

Yurinsha Book News

Grundlehren der mathematischen Wissenschaften,

Vol. 352: Armstrong, S. /

No. 519-116

Kuusi, T. /Mourrat, J.-C.:

Quantitative Stochastic Homogenization and Large-Scale Regularity

The focus of this book is the large-scale statistical behavior of solutions of divergence-form elliptic equations with random coefficients, which is closely related to the long-time asymptotics of reversible diffusions in random media and other basic models of statistical physics.

Of particular interest is the quantification of the rate at which solutions converge to those of the limiting, homogenized equation in the regime of large scale separation, and the description of their fluctuations around this limit. This self-contained presentation gives a complete account of the essential ideas and fundamental results of this new theory of quantitative stochastic homogenization, including the latest research on the topic, and is supplemented with many new results.

The book serves as an introduction to the subject for advanced graduate students and researchers working in partial differential equations, statistical physics, probability and related fields, as well as a comprehensive reference for experts in homogenization.

June 2019

518 pp.

9783030155445

21,010.

Vol. 353: Lerner, N.:

評訳掲載 Page 6

Carleman Inequalities: An Introduction and More

July 2019 537 pp. 9783030159924 22,920.

Springer

<http://www.yurinsha.com>

ホームページは毎月1日が更新予定日です

No. 519

May - June 2019

敬理科学 **友隣社** 洋書専門

*Student Mathematical Library,***Vol. 88: Murty, E. /Fodden, B.:** No. 519-097**Hilbert's Tenth Problem:****An Introduction to Logic, Number Theory, & Computability**

This book is an exposition of this remarkable achievement.
Often, the solution to a famous problem involves formidable background.
Surprisingly, the solution of Hilbert's tenth problem does not.
What is needed is only some elementary number theory and rudimentary logic.
In this book, the authors present the complete proof along with the romantic history that goes with it.

Along the way, the reader is introduced to Cantor's transfinite numbers, axiomatic set theory, Turing machines, and Gödel's incompleteness theorems.

May 2019 242 pp. 9,260.
9781470443993

*CBMS Regional Conference Series in Mathematics,***Vol. 131: Joshi, N.:** No. 519-156**Discrete Painleve Equations**

This book necessarily starts with introductory material to give the reader an accessible entry point to this vast subject matter. It is based on lectures that the author presented as principal lecturer at a Conference Board of Mathematical Sciences and National Science Foundation conference in Texas in 2016.

Instead of technical theorems or complete proofs, the book relies on providing essential points of many arguments through explicit examples, with the hope that they will be useful for applied mathematicians and physicists.

June 2019 154 pp. 9,260.
9781470450380

*Pure and Applied Undergraduate Texts,***Vol. 36: Silva, C.:** No. 519-179**Invitation to Real Analysis**

A theme in the book is to give more than one proof for interesting facts; this illustrates how different ideas interact and it makes connections among the facts that are being learned.

Metric spaces are introduced early in the book, but there are instructions on how to avoid metric spaces for the instructor who wishes to do so.

There are questions that check the readers' understanding of the material, with solutions provided at the end.

June 2019 304 pp. 16,660.
9781470449285

*Proceedings of Symposia in Pure Mathematics,***Vol. 102: Gay, D. /Wu, W. (eds.):** No. 519-197**Breadth in Contemporary Topology**

The papers contained in this volume cover topics ranging from symplectic topology to classical knot theory to topology of 3- and 4-dimensional manifolds to geometric group theory. Several papers focus on open problems, while other papers present new and insightful proofs of classical results.

Taken as a whole, this volume captures the spirit of the conference, both in terms of public lectures and informal conversations, and presents a sampling of some of the great new ideas generated in topology over the preceding eight years.

June 2019 283 pp. 22,390.
9781470442491

A. M. S.

Mathematical Surveys and Monographs,

Vol. 238: Tsfasman, M. /Vladut, S. /Nogin, D.: No. 519-107
Algebraic Geometry Codes:

Advanced Chapters

Whereas most books on coding theory start with elementary concepts and then develop them in the framework of coding theory itself within, this book systematically presents meaningful and important connections of coding theory with algebraic geometry and number theory.

Among many topics treated in the book, the following should be mentioned: curves with many points over finite fields, class field theory, asymptotic theory of global fields, decoding, sphere packing, codes from multi-dimensional varieties, and applications of algebraic geometry codes.

July 2019

459 pp.

9781470448653

21,710.

