage includes a detailed treatment of the forbidden subgraph problem from a geometrical point of view, and a chapter on maximum distance separable codes, which includes a proof that such codes over prime fields are short.
Finite Geometry and Combinatorial Applications is ideal for anyone, from a third-year undergraduate to a researcher, who wishes to familiarise themselves with and gain an appreciation of finite geometry.

July 2015 250 pp.
9781107107991 /9781107518438 16,300./6,520. (Paper ed.)

Cambrdige

Encyclopedia of Mathematics and its Applications,

494-136

*Vol. **:* Mora,T.:

Solving Polynomial Equation Sysyems, Vol. 4: Buchberger's Theory and Beyond

In this fourth and final volume the author extends Buchberger's Algorithm in three different directions.
First, he extends the theory to group rings and other Ore-like extensions, and provides an operative scheme that allows one to set a Buchberger theory over any effective associative ring.
Second, he covers similar extensions as tools for discussing parametric polynomial systems, the notion of SAGBI-bases, Grobner bases over invariant rings and Hironaka's theory.
Finally, Mora shows how Hilbert's followers - notably Janet, Gunther and Macaulay - anticipated Buchberger's ideas and discusses the most promising recent alternatives by Gerdt (involutive bases) and Faugere (F4 and F5).

Sep. 2015 800 pp.
9781107109636 26,080.

494-137

*Vol. **:* Mora,T.:

Solving Polynomial Equation Systems, Vol. 3: Algebraic Solving

This third volume of four finishes the program begun in Volume 1 by describing all the most important techniques, mainly based on Grobner bases, which allow one to manipulate the roots of the equation rather than just compute them.
The book begins with the 'standard' solutions (Gianni?Kalkbrener Theorem, Stetter Algorithm, Cardinal?Mourrain result) and then moves on to more innovative methods (Lazard triangular sets, Rouillier's Rational Univariate Representation, the TERA Kronecker package).
The author also looks at classical results, such as Macaulay's Matrix, and provides a historical survey of elimination, from Bezout to Cayley.

Mar. 2015 300 pp.
9780521811552 15,940.

Australian Math. Society Lecture Series,

494-048

*Vol. **:* Burness,T. /Giudici,M.:

Classical Groups, Derangements and Primes

A classical theorem of Jordan states that every finite transitive permutation group contains a derangement.
This existence result has interesting and unexpected applications in many areas of mathematics, including graph theory, number theory and topology. Various generalisations have been studied in more recent years, with a particular focus on the existence of derangements with special properties. Written for academic researchers and postgraduate students working in related areas of algebra, this introduction to the finite classical groups features a comprehensive account of the conjugacy and geometry of elements of prime order.
The development is tailored towards the study of derangements in finite primitive classical groups; the basic problem is to determine when such a group G contains a derangement of prime order r, for each prime divisor r of the degree of G.
This involves a detailed analysis of the conjugacy classes and subgroup structure of the finite classical groups.

Oct. 2015 350 pp.
9781107629448 12,880.

Cambridge

Publications of the Scuola Normale Superiore/CRM Series,

Vol. 18: Nesetril,J. /Pellegrini,M. (eds.): 494-177
Geometry, Structure and Randomness in Combinatorics .

This book collects some surveys on current trends in discrete mathematics and discrete geometry.
The areas covered include: graph representations, structural graphs theory, extremal graph theory, Ramsey theory and constrained satisfaction problems.

May 2015 160 pp.
9788876425240 6,240.

Vol. 17: Ambrosio,L. (ed.): 494-036
Geometric Measure Theory and Real Analysis

In 2013, a school on Geometric Measure Theory and Real Analysis, organized by G. Alberti, C. De Lellis and myself, took place at the Centro De Giorgi in Pisa, with lectures by V. Bogachev, R. Monti, E. Spadaro and D. Vittone.
The book collects the notes of the courses.
The courses provide a deep and up to date insight on challenging mathematical problems and their recent developments: infinite-dimensional analysis, minimal surfaces and isoperimetric problems in the Heisenberg group, regularity of sub-Riemannian geodesics and the regularity theory of minimal currents in any dimension and codimension.

