Yurinsha Book News

Ergebnisse der Mathematik und ihrer Grenzgebiete 3 Folge

Band 69: Chenevier, D. /Lannes, J.: Automorphic Forms and Even Unimodular Lattices: No. 515-042

Kneser Neighbors of Niemeier Lattices

This book includes a self-contained approach of the general theory of quadratic forms and integral Euclidean lattices, as well as a presentation of the theory of automorphic forms and Langlands' conjectures, ranging from the first definitions to the recent and deep classification results due to James Arthur. Its connecting thread is a question about lattices of rank 24: the problem of p-neighborhoods between Niemeier lattices. This question, whose expression is quite elementary, is in fact very natural from the automorphic point of view, and turns out to be surprisingly intriguing.
We explain how the new advances in the Langlands program mentioned above pave the way for a solution.
This study proves to be very rich, leading us to classical themes such as theta series, Siegel modular forms, the triality principle, L-functions and congruences between Galois representations.
This monograph is intended for any mathematician with an interest in Euclidean lattices, automorphic forms or number theory.

Jan. 2019 418 pp.
9783319958903 19,700.

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. 515 Sep.- Oct. 2018

University Lecture Series,

Vol. 71: Grigor'yan, A.: No. 515-018

Introduction to Analysis on Graphs

A central object of this book is the discrete Laplace operator on finite and infinite graphs. The eigenvalues of the discrete Laplace operator have long been used in graph theory as a convenient tool for understanding the structure of complex graphs. They can also be used in order to estimate the rate of convergence to equilibrium of a random walk (Markov chain) on finite graphs. For infinite graphs, a study of the heat kernel allows to solve the type problem--- a problem of deciding whether the random walk is recurrent or transient.
This book starts with elementary properties of the eigenvalues on finite graphs, continues with their estimates and applications, and concludes with heat kernel estimates on infinite graphs and their application to the type problem.
The book is suitable for beginners in the subject and accessible to undergraduate and graduate students with a background in linear algebra I and analysis I. It is based on a lecture course taught by the author and includes a wide variety of exercises.

Sep. 2018 168 pp.
9781470443979 8,160.

Translations of Mathematical Monographs,

Vol. 246: Gorchinskiy, S. /Shramov, C.: No. 515-061

Unramified Brauer Group and Its Applications

This book is devoted to arithmetic geometry with special attention given to the unramified Brauer group of algebraic varieties and its most striking applications in birational and Diophantine geometry.
The topics include Galois cohomology, Brauer groups, obstructions to stable rationality, Weil restriction of scalars, algebraic tori, the Hasse principle, Brauer-Manin obstruction, and etale cohomology.
The book contains a detailed presentation of an example of a stably rational but not rational variety, which is presented as series of exercises with detailed hints.

Aug. 2018 200 pp.
9781470440725 20,990.

Graduate Studies in Mathematics,

Vol. 193: Lorenz, M.: No. 515-078

A Tour of Representation Theory

Representation theory investigates the different ways in which a given algebraic object --- such as a group or a Lie algebra --- can act on a vector space. Besides being a subject of great intrinsic beauty, the theory enjoys the additional benefit of having applications in myriad contexts outside pure mathematics, including quantum field theory and the study of molecules in chemistry.
Adopting a panoramic viewpoint, this book offers an introduction to four different flavors of representation theory: representations of algebras, groups, Lie algebras, and Hopf algebras. A separate part of the book is devoted to each of these areas and they are all treated in sufficient depth to enable and hopefully entice the reader to pursue research in representation theory.
The book is intended as a textbook for a course on representation theory, which could immediately follow the standard graduate abstract algebra course, and for subsequent more advanced reading courses.

Oct. 2018 654 pp.
9781470436803 15,660.

A. M. S.

Contemporary Mathematics,

Vol. 715: Lopez-Permouth, S. /Keol Park, J. / Tariq Rizvi, S. /Roman, C. (eds.): Advances in Rings and Modules

No. 515-077

This volume, dedicated to Bruno J. Muller, a renowned algebraist, is a collection of papers that provide a snapshot of the diversity of themes and applications that interest algebraists today.
The papers highlight the latest progress in ring and module research and present work done on the frontiers of the topics discussed.
In addition, selected expository articles are included to give algebraists and other mathematicians, including graduate students, an accessible introduction to areas that may be outside their own expertise.

Oct. 2018 283 pp.
9781470435554 19,490.

Vol. 712: Budur, N. /de Fernex, T. / Docampo, R. /Tucker, K. (eds.): Local and Global Methods in Algebraic Geometry

No. 515-040

This volume contains the proceedings of the conference Local and Global Methods in Algebraic Geometry, 2016, at the University of Illinois at Chicago, in honor of Lawrence Ein's 60th birthday.
The articles cover a broad range of topics in algebraic geometry and related fields, including birational geometry and moduli theory, analytic and positive characteristic methods, geometry of surfaces, singularity theory, hyper-Kahler geometry, rational points, and rational curves.