Graduate Studies in Mathematics,

Vol. 199: Weinan, F. /Li, T. /Vanden-Eijnden, E.: No. 519-246
Applied Stochastic Analysis

It presents the basic mathematical foundations of stochastic analysis (probability theory and stochastic processes) as well as some important practical tools and applications (e.g., the connection with differential equations, numerical methods, path integrals, random fields, statistical physics, chemical kinetics, and rare events).

The book strikes a nice balance between mathematical formalism and intuitive arguments, a style that is most suited for applied mathematicians.

Readers can learn both the rigorous treatment of stochastic analysis as well as practical applications in modeling and simulation.

Numerous exercises nicely supplement the main exposition.

June 2019

305 pp.

9781470449339

14,310.

Contemporary Mathematics,

Vol. 728: Andruskiewitsch, N. /Nikshych, D. (eds.): No. 519-059
Tensor Categories and Hopf Algebras

Papers highlight the latest advances and research directions in the theory of tensor categories and Hopf algebras.

Primary topics include classification and structure theory of tensor categories and Hopf algebras, Gelfand-Kirillov dimension theory for Nichols algebras, module categories and weak Hopf algebras, Hopf Galois extensions, graded simple algebras, and bialgebra coverings.

May 2019

201 pp.

9781470443214

19,690.

Vol. 727: Leroy, A. /Lomp, C. /
Lopez-Permouth, S. /Oggier, F. (eds.): No. 519-284
Rings, Modules and Codes

The papers are related to noncommutative rings, covering topics such as: ring theory, with both the elementwise and more structural approaches developed; module theory with popular topics such as automorphism invariance, almost injectivity, ADS, and extending modules; and coding theory, both the theoretical aspects such as the extension theorem and the more applied ones such as Construction A or Reed-Muller codes.

May 2019

355 pp.

9781470441043

19,690.

A. M. S.

Dutta, H. /Kocinac, L. /Srivastava, H. (eds.): No. 519-146
**Current Trends in Mathematical Analysis and
 its Interdisciplinary Applications**

This book explores several important aspects of recent developments in the interdisciplinary applications of mathematical analysis (MA), and highlights how MA is now being employed in many areas of scientific research. Each of the 23 carefully reviewed chapters was written by experienced expert(s) in respective field, and will enrich readers's understanding of the respective research problems, providing them with sufficient background to understand the theories, methods and applications discussed.

July 2019 900 pp.
 9783030152413 26,740.

Tutorials, Schools, and Workshops in the Mathematical Sciences

Inam, I. /Buyukasik, E. (eds.): No. 519-019
**Notes From International Autumn School on
 Computational Number Theory**

Tutorials, Schools, and Workshops in the Mathematical Sciences
 This Workshop was held at the Izmir Institute of Technology,
 2017 in Izmir, Turkey.

Written by experts in computational number theory,
 the chapters cover a variety of the most important aspects of the field.
 By including timely research and survey articles, the text also helps pave
 a path to future advancements.

Topics include: Modular forms L-functions The modular symbols
 algorithm Diophantine equations Nullstellensatz Eisenstein series

Apr. 2019 350 pp.
 9783030125578 13,370.

Trends in Mathematics

**Aleman, A. /Hedenmalm, H. /
 Khavinson, D. /Putinar, M.:** No. 519-112

**Analysis of Operators on Function Spaces:
 The Serguei Shimorin Memorial Volume**

This book contains both expository articles and original research in
 the areas of function theory and operator theory.

The contributions include extended versions of some of the lectures by
 invited speakers at the conference in honor of the memory of
 Serguei Shimorin at the Mittag-Leffler Institute in the summer of 2018.

July 2019 205 pp.
 9783030146399 28,650.

Badawi, A. /Coykendall, J. (eds.): No. 519-065
Advances in Commutative Algebra:

Dedicated to David F. Anderson

This book highlights the contributions of the eminent mathematician and
 leading algebraist David F. Anderson in wide-ranging areas of
 commutative algebra.

It provides a balance of topics for experts and non-experts, with
 a mix of survey papers to offer a synopsis of developments across
 a range of areas of commutative algebra and outlining Anderson's work.

June 2019 263 pp.
 9789811370274 16,230.

Birkhauser

*Cambridge Studies in Advanced Mathematics,***Vol. 181: Agrachev, A. /Barilari, D. /Boscain, U.:** No. 519-188**A Comprehensive Introduction to
Sub-Riemannian Geometry**

Sub-Riemannian geometry is the geometry of a world with nonholonomic constraints. In such a world, one can move, send and receive information only in certain admissible directions but eventually can reach every position from any other.

In the last two decades sub-Riemannian geometry has emerged as an independent research domain impacting on several areas of pure and applied mathematics, with applications to many areas such as quantum control, Hamiltonian dynamics, robotics and Lie theory.