Apr. 2015 250 pp.
9788876425226 6,240.

Publications of the Scuola Normale Superiore/Theses,

Vol. 19: Velichkov,B.: 494-158
Existence and Regularity Results for Some Shape Optimization Problems

The domains are subject to perimeter and volume constraints; we also take into account the possible presence of geometric obstacles.
We investigate the properties of the optimal sets and of the optimal state functions. In particular, we prove that the eigenfunctions are Lipschitz continuous up to the boundary and that the optimal sets subject to the perimeter constraint have regular free boundary.
We also consider spectral optimization problems in non-Euclidean settings and optimization problems for potentials and measures, as well as multiphase and optimal partition problems.

July 2015 345 pp.
9788876425264 4,010.

Publications of the Scuola Normale Superiore/Monographs,

Vol. 2: Zannier,U. (ed.): 494-159
On Some Applications of Diophantine Approximations

A translation of C.L.Siegel's Uber einige Anwendungen diophantischer Approximationen

The paper contains proofs of most important results in transcendence theory and diophantine analysis, notably Siegel's celebrated theorem on integral points on algebraic curves.
Many modern versions of Siegel's proof have appeared, but none seem to faithfully reproduce all features of the original one.

May 2015 157 pp.
9788876425196 5,800.

The Scuola Normale Superiore

Springer Monographs in Mathematics

Rhodes,J. /Silva,P.: 494-081

Boolean Representations of Simplicial Complexes and Matroids

This self-contained monograph explores a new theory centered around boolean representations of simplicial complexes leading to a new class of complexes featuring matroids as central to the theory.
The book illustrates these new tools to study the classical theory of matroids as well as their important geometric connections.
Moreover, many geometric and topological features of the theory of matroids find their counterparts in this extended context.
Combinatorialists will find this extension of the theory of matroids useful as it opens new lines of research within and beyond matroids. The geometric features and geometric/topological applications will appeal to geometers.
Topologists who desire to perform algebraic topology computations will appreciate the algorithmic potential of boolean representable complexes.

June 2015 200 pp.
9783319151137 17,600.

Agranovich,M.: 494-095

Sobolev Spaces, Their Generalizations and Elliptic Problems in Smooth & Lipschitz Domains

This book, which is based on several courses of lectures given by the author at the Independent University of Moscow, is devoted to Sobolev-type spaces and boundary value problems for linear elliptic partial differential equations. Its main focus is on problems in non-smooth (Lipschitz) domains for strongly elliptic systems.
The author, who is a prominent expert in the theory of linear partial differential equations, spectral theory, and pseudodifferential operators, has included his own very recent findings in the present book.
The book is well suited as a modern graduate textbook, utilizing a thorough and clear format that strikes a good balance between the choice of material and the style of exposition.

June 2015 330 pp.
9783319146478 12,480.

Tignol,J.-P. /Wadsworth,A.: 494-088

Value Functions on Simple Algebras, and Associated Graded Rings

This book explains Important advances in the theory of finite-dimensional division algebras have spurred the development of valuation theory in a noncommutative context since the latter part of the twentieth century.
These advances include Amitsur's construction of noncrossed product algebras and Platonov's solution to the Tannaka-Artin problem.
This monograph is the first book-length treatment of valuation theory on finite-dimensional division algebras, a subject of active and substantial research over the last forty years.
This book is particularly timely because it approaches valuation theory from the perspective of associated graded structures.
This new approach has been developed by the authors in the last few years and has significantly clarified noncommutative valuation theory.
Various constructions of division algebras are obtained as applications, such as noncrossed product algebras and indecomposable algebras.

Oct. 2015 685 pp.
9783319163598 10,400.

Springer

Universitext

Godement,R.: 494-114

Analysis III

Volume III sets out classical Cauchy theory. It is much more geared towards its innumerable applications than towards a more or less complete theory of analytic functions.
Cauchy-type curvilinear integrals are then shown to generalize to any number of real variables (differential forms, Stokes-type formulas).
The fundamentals of the theory of manifolds are then presented, mainly to provide the reader with a "canonical" language and with some important theorems (change of variables in integration, differential equations).
A final chapter shows how these theorems can be used to construct the compact Riemann surface of an algebraic function, a subject that is rarely addressed in the general literature though it only requires elementary techniques.