Aug. 2018 355 pp.
9781470434885 19,490.

Vol. 711 Creutzig, T. /Linshaw, A. (eds.): Vertex Algebras and Geometry

No. 515-047

This book contains the proceedings of the AMS Special Session on Vertex Algebras and Geometry, 2016, in Denver, Colorado.
The papers cover vertex algebras in connection with geometry and tensor categories, with topics in vertex rings, chiral algebroids, the Higgs branch conjecture, and applicability and use of vertex tensor categories.

Aug. 2018 168 pp.
9781470437176 19,490.

Memoirs of the American Mathematical Society,

Vol. 1226: Feehan, P. /Leness, T.: An So(3)-Monopole Cobordism Formula Relating Donaldson and Seiberg-Witten Invariants

No. 515-166

The authors prove an analogue of the Kotschick-Morgan Conjecture in the context of SO(3)SO(3) monopoles, obtaining a formula relating the Donaldson and Seiberg-Witten invariants of smooth four-manifolds using the SO(3)SO(3)-monopole cobordism.
The main technical difficulty in the SO(3)SO(3)-monopole program relating the Seiberg-Witten and Donaldson invariants has been to compute intersection pairings on links of strata of reducible SO(3)SO(3) monopoles, namely the moduli spaces of Seiberg-Witten monopoles lying in lower-level strata of the Uhlenbeck compactification of the moduli space of SO(3)SO(3) monopoles.

Oct. 2018 228 pp.
9781470414214 12,990.

A. M. S.

Birkhauser Advanced Texts /Basler Lehrbucher Series

Bosch, S.: No. 515-039

Algebra:
From the Viewpoint of Galois Theory

The material presented here can be divided into two parts.
The first, sometimes referred to as abstract algebra, is concerned with the general theory of algebraic objects such as groups, rings, and fields, hence, with topics that are also basic for a number of other domains in mathematics.
The second centers around Galois theory and its applications.
Historically, this theory originated from the problem of studying algebraic equations, a problem that, after various unsuccessful attempts to determine solution formulas in higher degrees, found its complete clarification through the brilliant ideas of E. Galois.

Sep. 2018 562 pp.
9783319951768 14,770.

Torres Del Castillo, G.: No. 515-142

An Introduction to Hamiltonian Mechanics

This textbook examines the Hamiltonian formulation in classical mechanics with the basic mathematical tools of multivariate calculus.
It explores topics like variational symmetries, canonoid transformations, and geometrical optics that are usually omitted from an introductory classical mechanics course.
For students with only a basic knowledge of mathematics and physics, this book makes those results accessible through worked-out examples and well-chosen exercises.

Sep. 2018 358 pp.
9783319952246 12,800.

Modern Birkhauser Classics

Falb, P.: **Methods of** No. 515-054

Algebraic Geometry in Control Theory: Part II

"An introduction to the ideas of algebraic geometry in the motivated context of system theory. This describes this two volume work which has been specifically written to serve the needs of researchers and students of systems, control, and applied mathematics.
Without sacrificing mathematical rigor, the author makes the basic ideas of algebraic geometry accessible to engineers and applied scientist.
The emphasis on constructive methods and clarity rather than on abstraction.
While familiarity with Part I is helpful, it is not essential, since a considerable amount of relevant material is included here.

Sep. 2018 390 pp.
9783319965734 13,790.

Pseudo-Differential Operators,

Vol. 13: Unterberger, A.: No. 515-092

Pseudodifferential Methods in Number Theory

Classically developed as a tool for partial differential equations, the analysis of operators known as pseudodifferential analysis is here regarded as a possible help in questions of arithmetic.
The operators which make up the main subject of the book can be characterized in terms of congruence arithmetic.
They enjoy a Eulerian structure, and are applied to the search for new conditions equivalent to the Riemann hypothesis.

July 2018 170 pp.
9783319927060 11,820.

Birkhauser

Encyclopedia of Mathematics and its Applications,

Vol. 171: **Bulacu, D. /Caenepeel, S.:** No. 515-041

Quasi-Hopf Algebras: A Categorical Approach

This is the first book to be dedicated entirely to Drinfeld's quasi-Hopf algebras.
Ideal for graduate students and researchers in mathematics and mathematical physics, this treatment is largely self-contained, taking the reader from the basics, with complete proofs, to much more advancedtopics, with almost complete proofs.
Many of the proofs are based on general categorical results; the same approach can then be used in the study of other Hopf-type algebras, forexample Turaev or Zunino Hopf algebras, Hom-Hopf algebras, Hopfishalgebras, and in general any algebra for which the category ofrepresentations is monoidal.

Apr. 2019 542 pp.
9781108427012 25,620.