This comprehensive introduction proceeds from classical topics to cutting-edge theory and applications, assuming only standard knowledge of calculus, linear algebra and differential equations.

Nov. 2019 774 pp. 32,690.
9781108476355

*Cambridge Tracts in Mathematics,***Vol. 218: Meckes, E.:**

No. 519-096

**The Random Matrix Theory of
the Classical Compact Groups**

This is the first book to provide a comprehensive overview of foundational results and recent progress in the study of random matrices from the classical compact groups, drawing on the subject's deep connections to geometry, analysis, algebra, physics, and statistics.

The book sets a foundation with an introduction to the groups themselves and six different constructions of Haar measure.

Classical and recent results are then presented in a digested, accessible form, including the following: results on the joint distributions of the entries; an extensive treatment of eigenvalue distributions, including the Weyl integration formula, moment formulae, and limit theorems and large deviations for the spectral measures; concentration of measure with applications both within random matrix theory and in high dimensional geometry; and results on characteristic polynomials with connections to the Riemann zeta function.

July 2019 150 pp. 21,460.
9781108419529

*London Mathematical Society Student Texts,***Vol. 93: Applebaum, D.:**

No. 519-060

Semigroups of Linear Operators:**With Applications to Analysis, Probability and Physics**

The theory of semigroups of operators is one of the most important themes in modern analysis. Not only does it have great intellectual beauty, but also wide-ranging applications.

In this book the author first presents the essential elements of the theory, introducing the notions of semigroup, generator and resolvent, and establishes the key theorems of Hille-Yosida and Lumer-Phillips that give conditions for a linear operator to generate a semigroup. He then presents a mixture of applications and further developments of the theory.

May 2019 238 pp. 18,070./6,320. (Paper ed.)
9781108483094/9781108716376

Cambridge

Vol. 353: Lerner, N.:

No. 519-161

**Carleman Inequalities:
An Introduction and More**

This book provides a detailed exposition of the basic techniques of Carleman Inequalities, driven by applications to various questions of unique continuation. Beginning with an elementary introduction to the topic, including examples accessible to readers without prior knowledge of advanced mathematics, the book's first five chapters contain a thorough exposition of the most classical results, such as Calderon's and Hormander's theorems. Later chapters explore a selection of results of the last four decades around the themes of continuation for elliptic equations, with the Jerison-Kenig estimates for strong unique continuation, counterexamples to Cauchy uniqueness of Cohen and Alinhac & Baouendi, operators with partially analytic coefficients with intermediate results between Holmgren's and Hormander's uniqueness theorems, Wolff's modification of Carleman's method, conditional pseudo-convexity, and more.

July 2019
9783030159924

557 pp.

22,920.

Lecture Notes in Mathematics,

Vol. 2240: Pitale, A.:

No. 519-100

Siegel Modular Forms:**A Classical and Representation Theoretic Approach**

This monograph introduces two approaches to studying Siegel modular forms: the classical approach as holomorphic functions on the Siegel upper half space, and the approach via representation theory on the symplectic group. By illustrating the interconnections shared by the two, this book fills an important gap in the existing literature on modular forms. It begins by establishing the basics of the classical theory of Siegel modular forms, and then details more advanced topics. After this, much of the basic local representation theory is presented. Exercises are featured heavily throughout the volume, the solutions of which are helpfully provided in an appendix. Other topics considered include Hecke theory, Fourier coefficients, cuspidal automorphic representations, Bessel models, and integral representation.

June 2019
9783030156749

138 pp.

7,640.

Vol. 2237: Coupier, D. (ed.):

No. 519-221

Stochastic Geometry:**Modern Research Frontiers**

This book contains five of these introductory lectures. The first chapter is a historically motivated introduction to Stochastic Geometry which relates four classical problems (the Buffon needle problem, the Bertrand paradox, the Sylvester four-point problem and the bicycle wheel problem) to current topics. The remaining chapters give an application motivated introduction to contemporary Stochastic Geometry, each one devoted to a particular branch of the subject: understanding spatial point patterns through intensity and conditional intensities; stochastic methods for image analysis; random fields and scale invariance; and the theory of Gibbs point processes.

June 2019
9783030135461

248 pp.

8,590.

Springer

*Lecture Notes in Mathematics,***Vol. 2241: Cobzas, S. /Miculescu, R. /Nicolae, A.:** No. 519-046**Lipschitz Functions**

The aim of this book is to present various facets of the theory and applications of Lipschitz functions, starting with classical and culminating with some recent results.