July 2015 314 pp.
9783319160528 10,400.

Sontz,S.: 494-150

Principal Bundles: The Quantum Case

This introductory text is the first book about quantum principal bundles and their quantum connections which are natural generalizations to non-commutative geometry of principal bundles and their connections in differential geometry. To make for a more self-contained book there is also much background material on Hopf algebras, (covariant) differential calculi, braid groups and compatible conjugation operations.
The approach is slow paced and intuitive in order to provide researchers and students in both mathematics and physics ready access to the material.

May 2015 382 pp.
9783319158280 11,640.

Giga Yoshikazu /Novotny,A. (eds.): 494-113

Handbook of Mathematical Analysis in Mechanics of Viscous Fluids

Mathematics has always played a key role for researches in fluid mechanics. The purpose of this handbook is to give an overview of items that are key to handling problems in fluid mechanics.
Since the field of fluid mechanics is huge, it is almost impossible to cover many topics. In this handbook, we focus on mathematical analysis on viscous Newtonian fluid.
The first part is devoted to mathematical analysis on incompressible fluids while part 2 is devoted to compressible fluids.

Mar. 2018 1400 pp.
9783319133430 120,200.

Springer Theses

Rosin,D.: 494-318

Complex Autonomous Boolean Networks.

These networks are realized with integrated circuits on an electronic chip as a field programmable gate array (FPGA) with roughly 100,000 logic gates, offering an extremely flexible model system.
It allows fast and cheap design cycles and large networks with arbitrary topologies and coupling delays.

Jan. 2015 199 pp.
9783319135779 22,300

Springer

Problem Books in Mathematics

Tkachuk,V.: 494-153
A Cp-Theory Problem Book:
Compactness in Function Spaces

The books in Vladimir Tkachuk's A Cp-Theory Problem Book series will be the 'go to' texts for basic reference to Cp-theory.
This third volume, Compactness in Function Spaces, applies all modern methods of Cp-theory to study compactness-like properties in function spaces and introduces the reader to the theory of compact spaces widely used in Functional Analysis.
The text is designed to bring a dedicated reader from basic topological principles to the frontiers of modern research covering a wide variety of topics in Cp-theory and general topology at the professional level.
This third volume is self-contained and works in tandem with the other two, containing five hundred carefully selected problems and solutions.
It can also be considered as an introduction to advanced set theory and descriptive set theory, presenting diverse topics of the theory of function spaces with the topology of pointwise convergence, or Cp-theory which exists at the intersection of topological algebra, functional analysis and general topology.

May 2015 492 pp.
9783319160917 14,560.

Fields Institute Communications,

Vol. 73: Chang,D. /Holm,D. /Patrick,G. /Ratiu,T. (eds.):
Geometry, Mechanics, and Dynamics:
The Legacy of Jerry Marsden 494-105

This book illustrates the broad range of Jerry Marsden's mathematical legacy in areas of geometry, mechanics, and dynamics, from very pure mathematics to very applied, but always with a geometric perspective.
Each contribution develops its material from the viewpoint of geometric mechanics beginning at the very foundations, introducing readers to modern issues via illustrations in a wide range of topics.
The twenty refereed papers contained in this volume are based on lectures and research performed during the month of July 2012 at the Fields Institute for Research in Mathematical Sciences, in a program in honor of Marsden's legacy.

Apr. 2015 368 pp.
9781493924400 20,900.

Vol. 72: Douglas,R. / 494-108
Krantz,S. /Sawyer,E. /Treil,S. /Wick,B. (eds.):
The Corona Problem:
Connections Between Operator Theory, Function Theory, and Geometry

This volume validates and commemorates the workshop, and records some of the ideas that were developed within.
The corona problem dates back to 1941. It has exerted a powerful influence over mathematical analysis for nearly 75 years.
There is material to help bring people up to speed in the latest ideas of the subject, as well as historical material to provide background.
Particularly noteworthy is a history of the corona problem, authored by the five organizers, that provides a unique glimpse at how the problem and its many different solutions have developed.