Vol. 170: **Krajicek, J.:** No. 515-033

Proof Complexity

Proof complexity is a rich subject drawing on methods from logic, combinatorics, algebra and computer science.
This self-contained book presents the basic concepts, classical results, current state of the art and possible future directions in the field.
It stresses a view of proof complexity as a whole entity rather than a collection of various topics held together loosely by a few notions, and it favors more generalizable statements.
Lower bounds for lengths of proofs, often regarded as the key issue in proof complexity, are of course covered in detail.
However, upper bounds are not neglected: this book also explores the relations between bounded arithmetic theories and proof systems and how they can be used to prove upper bounds on lengths of proofs and simulations among proof systems.

Feb. 2019 542 pp.
9781108416849 23,730.

Vol. 169: **Finch, S.:** No. 515-112

Mathematical Constants II

Famous mathematical constants include the ratio of circular circumference to diameter, Pai = 3.14 ..., and the natural logarithm base, e = 2.178 ....
Students and professionals can often name a few others, but there are many more buried in the literature and awaiting discovery.
How do such constants arise, and why are they important?
Here the author renews the search he began in his book Mathematical Constants, adding another 133 essays that broaden the landscape.
Topics include the minimality of soap film surfaces, prime numbers, elliptic curves and modular forms, Poisson-Voronoi tessellations, random triangles, Brownian motion, uncertainty inequalities, Prandtl-Blasius flow (from fluid dynamics), Lyapunov exponents, knots and tangles, continued fractions, Galton-Watson trees, electrical capacitance (from potential theory), Zermelo's navigation problem, and the optimal control of a pendulum.
Unsolved problems appear virtually everywhere as well.
This volume continues an outstanding scholarly attempt to bring together all significant mathematical constants in one place.

Oct. 2018 830 pp.
9781108470599 18,320.

Cambridge

Cambridge Tracts in Mathematics,

Vol. 215: **Dimitric, R.:** No. 515-049

Slenderness, Vol. 1: Abelian Categories

This first book on the subject is systematically presented and largely self-contained, making it ideal for researchers and graduate students.
The appendix gives an introduction to the necessary set theory, in particular to the (non-)measurable cardinals, to help the reader make smooth progress through the text.
A detailed index shows the numerous connections among the topics treated.
Every chapter has a historical section to show the original sources for results and the subsequent development of ideas, and is rounded off with numerous exercises.
More than 100 open problems and projects are presented, ready to inspire the keen graduate student or researcher.
Many of the results are appearing in print for the first time, and many of the older results are presented in a new light.

Dec. 2018 323 pp.
9781108474429 21,910.

London Mathematical Society Lecture Note Series,

Vol. 452: **Robinson, J. /Rodrigo, J.:** No. 515-139

Partial Differential Equations in Fluid Mechanics

The Euler and Navier-Stokes equations are the fundamental mathematical models of fluid mechanics and their study has greatly informed our understanding of the behaviour of complex fluids.
This volume of articles, derived from the workshop 'PDEs in Fluid Mechanics' held at the University of Warwick in 2016, serves to consolidate, survey and further advance research in this area.
It contains surveys of recent progress and classical topics, as well as cutting-edge research articles.
Topics include Onsager's conjecture for energy conservation in the Euler equations, weak-strong uniqueness in fluid models, and several chapters address the Navier-Stokes equations directly, in particular,a retelling of Leray's formative 1934 paper in modern mathematical language.

Oct. 2018 342 pp.
9781108460965 14,990.

Cambridge Studies in Advanced Mathematics,

Vol. 177: **Peterson, E.:** No. 515-180

Formal Geometry and Bordism Operations

This text organizes a range of results in chromatic homotopy theory, running a single thread through theorems in bordism and a detailed understanding of the moduli of formal groups.
It emphasizes the naturally occurring algebro-geometric models that presage the topological results, taking the reader through a pedagogical development of the field.
In addition to forming the backbone of the stable homotopy category, these ideas have found application in other fields: the daughter subject 'elliptic cohomology' abuts mathematical physics, manifold geometry, topological analysis, and the representation theory of loop groups.

Dec. 2018 421 pp.
9781108428033 13,990.

Cambridge

No. 515-067/ 068

Guillot, P.:

A Gentle Course in Local Class Field Theory: Local Number Fields, Brauer Groups, Galois Cohomology

This book offers a self-contained exposition of local class field theory, serving as a second course on Galois theory.
It opens with a discussion of several fundamental topics in algebra, such as profinite groups, p-adic fields, semisimple algebras and their modules, and homological algebra with the example of group cohomology.
The book culminates with the description of the abelian extensions of local number fields, as well as the celebrated Kronecker-Weber theory, in both the local and global cases.

Nov. 2018 250 pp.
9781108421775/9781108432245 14,640./6,840. (Paper ed.)