Among the included topics we mention: characterizations of Lipschitz functions and relations with other classes of functions, extension results for Lipschitz functions and Lipschitz partitions of unity, Lipschitz free Banach spaces and their applications, compactness properties of Lipschitz operators, Bishop-Phelps type results for Lipschitz functionals, applications to best approximation in metric and in metric linear spaces, Kantorovich-Rubinstein norm and applications to duality in the optimal transport problem, Lipschitz mappings on geodesic spaces.

The prerequisites are basic results in real analysis, functional analysis, measure theory (including vector measures) and topology, which, for reader's convenience, are surveyed in the first chapter of the book.

June 2019 593 pp. 10,500.
9783030164881

Vol. 2239: Di Nasso, M. /Goldbring, I. /Lupini, M.:**Nonstandard Methods in** No. 519-076**Ramsey Theory and Combinatorial Number Theory**

The goal of this monograph is to give an accessible introduction to nonstandard methods and their applications, with an emphasis on combinatorics and Ramsey theory.

It includes both new nonstandard proofs of classical results and recent developments initially obtained in the nonstandard setting.

This makes it the first combinatorics-focused account of nonstandard methods to be aimed at a general (graduate-level) mathematical audience.

This book will provide a natural starting point for researchers interested in approaching the rapidly growing literature on combinatorial results obtained via nonstandard methods.

July 2019 206 pp. 7,640.
9783030179557

Vol. 2238: Gille, P.: No. 519-081**Groupes Algébriques Semi-Simples
En Dimension Cohomologique < 2**

La théorie des groupes algébriques sur un corps arbitraire est l'une des branches les plus merveilleuses des mathématiques modernes. Cette monographie porte sur les groupes algébriques semi-simples définis sur un corps k de dimension cohomologique séparable -2 et la cohomologie galoisienne d'iceux.

La question ouverte la plus importante est la conjecture II de Serre (1962) qui prédit l'annulation de la cohomologie galoisienne d'un groupe semi-simple simplement connexe.

Utilisant principalement des techniques de groupes algébriques, on couvre tous les cas connus de la conjecture: les cas classiques (dus à Bayer-Fluckiger and Parimala) ainsi que les avancées sur les cas exceptionnels restants (par exemple de type E8).

Ceci s'applique à la classification des groupes semi-simples.

July 2019 157 pp. 5,970.
9783030172718

Springer

Vol. 2236: Harjulehto, P. /Hasto, P.:

No. 519-152

Orlicz Spaces and Generalized Orlicz Spaces

This book presents a systematic treatment of generalized Orlicz spaces (also known as Musielak-Orlicz spaces) with minimal assumptions on the generating Φ -function.

It introduces and develops a technique centered on the use of equivalent Φ -functions.

Results from classical functional analysis are presented in detail and new material is included on harmonic analysis.

Extrapolation is used to prove, for example, the boundedness of Calderon-Zygmund operators.

Finally, central results are provided for Sobolev spaces, including Poincare and Sobolev-Poincare inequalities in norm and modular forms.

Primarily aimed at researchers and PhD students interested in Orlicz spaces or generalized Orlicz spaces, this book can be used as a basis for advanced graduate courses in analysis.

Aug. 2019
9783030150990

169 pp.

7,640.

No. 519-202

Vol. 2230: Kesler, E.:**Supergeometry, Super-Riemann Surfaces and the Superconformal Action Functional**

This book treats the two-dimensional non-linear supersymmetric sigma model or spinning string from the perspective of supergeometry.

The objective is to understand its symmetries as geometric properties of super Riemann surfaces, which are particular complex super manifolds of dimension $1|1$.

The first part gives an introduction to the super differential geometry of families of super manifolds.

Appropriate generalizations of principal bundles, smooth families of complex manifolds and integration theory are developed.

The second part studies uniformization, $U(1)$ -structures and connections on Super Riemann surfaces and shows how the latter can be viewed as extensions of Riemann surfaces by a gravitino field.

A natural geometric action functional on super Riemann surfaces is shown to reproduce the action functional of the non-linear supersymmetric sigma model using a component field formalism.

July 2019
9783030137571

310 pp.

8,590.

Bonnans, F.:

No. 519-249

Convex and Stochastic Optimization

This textbook provides an introduction to convex duality for optimization problems in Banach spaces, integration theory, and their application to stochastic programming problems in a static or dynamic setting.

It introduces and analyses the main algorithms for stochastic programs, while the theoretical aspects are carefully dealt with.

The reader is shown how these tools can be applied to various fields, including approximation theory, semidefinite and second-order cone programming and linear decision rules.