Dec. 2014 231 pp.
9781493912551 18,700.

Springer

Series on Number Theory and Its Applications,

Vol. 11: Kaneko Masanobu /Kanemitsu Shigeru /Liu,J. (eds.):
Number Theory: 494-060
Plowing and Starring Through High Wave Forms:
The 7th China-Japan Seminar, Fukuoka, Japan

Based on the successful 7th China-Japan seminar on number theory conducted in Kyushu University, this volume is a compilation of survey and semi-survey type of papers by the participants of the seminar.
The topics covered range from traditional analytic number theory to elliptic curves and universality.
This volume contains new developments in the field of number theory from recent years and it provides suitable problems for possible new research at a level which is not unattainable.
Timely surveys will be beneficial to a new generation of researchers as a source of information and these provide a glimpse at the state-of-the-art affairs in the fields of their research interests.

Mar. 2015 200 pp.
9789814644921 17,740.

Series on Complexity, Nonlinearity and Chaos,

Vol. 4: Baleanu,D. /Mustafa,O.: 494-099
Asymptotic Integration and Stability:
For Ordinary, Functional and
Discrete Differential Equations of Fractional Order

This volume presents several important and recent contributions to the emerging field of fractional differential equations in a self-contained manner.
It deals with new results on existence, uniqueness and multiplicity, smoothness, asymptotic development, and stability of solutions.
The new topics in the field of fractional calculus include also the Mittag-Leffler and Razumikhin stability, stability of a class of discrete fractional non-autonomous systems, asymptotic integration with a priori given coefficients, intervals of disconjugacy (non-oscillation), existence of Lp solutions for various linear, and nonlinear fractional differential equations.

Apr. 2015 212 pp.
9789814641098 14,300.

Lefloch,P. /Ma,Y.:
The Hyperboloidal Foliation Method

The "Hyperboloidal Foliation Method" introduced in this 494-245
monograph is based on a (3 + 1) foliation of Minkowski spacetime by hyperboloidal hypersurfaces.
This method allows the authors to establish global-in-time existence results for systems of nonlinear wave equations posed on a curved spacetime.
It also allows to encompass the wave equation and the Klein-Gordon equation in a unified framework and, consequently, to establish a well-posedness theory for a broad class of systems of nonlinear wave-Klein-Gordon equations.
This book requires certain natural (null) conditions on nonlinear interactions, which are much less restrictive that the ones assumed in the existing literature.
This theory applies to systems arising in mathematical physics involving a massive scalar field, such as the Dirac-Klein-Gordon systems.

Jan. 2015 160 pp.
9789814641623 12,310.

World Scientific Publishing

Berlekamp,E.: 494-270

Algebraic Coding Theory, Revised ed.

This is the revised edition of Berlekamp's famous book, "Algebraic Coding Theory", originally published in 1968, wherein he introduced several algorithms which have subsequently dominated engineering practice in this field. One of these is an algorithm for decoding Reed-Solomon and Bose-Chaudhuri-Hocquenghem codes that subsequently became known as the Berlekamp-Massey Algorithm.
Another is the Berlekamp algorithm for factoring polynomials over finite fields, whose later extensions and embellishments became widely used in symbolic manipulation systems.

May 2015 480 pp.
9789814635899 17,740.

Koh,K. /Dong,F. /Ng,K. /Tay,E.: 494-061/062

Graph Theory: Undergraduate Mathematics

This book is an expansion of our first book Introduction to Graph Theory: H3 Mathematics. While the first book was intended for capable high school students and university freshmen, this version covers substantially more ground and is intended as a reference and textbook for undergraduate studies in Graph Theory. In fact, the topics cover a few modules in the Graph Theory taught at the National University of Singapore.
The reader will be challenged and inspired by the material in the book, especially the variety and quality of the problems, which are derived from the authors' years of teaching and research experience.