New Mathematical Monographs,

Vol. 35: **Dickmann, M. /Schwartz, N.:** No. 515-163

Spectral Spaces

Spectral spaces are a class of topological spaces.
They are a tool linking algebraic structures, in a very wide sense, with geometry.
They were invented to give a functional representation of Boolean algebras and distributive lattices and subsequently gained great prominence as a consequence of Grothendieck's invention of schemes.
There are more than 1000 research articles about spectral spaces, but this is the first monograph.
It provides an introduction to the subject and is a unified treatment of results scattered across the literature, filling in gaps and showing the connections between different results.
The book also includes new research going beyond the existing literature, answering questions that naturally arise from this comprehensive approach.
The authors serve graduates by starting gently with the basics.
For experts, they lead them to the frontiers of current research, making this book a valuable reference source.

Mar. 2019 657 pp.
9781107146723 21,070.

Cambridge Mathematical Textbooks

Marshall, D.: No. 515-129

Complex Analysis

This user-friendly textbook introduces complex analysis at the beginning graduate or advanced undergraduate level.
Unlike other textbooks, it follows Weierstrass' approach, stressing the importance of power series expansions instead of starting with the Cauchy integral formula, an approach that illuminates many important concepts.
This view allows readers to quickly obtain and understand many fundamental results of complex analysis, such as the maximum principle, Liouville's theorem, and Schwarz's lemma.
The book covers all the essential material on complex analysis, and includes several elegant proofs that were recently discovered.
It includes the zipper algorithm for computing conformal maps, a constructive proof of the Riemann mapping theorem, and culminates in a complete proof of the uniformization theorem.

Feb. 2018 308 pp.
9781107134829 11,800.

Cambridge

Advances in Applied Mathematics

Brychkov, Y. /Marichev, O. /Savischenko, N.: No. 515-006

Handbook of Mellin Transforms

The Mellin transformation was introduced by Finnish mathematician Robert Hjalmar Mellin. It found extensive applications in mathematical physics, number theory, mathematical statistics, theory of asymptotic expansions, and especially, in the theory of special functions and integral transformations. Using the Mellin transformation, many classical integral transforms can be represented as compositions of direct and inverse Laplace transforms. Since the majority of integrals can be reduced to the form of the corresponding Mellin transforms, the book is also a handbook of definite and indefinite integrals.

Oct. 2018 587 pp.
9781138353350 51,980.

Ibragimov, N.: No. 515-020

CRC Handbook of Lie Group Analysis of Differential Equations, Vol. 2: Applications in Engineering and Physical Sciences

Volume 2 offers a unique blend of classical results of Sophus Lie with new, modern developments and numerous applications which span a period of more than 100 years.
Volume 2 is divided into three parts. Part A focuses on relevant definitions, main algorithms, group classification schemes for partial differential equations, and multifaceted possibilities offered by Lie group theoretic philosophy.
Part B contains the group analysis of a variety of mathematical models for diverse natural phenomena. It tabulates symmetry groups and solutions for linear equations of mathematical physics, classical field theory, viscous and non-Newtonian fluids, boundary layer problems, Earth sciences, tc.
Part C offers an English translation of Sophus Lie's fundamental paper on the group classification and invariant solutions of linear second-order equations with two independent variables.

Sep. 2018 546 pp.
9781315892009 50,850.

Ray, S. /Sahoo, S.: No. 515-137

Generalized Fractional Order Differential Equations Arising in Physical Models

This book analyzes the various semi-analytical and analytical methods for finding approximate and exact solutions of fractional order partial differential equations. It explores approximate and exact solutions obtained by various analytical methods for fractional order partial differential equations arising in physical models.

Nov. 2018 392 pp.
9781138366817 31,640.

Woyczynski, W.: No. 515-183

Geometry and Martingales in Banach Spaces

This book provides a compact exposition of the results explaining the interrelations existing between the metric geometry of Banach spaces and the theory of martingales, with values in those Banach spaces. Geometric concepts such as dentability, uniform smoothness, uniform convexity, Beck convexity, etc. turn out to characterize asymptotic behavior of martingales with values in Banach spaces.

Oct. 2018 272 pp.
9781138616370 20,790.

Chapman & Hall/C R C Press

EMS Series of Lectures in Mathematics,

Triebel, H.: No. 515-147

Function Spaces with Dominating Mixed Smoothness

The first part of this book is devoted to function spaces in Euclidean n-space with dominating mixed smoothness.
Some new properties are derived and applied in the second part where weighted spaces with dominating mixed smoothness in arbitrary bounded domains in Euclidean n-space are introduced and studied.
This includes wavelet frames, numericl integration and discrepancy, measuring the deviation of sets of points from uniformity.
These notes are addressed to graduate students and mathematicians having a workhlg knowledge of basic elements of the theory of function spaces, especially of Besov-Sobolev type.
In particular, it will be of interest for researchers dealhlg with approximation theory, numerical integration and discrepancy.