June 2019
9783030149765

311 pp.

9,550.

Bolyai Society Mathematical Studies,

Vol. 28: Barany, I. /Katona, G. /Sali, A. (eds.): No. 519-040
Building Bridges II:

Mathematics of Laszlo Lovasz

The present volume is a collection of research or survey papers written by invited speakers of a conference celebrating the 70th birthday of Laszlo Lovasz. Topics covered by the contributions of this book include classical research subjects like extremal graph theory, coding theory, design theory, applications of linear algebra and combinatorial optimization, as well as recent trends like extensions of graph limits, online or statistical versions of classical combinatorial problems, and new ways of derandomization.

May 2019 420 pp. 19,100.
 9783662592038

Problem Books in Mathematics

Barreira, L. /Valls, C.: No. 519-119

Dynamical Systems by Example

This book comprises an impressive collection of problems that cover a variety of carefully selected topics on the core of the theory of dynamical systems. Aimed at the graduate/upper undergraduate level, the emphasis is on dynamical systems with discrete time.

In addition to the basic theory, the topics include topological, low-dimensional, hyperbolic and symbolic dynamics, as well as basic ergodic theory.

July 2019 223 pp. 11,460.
 9783030159146

Springer INdAM Series,

Vol. 31: Codogni, G. /Dervan, R. /Viviani, F. (eds.): No. 519-073
Moduli of K-stable Varieties

The content focuses on the existence problem for canonical Kahler metrics and links to the algebro-geometric notion of stability.

The book includes both surveys on this problem, notably in the case of Fano varieties, and original contributions addressing this and related problems. The papers in the latter group develop the theory of K-stability; explore canonical metrics in the Kahler and almost-Kahler settings; offer new insights into the geometric significance of K-stability; and develop tropical aspects of the moduli space of curves, the singularity theory necessary for higher dimensional moduli theory, and the existence of minimal models.

June 2019 150 pp. 17,190.
 9783030131579

Springer Monographs in Mathematics

Rataj, J. /Zahle, M.: No. 519-176

Curvature Measures of Singular Sets

The book describes how curvature measures can be introduced for certain classes of sets with singularities in Euclidean spaces.

Its focus lies on sets with positive reach and some extensions, which include the classical polyconvex sets and piecewise smooth submanifolds as special cases.

The measures under consideration form a complete system of certain Euclidean invariants.

Techniques of geometric measure theory, in particular, rectifiable currents are applied, and some important integral-geometric formulas are derived.

July 2019 250 pp. 17,190.
 9783030181826

Springer

Kostic, M.:

No. 519-158

**Almost Periodic and Almost Automorphic Solutions to
Integro-Differential Equations**

This book discusses almost periodic and almost automorphic solutions to abstract integro-differential Volterra equations that are degenerate in time, and in particular equations whose solutions are governed by (degenerate) solution operator families with removable singularities at zero.

June 2019 320 pp. 21,570.
9783110641240

de Gruyter Series in Logic and Its Applications,

Vol. **: Carl, M.:

No. 519-043

Ordinal Computability:

An Introduction to Infinitary

Ordinal Computability discusses models of computation obtained by generalizing classical models, such as Turing machines, register machines or lambda-calculus to transfinite working time and space.

July 2019 200 pp. 19,090.
9783110495621

de Gruyter Proceedings in Mathematics

Vol. **: Mahmoud, F.:

No. 519-164

Banach Algebras and Applications:

**Proceedings of the International Conference held at
the University of Oulu, 2017**

Banach algebras is a multilayered area in mathematics with many ramifications. With a diverse coverage of different schools working on the subject, this proceedings volume reflects recent achievements in areas such as Banach algebras over groups, abstract harmonic analysis, group actions, amenability, topological homology, Arens irregularity, C^* -algebras and dynamical systems, operator theory, operator spaces, and locally compact quantum groups.

May 2019 250 pp. 21,570.
9783110601329

de Gruyter Studies in Mathematics,

Vol. 52: Pavlovic, M.:

No. 519-171

Function Classes on the Unit Disc, 2nd Revised ed.

This revised and extended edition of a well-established monograph in function theory contains a study on various function classes on the disc, a number of new results and new or easy proofs of old but interesting theorems (for example, the Fefferman-Stein theorem on subharmonic behavior or the theorem on conjugate functions in Bergman spaces), a full discussion on g -functions, and a treatment of lacunary series with values in quasi-Banach spaces.

Oct. 2019 530 pp. 23,100.
9783110628449

Vol. **: Loth, P. /Jacoby, C.:

No. 519-094

Classifications of Infinite Abelian Groups

This monograph covers in a comprehensive manner the current state of classification theory with respect to infinite abelian groups. A wide variety of ways to characterise different classes of abelian groups by invariants, isomorphisms and duality principles are discussed.