May 2015 496 pp.
9789814641586/ 9789814641593 23,170./12,310. (Paper ed.)

Kato Tsuyoshi: 494-172

Dynamical Scale Transform in Tropical Geometry

This book provides comprehensive analysis of dynamical systems in tropical geometry, which include the author's significant discoveries and pioneering contributions. Tropical geometry is a kind of dynamical scale transform which connects real rational dynamics with piecewise linear one presented by max and plus algebras.
A comparison method is given which estimates orbits corresponding to different rational dynamics by reduction to the piecewise linear dynamics. Both rational and piecewise linear dynamics appear in many important branches of mathematics.

May 2016 250 pp.
9789814635363 11,630.

Bokut,L. /Chen,Y. /Kalorkoti,K. /Piontlovski,D.: 494-043

Grobner-Shirshov Bases: Normal Forms, Combinatorial and Decision Problems in Algebra

The book is about algebras, groups, semigroups presented by generators and defining relations. They play a great role in modern mathematics.
It is enough to mention the quantum groups and Hopf algebra theory, the Kac-Moody and Borcherds algebra theory, the braid groups and Hecke algebra theory, the Coxeter groups and semisimple Lie algebra theory, the plactic monoid theory.
One of the main problems for such presentations is the problem of normal forms of their elements.

Aug. 2015 450 pp.
9789814619486 24,160.

World Scientific Publishing

Asterisque,

Vol. 366: **Martin,J. /Milman,M.:** 494-132

Fractional Sobolev Inequalities: Symmetrization, Isoperimetry and Interpolation

We obtain new oscillation inequalities in metric spaces in terms of the Peetre K?functional and the isoperimetric profile.
Applications provided include a detailed study of Fractional Sobolev inequalities and the Morrey-Sobolev embedding theorems in different contexts.
In particular we include a detailed study of Gaussian measures as well as probability measures between Gaussian and exponential.
We show a kind of reverse Polya-Szego principle that allows us to obtain continuity as a self improvement from boundedness, using symmetrization inequalities.
Our methods also allow for precise estimates of growth envelopes of generalized Sobolev and Besov spaces on metric spaces.
We also consider embeddings into BMO and their connection to Sobolev embeddings.

Dec. 2014 136 pp.
9782856297964 9,370.

Vol. 365: **Kleiner,B. /Lott,J.:** 494-174

Local Collapsing, Orbifolds, and Geometrization

This volume has two papers, which can be read separately.
The first paper concerns local collapsing in Riemannian geometry.
We prove that a three-dimensional compact Riemannian manifold which is locally collapsed, with respect to a lower curvature bound, is a graph manifold.
This theorem was stated by Perelman without proof and was used in his proof of the geometrization conjecture.
The second paper is about the geometrization of orbifolds.
A three-dimensional closed orientable orbifold, which has no bad suborbifolds, is known to have a geometric decomposition from work of Perelman in the manifold case, along with earlier work of Boileau-Leeb-Porti, Boileau-Maillot-Porti, Boileau-Porti, Cooper-Hodgson-Kerckhoff and Thurston.
We give a new, logically independent, unified proof of the geometrization of orbifolds, using Ricci flow.

Mar. 2015 136 pp.
9782856297957 9,370.

Panoramas et syntheses, Vol. 42 - 43

Vol. 42 - 43: **Brochard,S. /Conrad,B. /Oesterle,J.:**

Autour des Schemas En Groupes: Ecole d'ete <<Schemas en groupes>>

494-045

Group Schemes, A Celebration of SGA 3 -Vol. 1

This volume contains the first part of the lecture notes of the Summer school "Group Schemes, introduction to the SGA3 seminar of Demazure-Grothendieck", which was held at the Centre International de Rencontres Mathematiques (CIRM) at Luminy in September 2011.
This summer school was devoted to the theory of group schemes and especially of reductive group schemes.
The contributions in this first part are expanded versions of the talks introducing Grothendieck topologies (S. Brochard), group schemes of multiplicative type (J. Oesterle) and reductive group schemes (B. Conrad).

Dec. 2014 458 pp.
9782856297940 21,410.