Jan. 2019 200 pp.
9783037191958 7,090.

EMS Textbooks in Mathematics

Marquis, T.: No. 515-080

An Introduction to Kac-Moody Groups Over Fields

The interest for Kac-Moody algebras and groups has grown exponentially in the past decades, both in the mathematical and physics communities, and with it also the need for an introductory textbook on the topic.
The aims of this book are twofold:- to offer an accessible, reader-friendly and self-contained introduction to Kac-Moody algebras and groups;
- to clean the foundations and to provide a unified treatment of the theory.
The book starts with an outline of the classical Lie theory, used to set the scene.
Part II provides a self-contained introduction to Kac-Moody algebras.
The heart of the book is Part III, which develops an intuitive approach to the construction and fundamental properties of Kac-Moody groups.

June 2018 343 pp.
9783037191873 9,460.

EMS Series of Lectures in Mathematics

Christodoulou, D.: No. 515-106

The Shock Development Problem

This monograph addresses the problem of the development of shocks in the context of the Eulerian equations of the mechanics of compressible fluids.
The mathematical problem is that of an initial-boundary value problem for a nonlinear hyperbolic system of partial differential equations with a free boundary and singular initiaL conditions.
The free boundary is the shock hypersurface and the boundary conditions are jump conditions relative to a prior solution, conditions following from the integral form of the mass, momentum and energy conservation laws.
The prior solution is provided by the author's previous work which studies the maximal classical development of smooth initial data.
New geometric and analytic methods are introduced to solve the problem.
Geometry enters as the acoustical structure, a Lorentzian metric structure defined on the spacetime manifold by the fluid.

Jan. 2019 850 pp.
9783037191927 25,220.

European Mathematical Society

EMS Tracts in Mathematics,

Vol. 31: **Gel'man, I. /Maz'ya, V.:** No. 515-115

Estimates for Differential Operators in Half-Space

Inequalities for differential operators play a fundamental role in the modern theory of partial differential equations.
Among the numerous applications of such inequalities are existence and uniqueness theorems, error estimates for numerical approximations of solutions and for residual terms in asymptotic formulas, as well as results on the structure of the spectrum.
The inequalities cover a wide range of differential operators, boundary conditions and norms of the orresponding function spaces.
The book focuses on estimates up to the boundary of a domain.
It contains a great variety of inequalities for differential and pseudodifferential operators with constant coefficients.

Jan. 2019 270 pp.
9783037191910 13,400.

Vol. 30: **Maz'ya, V.:** No. 515-132

Boundary Behavior of Solutions to Elliptic Equations in General Domains

The present book is a detailed exposition of the author and his collaborators work on boundedness, continuity, and differentiability properties of solutions to elliptic equations in general domains, that is, in domains that are not apriori restricted by assumptions such as "piecewise smoothness" or being a "lipschitz graph".
The description of the boundary behavior of such solutions is one of the most difficult problems in the theory of partial differential equations.
After the famous Wiener test, the main contributions to this area were made by the author.

Sep. 2018 440 pp.
9783037191903 15,370.

EMS Monographs in Mathematics,

Arsenio, D. /Saint-Raymond, L.: No. 515-095

From the Vlasov-Maxwell-Boltzmann System to Incompressible Viscous Electro-Magneto-hydrodynamics, Vol. 1

The Vlasov-Maxwell-Boltzmann system is a microscopic model to describe the dynamics of charged particles subject to self-induced electromaqnetic forces.
At the macroscopic scale, in the incompressible viscous fluid limit, the evolution of the plasma is governed by equations of Navier-Stokes Fourier type, with some electromagnetic forcing that may take on various forms depending on the number of species and on the strength of the interactions.
From the mathematical point of view, these models have very differentbehaviors. Their analysis therefore requires various mathematical methods which this book aims at presenting in a systematic, painstaking and rather exhaustive way.
The third and fourth parts (which will be published in a second volume) show how to adapt the arguments presented in the conditional case to deal with a weaker notion of solutions to the Vlasov-Maxwell-Boltzmann system the existence of which is known.

Dec. 2018 406 pp.
9783037191934 15,370.

Lecture Notes in Mathematics,

Vol. 2226: **Bohm, G.:** No. 515-038

Hopf Algebras and Their Generalizations From A Category Theoretical Point of View

These lecture notes provide a self-contained introduction to a wide range of generalizations of Hopf algebras. Multiplication of their modules is described by replacing the category of vector spaces with more general monoidal categories, thereby extending the range of applications.
Since Sweedler's work in the 1960s, Hopf algebras have earned a noble place in the garden of mathematical structures.
Their use is well accepted in fundamental areas such as algebraic geometry, representation theory, algebraic topology, and combinatorics.
Now, similar to having moved from groups to groupoids, it is becoming clear that generalizations of Hopf algebras must also be considered.
This book offers a unified description of Hopf algebras and their generalizations from a category theoretical point of view.