July 2019 250 pp. 21,000.
9783110432114

de Gruyter

de Gruyter Series in Nonlinear Analysis & Applications,

Vol. **: Blanc, P. /Rossi, J.: No. 519-123

Game Theory and Partial Differential Equations, 1

Extending the well-known connection between classical linear potential theory and probability theory (through the interplay between harmonic functions and martingales) to the nonlinear case of tug-of-war games and their related partial differential equations, this unique book collects several results in this direction and puts them in an elementary perspective in a lucid and self-contained fashion.

Aug. 2019 152 pp. 16,610.
9783110619256

Vol. **: Damascelli, L. /Pacella, F.: No. 519-139

Morse Index of Solutions of Nonlinear Elliptic Equations

This monograph presents in a unified manner the use of the Morse index, and especially its connections to the maximum principle, in the study of nonlinear elliptic equations.

The knowledge or a bound on the Morse index of a solution is a very important qualitative information which can be used in several ways for different problems, in order to derive uniqueness, existence or nonexistence, symmetry, and other properties of solutions.

July 2019 250 pp. 19,090.
9783110537321

Vol. **: Diaz, J. /Gomez-Castro, D. /Shaposhnikova, T.:
**Nonlinear Reaction-Diffusion Processes for
Nanocomposites:** No. 519-142

Anomalous Improved Homogenization

The behavior of materials at the nanoscale is a key aspect of modern nanoscience and nanotechnology.

This book presents rigorous mathematical techniques showing that some very useful phenomenological properties which can be observed at the nanoscale in many nonlinear reaction-diffusion processes can be simulated and justified mathematically by means of homogenization processes when a certain critical scale is used in the corresponding framework.

Sep. 2019 180 pp. 18,130.
9783110647273

Vol. 25: Pick, L. /Musil, V. /Kufner, A. /John, O. /Fucik, S.:
Function Spaces, 1

This is the first part of the third corrected and extended edition of a well established monograph. It is an introduction to function spaces defined in terms of differentiability and integrability classes.

It provides a catalogue of various spaces and benefits as a handbook for those who use function spaces to study other topics such as partial differential equations.

Oct. 2019 500 pp. 26,540.
9783110581775

Vol. **: Wolansky, G.: No. 519-276
Optimal Transport:

A Semi-Discrete Approach

Topics covered include problems related to stable marriages and stable partitions, multipartitions, optimal transport for measures and optimal partitions, and finally cooperative and noncooperative partitions.

Aug. 2019 250 pp. 19,850.
9783110633122

de Gruyter

Cenzer, D. /Larson, J.:

No. 519-044

**Set Theory and Foundations of Mathematics:
An Introduction to Mathematical Logic, Vol. 1**

This book provides an introduction to axiomatic set theory and descriptive set theory.

It is written for the upper level undergraduate or beginning graduate students to help them prepare for advanced study in set theory and mathematical logic as well as other areas of mathematics, such as analysis, topology, and algebra.

The book is designed as a flexible and accessible text for a one-semester introductory course in set theory, where the existing alternatives may be more demanding or specialized.

Readers will learn the universally accepted basis of the field, with several popular topics added as an option.

Pointers to more advanced study are scattered throughout the text.

Dec. 2019 150 pp. 8,060.
9789811201929

Nicaisej. /Bourqui, D.:

No. 519-098

Arc Schemes and Singularities

This title introduces the theory of arc schemes in algebraic geometry and singularity theory, with special emphasis on recent developments around the Nash problem for surfaces.

The main challenges are to understand the global and local structure of arc schemes, and how they relate to the nature of the singularities on the variety. Since the arc scheme is an infinite dimensional object, new tools need to be developed to give a precise meaning to the notion of a singular point of the arc scheme.

Other related topics are also explored, including motivic integration and dual intersection complexes of resolutions of singularities.

Written by leading international experts, it offers a broad overview of different applications of arc schemes in algebraic geometry, singularity theory and representation theory.

June 2019 300 pp. 18,140.
9781786347190

Staples, G.:

No. 519-106

**Clifford Algebras and Zeons:
Geometry to Combinatorics and Beyond**

Clifford algebras have many well-known applications in physics, engineering, and computer graphics.

Zeon algebras are subalgebras of Clifford algebras whose combinatorial properties lend them to graph-theoretic applications such as enumerating minimal cost paths in dynamic networks.