Oct. 2018 202 pp.
9783319981369 12,800.

Vol. 2192: **Yau, D.:** No. 515-093

Operads of Wiring Diagrams

The book proves finite presentation theorems for operads of wiring diagrams as well as their algebras. These theorems describe the operad in terms of just a few operadic generators and a small number of generating relations.
The author further explores recent trends in the application of operad theory to wiring diagrams and related structures, including finite presentations for the propagator algebra, the algebra of discrete systems, the algebra of open dynamical systems, and the relational algebra.
A partial verification of David Spivaks conjecture regarding the quotient-freeness of the relational algebra is also provided.
In the final part, the author constructs operad maps between the various operads of wiring diagrams and identifies their images.

Sep. 2018 294 pp.
9783319950006 12,800.

Fields Institute Monographs,

Vol. 36: **Efendiev, M.:** No. 515-110

Symmetrization and Stabilization of Solutions of Nonlinear Elliptic Equations

This book deals with a systematic study of a dynamical system approach to investigate the symmetrization and stabilization properties of nonnegative solutions of nonlinear elliptic problems in asymptotically symmetric unbounded domains.
The usage of infinite dimensional dynamical systems methods for elliptic problems in unbounded domains as well as finite dimensional reduction of their dynamics requires new ideas and tools.
To this end, both a trajectory dynamical systems approach and new Liouville type results for the solutions of some class of elliptic equations are used.
The work also uses symmetry and monotonicity results for nonnegative solutions in order to characterize an asymptotic profile of solutions and compares a pure elliptic partial differential equations approach and a dynamical systems approach.

Oct. 2018 232 pp.
9783319984063 17,730.

Springer

Graduate Texts in Mathematics,

Vol. 279: **Herzog, J. /Hibi Takayuki :** No. 515-070
Binomial Ideals

This textbook provides an introduction to the combinatorial and statistical aspects of commutative algebra with an emphasis on binomial ideals.
In addition to thorough coverage of the basic concepts and theory, it explores current trends, results, and applications of binomial ideals to other areas of mathematics.
The book begins with a brief, self-contained overview of the modern theory of Grobner bases and the necessary algebraic and homological concepts from commutative algebra.
Binomials and binomial ideals are then considered in detail, along with a short introduction to convex polytopes.
Chapters in the remainder of the text can be read independently and explore specific aspects of the theory of binomial ideals, including edge rings and edge polytopes, join-meet ideals of finite lattices, binomial edge ideals, ideals generated by 2-minors, and binomial ideals arising from statistics.

Sep. 2018 322 pp.
9783319953472 12,800.

Springer Monographs in Mathematics

Gassiat, E.: No. 515-032
Universal Coding and Order Identification by Model Selection Methods

The purpose of these notes is to highlight the far-reaching connections between Information Theory and Statistics.
Universal coding and adaptive compression are indeed closely related to statistical inference concerning processes and using maximum likelihood or Bayesian methods.
The book is divided into four chapters, the first of which introduces readers to lossless coding, provides an intrinsic lower bound on the codeword length in terms of Shannon's entropy, and presents some coding methods that can achieve this lower bound, provided the source distribution is known.
This book is accessible to anyone with a graduate level in Mathematics, and will appeal to information theoreticians and mathematical statisticians alike.

Sep. 2018 131 pp.
9783319962610 21,670.

Schenzel, P. /Simon, A.: No. 515-090
Completion, Cech and Local Homology and Cohomology

The aim of the present monograph is a thorough study of the adic-completion, its left derived functors and their relations to the local cohomology functors, as well as several completeness criteria, related questions and various dualities formulas.
A basic construction is the Cech complex with respect to a system of elements and its free resolution.
The study of its homology and cohomology will play a crucial role in order to understand left derived functors of completion and right derived functors of torsion.
This is useful for the extension and refinement of results known for modules to unbounded complexes in the more general setting of not necessarily Noetherian rings.

Sep. 2018 315 pp.
9783319965161 21,670.

Springer

Universitext

Gruson, C. /Serganova, V.: No. 515-065

A Journey Through Representation Theory:
From Finite Groups to Quivers via Algebras

This text covers a variety of topics in representation theory and is intended for graduate students and more advanced researchers who are interested in the field.
The book begins with classical representation theory of finite groups over complex numbers and ends with results on representation theory of quivers.
The text includes in particular infinite-dimensional unitary representations for abelian groups, Heisenberg groups and SL(2), and representation theory of finite-dimensional algebras.
The last chapter is devoted to some applications of quivers, including Harish-Chandra modules for SL(2).