This book provides a foundational working knowledge of zeon algebras, their properties, and their potential applications in an increasingly technological world.

As a graduate-level or advanced undergraduate-level mathematics textbook, it is suitable for self-study by researchers interested in new approaches to existing combinatorial problems and applications (wireless networks, Boolean satisfiability, coding theory, etc.).

Readers will need this as the first textbook to explore algebraic and combinatorial properties of zeon algebras in depth.

Aug. 2019 350 pp. 16,460.
9789811202575

World Scientific Pub.

Hattori Harumi : No. 519-153
Partial Differential Equations:

Methods, Applications and Theories, 2nd ed.

This is an introductory level textbook for partial differential equations (PDE's). It is suitable for a one-semester undergraduate level or two-semester graduate level course in PDE's or applied mathematics.

This volume is application-oriented and rich in examples.

Going through these examples, the reader is able to easily grasp the basics of PDE's.

Chapters One to Five are organized to aid understanding of the basic PDE's. They include the first-order equations and the three fundamental second-order equations, i.e. the heat, wave and Laplace equations.

Through these equations, we learn the types of problems, how we pose the problems, and the methods of solutions such as the separation of variables and the method of characteristics.

June 2019 428 pp.
 9789811202230 16,460.

Hardy, Y. /Steeb, W.-H.: No. 519-085

**Matrix Calculus,
 Kronecker Product and Tensor Product:
 A Practical Approach to Linear Algebra,
 Multilinear Algebra and Tensor Calculus
 with Software Implementations, 3rd ed.**

Our self-contained volume provides accessible introduction to linear and multilinear algebra as well as tensor calculus.

Besides the standard techniques for linear algebra, multilinear algebra and tensor calculus, many advanced topics are included where emphasis is placed on the Kronecker product and tensor product.

The Kronecker product has widespread applications in signal processing, discrete wavelets, statistical physics, Hopf algebra, Yang-Baxter relations, computer graphics, fractals, quantum mechanics, quantum computing, entanglement, teleportation and partial trace.

All these fields are covered comprehensively.

The volume contains many detailed worked-out examples.

Each chapter includes useful exercises and supplementary problems.

May 2019 388 pp.
 9789811202513 16,460.

Soltan, V.: No. 519-212

Lectures on Convex Sets, 2nd ed.

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

It benefits advanced undergraduate and graduate students with various majors in mathematics, optimization, and operations research.

It should be adapted as a primary book or an additional text for any course in convex geometry or convex analysis, aimed at non-geometers.

It can be a source for independent study and a reference book for researchers in academia.

The second edition essentially extends and revises the original book.

Every chapter is rewritten, with many new theorems, examples, problems, and bibliographical references included.

It contains three new chapters and 100 additional problems with solutions.

July 2019 604 pp.
 9789811202117/9789811203510 24,860./13,100. (Paper ed.)

World Scientific Pub.

Seminaires et Congres,

Vol. 32: Anne, C. /Torki-Hamza, N. (eds.): No. 519-191

**Spectral Theory of
Graphs and of Manifolds -CIMPA 2016,
Kairouan, Tunisia**

You can find in this volume the redaction of five of them: an introduction to the Spectral Theory on Combinatorial and Quantum Graphs by E. M. Harrell, an introduction to the Spectral Theory of Unbounded Operators by H. Najjar, a presentation of the Study of the Absolute Spectrum of Discrete Operators by S. Golenia, a presentation of Random Schrodinger Operators of Discrete Structures by C. Rojas-Molina and the presentation of the Theory of Critical Points at infinity on CR-manifolds by N. Gamara. The last one, on Geometric Bounds on the Eigenvalues of Graphs, by N. Anantaraman is just summarized as it was podcasted and is still available on Internet.

Finally you can read the text of the conference of L.Hillairet on two applications of the Dirichlet-Neumann Bracketing.

Feb. 2019 261 pp. 6,680.
9782856298954

Asterisque,

Vol. 407: Bourbaki, N.: No. 519-068

**Seminaire Bourbaki,
Volume 2016/2017, Exposes 1120-1135**

This 69th volume of the Bourbaki Seminar contains the texts of the fifteen survey lectures done during the year 2016/2017. Topics addressed covered Langlands correspondence, NIP property in model theory, Navier–Stokes equation, algebraic and complex analytic geometry, algorithmic and geometric questions in knot theory, analytic number theory formal moduli problems, general relativity, sofic entropy, sphere packings, subriemannian geometry.