Oct. 2018 219 pp.
9783319982694 8,770.

Moore, W. /Rogers, M. /Sather-Wagstaff, S.: No. 515-082

Monomial Ideals and Their Decompositions

This textbook on combinatorial commutative algebra focuses on properties of monomial ideals in polynomial rings and their connections with other areas of mathematics such as combinatorics, electrical engineering, topology, geometry, and homological algebra.
Aimed toward advanced undergraduate students and graduate students who have taken a basic course in abstract algebra that includes polynomial rings and ideals, this book serves as a core text for a course in combinatorial commutative algebra or as preparation for more advanced courses in the area.

Nov. 2018 382 pp.
9783319968742 12,800.

Yan, J.-A.: No. 515-208

Introduction to Stochastic Finance

This book gives a systematic introduction to the basic theory of financial mathematics, with an emphasis on applications of martingale methods in pricing and hedging of contingent claims, interest rate term structure models, and expected utility maximization problems.
The general theory of static risk measures, basic concepts and results on markets of semimartingale model, and a numeraire-free and original probability based framework for financial markets are also included.
The basic theory of probability and Ito's theory of stochastic analysis, as preliminary knowledge, are presented.

Nov. 2018 396 pp.
9789811316562 11,820.

SpringerBriefs in Mathematical Physics,

Vol. 30: **Murakami Hitoshi /Yokota Yoshiyuki :** No. 515-179

Volume Conjecture for Knots

The volume conjecture states that a certain limit of the colored Jones polynomial of a knot in the three-dimensional sphere would give the volume of the knot complement.
Here the colored Jones polynomial is a generalization of the celebrated Jones polynomial and is defined by using a so-called R-matrix that is associated with the N-dimensional representation of the Lie algebra sl(2;C).

Sep. 2018 108 pp.
9789811311499 10,720.

Springer

de Gruyter Studies in Mathematics,

No. 515-138

Vol. 70: **Remling, C.:**
Spectral Theory of Canonical Systems

Spectral Theory of Canonical Systems offers an introduction into basic theory of ordinary differential equations and how common second order operators such as Schrodinger, Jacobi, Dirac and Sturm-Liouville can be cast into a canonical system.
Techniques to construct self-adjoint operators on suitable Hilbert spaces, a modern treatment of de Branges spaces and direct and inverse spectral problems are discussed.

Aug. 2018 196 pp.
9783110562026 17,130.

de Gruyter Expositions in Mathematics,

No. 515-122

Vol. 66: **Kalauch, A. /Van Gaans, O.:**
Pre-Riesz Spaces

This monograph develops the theory of operators on partially ordered vector spaces as an extension to the classical theory on Riesz spaces.
Structures from vector lattice theory, such as disjointness, ideals and bands are studied with respect to which extend they can be extended to partially ordered vector spaces.

Oct. 2018 240 pp.
9783110475395 19,690.

de Gruyter Series in Nonlinear Analysis and Applications,

No. 515-126

Vol. 27: **Korpusov, M. /Ovchinnikov, A.:**
Blow-Up in Nonlinear Equations of Mathematical Physics: Theory and Methods

The present book carefully studies the blow-up phenomenon of solutions to partial differential equations, including many equations of mathematical physics.
The included material is based on lectures read by the authors at the Lomonosov Moscow State University, and the book is addressed to a wide range of researchers and graduate students working in nonlinear partial differential equations, nonlinear functional analysis, and mathematical physics.

Aug. 2018 326 pp.
9783110601084 20,480.

de Gruyter Studies in Mathematical Physics,

No. 515-323/324

Vol. 47: **Stefanovich, E.:**
Elementary Particle Theory, Vol. 3: Relativistic Quantum Dynamics

In this third volume of three, quantum electrodynamics is formulated in the language of physical "dressed" particles.
A theory where charged particles interact via instantaneous action-at-a-distance forces is constructed - without need for renormalization.
This theory describes electromagnetic phenomena in terms of directly interacting charges, but in full accord with fundamental principles of relativity and causality.

Nov. 2018 343 pp.
9783110490909 19,690.

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Advanced Studies in Pure Mathematics,

Vol. 77: **Hibi Takayuki (ed.):**
The 50th Anniversary of Grobner Bases
No. 515-019
Aug. 2018 432 pp.
9784864970525 6,760.