Jan. 2019 588 pp. 17,190.
9782856298978

Memoires de la Societe Mathematique de France,

Numero 159: Positselski, L.: No. 519-101

**Weakly curved A_∞ -algebras over
a topological local ring**

We define and study the derived categories of the first kind for curved DG- and A_∞ -algebras complete over a pro-Artinian local ring with the curvature elements divisible by the maximal ideal of the local ring.

We develop the Koszul duality theory in this setting and deduce the generalizations of the conventional results A_∞ -modules to the weakly curved case.

The formalism of contramodules and comodules over pro-Artinian topological rings is used throughout the memoir. Our motivation comes from the Floer-Fukaya theory.

Dec. 2018 201 pp. 10,700.
9782856298992

Numero 160: Vidotto, P.:

Ergodic Properties of**Some Negatively Curved Manifolds with Infinite Measure**

Jan. 2019 132 pp. 9782856299012 8,400.

Societe Mathematique de France

Discrete Mathematics and Its Applications

Bezdek, K. /Langi, Z.:

No. 519-066

Volumetric Discrete Geometry

Volume of geometric objects has been studied by the ancient Greek mathematicians. Even today volume continues to play an important role in applied as well as pure mathematics.

In discrete geometry, which is a relatively new branch of geometry, volume plays a significant role in generating new topics for research.

The author's goal is to demonstrate the recent aspects of volume in particular, volumetric method within discrete geometry.

Part I consists of survey chapters of selected topics on volume and

Part II consisting of chapters of selected proofs of theorems stated in Part I.

Apr. 2019
9780367223755

282 pp.

21,700.

Monographs and Research Notes in Mathematics

Banasiak, J. /Lamb, W. /Laurencot, P.:

No. 519-118

Analytic Methods for

Coagulation -Fragmentation Models, Vol. II

This book Analytic Methods for Coagulation-Fragmentation Models is a two-volume set that provides a comprehensive exposition of the mathematical analysis of coagulation-fragmentation models.

Initially, an in-depth survey of coagulation-fragmentation processes is presented, together with an account of relevant early results obtained on the associated model equations.

These provide motivation for the subsequent detailed treatment of more up-to-date investigations which have led to significant theoretical developments on topics such as solvability and the long-term behaviour of solutions.

To make the account as self-contained as possible, the mathematical tools that feature prominently in these modern treatments are introduced at appropriate places.

The main theme of Volume I is the analysis of linear fragmentation models, with Volume II devoted to processes that involve the nonlinear contribution of coagulation.

July 2019
9780367235482

336 pp.

25,090.

Chapman & Hall

IRMA - Lecture Notes in Mathematics and Theoretical Physics,

No. 519-189

Vol. 29: Alberge, V. /Papadopoulos, A. (eds.):

Eighteen Essays in Non-Euclidean Geometry

This book consists of a series of self-contained essays in non-Euclidean geometry in a broad sense, including the classical geometries of constant curvature, de Sitter, anti-de Sitter, co-Euclidean, co-Minkowski, Hermitian geometries, and some axiomatically defined geometries.

Some of these essays deal with very classical questions and others address problems that are at the heart of present day research, but all of them are concerned with fundamental topics.

All the essays are self-contained and most of them can be understood by the general educated mathematician.

They should be useful to researchers and to students of non-Euclidean geometry, and they are intended to be references for the various topics they present.

Mar. 2019
9783037191965

475 pp.

14,900.

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by David Goodman, Ilan Garibi

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180pp

May 2019

978-981-3275-31-7

978-981-3275-94-2(pbk)

Differential Forms

by Victor Guillemin & Peter Haine (*Massachusetts Institute of Technology, USA*)

This is an authoritative textbook on differential forms for undergraduates. It is entirely devoted to the subject of differential forms and explores a lot of its important ramifications. In particular, our book provides a detailed and lucid account of a fundamental result in the theory of differential forms which is, as a rule, not touched upon in undergraduate texts: the isomorphism between the Čech cohomology groups of a differential manifold and its de Rham cohomology groups. It includes numerous Examples and Exercises for further in-depth understanding on the presented concepts

272pp

Apr 2019

978-981-3272-77-4

An Introduction to the Geometrical Analysis of Vector Fields

with Applications to Maximum Principles and Lie Groups
by Stefano Biagi (*Università Politecnica delle Marche, Italy*), Andrea Bonfiglioli (*Università di Bologna, Italy*)

This book provides the reader with a gentle path through the multifaceted theory of vector fields, starting from the definitions and the basic properties of vector fields and flows, and ending with some of their countless applications, in the framework of what is nowadays called Geometrical Analysis. Once the background material is established, the applications mainly deal with the following meaningful settings: ODE theory; Maximum Principles; Lie groups.

452pp

Feb 2019

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