Vol. 76: **Konno Hitoshi /Sakai Hidetaka /Shiraishi Junichi / Suzuki Takao /Yamada Yasuhiko (eds.):**
Representation Theory, Special Functions and Painleve Equations - RIMS 2015
No. 515-075

From Preface:
To celebrate Professor Masatoshi Noumi's 60th Birthday, we held the international conference "Representation Theory, Special Functions and Painleve Equations" at the Research Institute for Mathematical Sciences, Kyoto University from March 3 to March 6 in 2015.
This volume is the proceedings of the conference.
It contains 15 paperscovering a variety of topics in the research fields where Prof. Noumi has made many significant contributions over the years - representation theory, special functions, Painleve equations and so on.
We hope that readers interested in those subjects will find exciting and stimulating insights from excellent papers of this volume.
The conference was supported by RIMS and JSPS Grant-in-Aid for Scientific Research (S)24224001 (PI:. M.-H. Saito), (B)24340029 (PI: Y. Ohta), (B)25287017 (PI: T. Oshima), (B)26287018 (PI: Y. Yamada), (C)24540206 (PI: J. Shiraishi) and (C)26400046 (PI: H. Konno). We express our heartiest thanks to all the speakers, the audiences and those who assisted with the organization and the running of the conference.
Last but not least, we wish to dedicate this book to Masatoshi Noumi on the occasion of his 60th birthday.
June 2018 562 pp.
9784864970501 9,630.
Mathematical Society of Japan

No. 515-170/171

Iwayama Eiko :
The Study of High Dimensional Manifolds

ポアンカレ予想について私なりに反例が見つかり、またオイラー・ポアンカレの標数についても高次元多様体 **(highdimensionalcubes, Simplexes,andcomplexes)** の部分多様体をその存在する次元まで数える事によって **NewEulerPoincar Expanded characteristic (NEPE)=1** を得た。

3、4 次元多様体を低次元トポロジーとして別に扱っていたが、私は、すべての次元の多様体について同じ構成法で得られるため、3、4 次元についても高次元多様体として扱っている。

今迄の数学、特にトポロジーの考え方と異なる所も多いが、科学的真実は時代に従って変化していくものと信じている。

最後に、とりわけ **Institute Henri Poincare** の所長であり リヨン大学教授の **Prof. Cedric Villani** にご理解頂き、日本および諸外国の数学、物理学者に紹介して頂いたことに心から感謝申し上げます。

Feb. 2018 93 pp.
9781000023718 8,000.
Institute of
High Dimensional Mathematics and Physics

Bellow, A. /Calude, C. /Zamfirescu , T. (eds.): No. 515-003

Mathematics Almost Everywhere:
In Memory of Solomon Marcus

The book is a collection of original papers, research and surveys, dedicated to the memory of the Romanian mathematician Solomon Marcus (1925-2016). Marcus published many papers and books in mathematical analysis, theoretical computer science, mathematical linguistics, poetics, theory ofliterature, semiotics, and several other fields less strongly connected tomathematics, like cultural anthropology, biology, history and philosophy of science, education.

June 2018 252 pp.
9789813237308 16,560.

Forte, S. /Levy, A. /Ridolfi, G. (eds.): No. 515-015

From My Vast Repertoire ...:
Guido Altarelli's Legacy

Guido Altarelli was a leading figure in 20th century particle physics. His scientific contributions and leadership played a key role in the development of the Standard Model of fundamental interactions, as well as the current search for new physics beyond it, both at and beyond CERN. This book is a collection of original contributions, at the cutting edge of scientific research, by some of the leading theoretical and experimental high-energy physicists currently in the field.

Oct. 2018 350 pp.
9789813238046 19,940.

Jacob, N. /Evans, K.: No. 515-119/120

A Course in Analysis, Vol. IV:
Fourier Analysis, Ordinary Differential Equations, Calculus

In the part on Fourier analysis, we discuss pointwise convergence results, summability methods and, of course, convergence in the quadratic mean ofFourier series.
More advanced topics include a first discussion of Hardy spaces.
We also spend some time handling general orthogonal series expansions, in particular, related to orthogonal polynomials.
Then we switch to the Fourier integral, i.e. the Fourier transform in Schwartz space, as well as in some Lebesgue spaces or of measures.

Nov. 2018 780 pp.
9789813273511/9789813274525 31,770./13,180. (Paper ed.)

Sirakov, B. /de Souza, P. (eds.): No. 515-027

Proceedings of the
International Congress of Mathematicians 2018

The Proceedings of the ICM publishes the talks, by invited speakers, at the conference organized by the International Mathematical Union every 4 years. It covers several areas of Mathematics and it includes the Fields Medal and Nevanlinna, Gauss and Leelavati Prizes and the Chern Medal laudatios.
Contents: *Logic and Foundations *Algebra Number Theory *Algebraic and Complex Geometry *GeometryTopology *Lie Theory and Generalizations *Analysis and Operator Algebras *Dynamical Systems and Ordinary Differential Equations *Partial Differential Equations *Mathematical Physics *Probability and Statistics *Combinatorics *Mathematical Aspects of Computer Science *Numerical Analysis and Scientific Computing *Control Theory and Optimization *Mathematics in Science and Technology *Mathematics Education and Popularization of Mathematics *History of Mathematics

2019 5000 pp.
9789813272873 143,650.
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