Yurinsha Book News

Colloquium Publications,

Vol. 64: **Ringmann, K. /Folsom, A. / Ono Ken /Rolen, L.:**
Harmonic Maass Forms and Mock Modular Forms:
Theory and Applications

511-119

Modular forms and Jacobi forms play a central role in many areas of mathematics.
Over the last 10-15 years, this theory has been extended to certain non-holomorphic functions, the so-called "harmonic Maass forms". The first glimpses of this theory appeared in Ramanujan's enigmatic last letter to G.H.Hardy written from his deathbed. Ramanujan discovered functions he called "mock theta functions" which over eighty years later were recognized as pieces of harmonic Maass forms. This book contains the essential features of the theory of harmonic Maass forms and mock modular forms, together with a wide variety of applications to algebraic number theory, combinatorics, elliptic curves, mathematical physics, quantum modular forms, and representation theory.

Jan. 2018 391 pp.
9781470419448 17,780.

Vol. 63: Drutu,C./Kapovich,M.:
Geometric Group Theory
Nov. 2017 *9781470411046* *23,070.*

A. M. S.

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No.511 **Jan. - Feb. 2018**

数理科学 **友 隣 社** 洋書専門

目　次

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毎号，最新刊のみのチェック作業にお役立て下さい

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Mathematical Surveys and Monographs,

Vol. 227: **Frigerio, R.:** No. 511-083

Bounded Cohomology of Discrete Groups

The theory of bounded cohomology, introduced by Gromov in the late 1980s, has had powerful applications in geometric group theory and the geometry and topology of manifolds, and has been the topic of active research continuing to this day.
This monograph provides a unified, self-contained introduction to the theory and its applications, making it accessible to a student who has completed a first course in algebraic topology and manifold theory.

Dec. 2017 193 pp.
9781470441463 19,830.

Graduate Studies in Mathematics,

Vol. 187: **Douglas Moore, J.:** No. 511-138

Introduction to Global Analysis

Palais and Smale reformulated Morse's calculus of variations in terms of infinite-dimensional manifolds, and these infinite-dimensional manifolds were found useful for studying a wide variety of nonlinear PDEs.
This book applies infinite-dimensional manifold theory to the Morse theory of closed geodesics in a Riemannian manifold. It then describes the problems encountered when extending this theory to maps from surfaces instead of curves. It treats critical point theory for closed parametrized minimal surfaces in a compact Riemannian manifold, establishing Morse inequalities for perturbed versions of the energy function on the mapping space.

Jan. 2018 368 pp.
9781470429508 14,190.

Vol. 186: **Poonen, B.:** No. 511-119

Rational Points on Varieties

This book is motivated by the problem of determining the set of rational points on a variety, but its true goal is to equip readers with a broad range of tools essential for current research in algebraic geometry and number theory.
The book is unconventional in that it provides concise accounts of many topics instead of a comprehensive account of just one --- this is intentionally designed to bring readers up to speed rapidly.
Among the topics included are Brauer groups, faithfully flat descent, algebraic groups, torsors, etale and fppf cohomology, the Weil conjectures, and the Brauer-Manin and descent obstructions.

Dec. 2017 337 pp.
9781470437732 14,190.

Contemporary Mathematics,

Vol. 700: **Girouard, A. /Jakobson, D. /Levitin, M. / Nigam, N. /Polterovich, I. /Rochon, F. (eds.):** No. 511-142

Geometric and Computational Spectral Theory

The volume covers a broad variety of topics in spectral theory, highlighting its connections to differential geometry, mathematical physics and numerical analysis, bringing together the theoretical and computational approaches to spectral theory, and emphasizing the interplay between the two.

Nov. 2017 284 pp.
9781470426651 18,970.

A. M. S

Contemporary Mathematics,

Vol. 699: **Agranovsky, A. /Ben-Artzi, M. /Beneteau, C. / Karp, L. /Reich, S. /Shoikhet, D. /Weinstein, G. / Zalcman, L. (eds.):** No. 511-055

Complex Analysis and Dynamical Systems VII

The papers in this volume range over a wide variety of topics in the interaction between various branches of mathematical analysis. Taken together, the articles collected here provide the reader with a panorama of activity in complex analysis, geometry, harmonic analysis, and partial differential equations, drawn by a number of leading figures in the field.

Nov. 2017 293 pp.
9781470429614 18,970.

Classical Topics in Mathematics,

Vol. 6: **Wu, H.-H.:** No. 511-038

The Bochner Technique in Differential Geometry

In 1953 K. Kodaira applied this method to prove the vanishing theorem for harmonic forms with values in a holomorphic vector bundle.
This theorem, which bears his name, was the crucial step that allowed him to prove his famous imbedding theorem.
Subsequently, the Bochner technique has been extended, on the one hand, to spinor fields and harmonic maps and, on the other, to harmonic functions and harmonic maps on noncompact manifolds.
The last has led to the proof of rigidity properties of certain Kahler manifolds and locally symmetric spaces.

Dec. 2017 214 pp.
9787040478389 10,080.

Vol. 4: **Klein, F. /Fricke, R.:**

Lectures on the Theory of Automorphic Functions:
Second Volume

Felix Klein's famous Erlangen program made the theory of group actions into a central part of mathematics. In the spirit of this program, Klein set out to write a grand series of books which unified many different subjects of mathematics, including number theory, geometry, complex analysis, and discrete subgroups. These four classic books are vast generalizations of the first volume and contain the highly original works of Poincare and Klein on automorphic forms. They have been very influential in the development of mathematics and are now available in English for the first time. No. 511-025

Dec. 2017 563 pp.
9787040478396 15,210.

Vol. 3: Klein, F. /Fricke, R.:
Lectures on the Theory of Automorphic Functions: First Volume
Dec. 2017 *539 pp.* *9787040478402* *15,210.*

Vol. 2: Klein, F. /Fricke, R.:
Lectures on the Theory of Elliptic Modular Functions: Second Volume
Dec. 2017 *589 pp.* *9787040478372* *15,210.*

Vol. 1: Klein, F. /Fricke, R.:
Lectures on the Theory of Elliptic Modular Functions: First Volume
Dec. 2017 *639 pp.* *9787040478723* *15,210.*

A. M. S.

University Lecture Series,

Vol. 69: De Concini, C. /Procesi, C.: No. 511-076

The Invariant Theory of Matrices

This book gives a unified, complete, and self-contained exposition of the main algebraic theorems of invariant theory for matrices in a characteristic free approach.
More precisely, it contains the description of polynomial functions in several variables on the set of matrices with coefficients in an infinite field or even the ring of integers, invariant under simultaneous conjugation.
Following Hermann Weyl's classical approach, the ring of invariants is described by formulating and proving
(1) the first fundamental theorem that describes a set of generators in the ring of invariants, and (2) the second fundamental theorem that describes relations between these generators.

Nov. 2017 153 pp.
9781470441876 7,520.

Vol. 68: Auffinger, A. /Damron, M.: No. 511-213

50 Years of First-Passage Percolation

First-passage percolation (FPP) is a fundamental model in probability theory that has a wide range of applications to other scientific areas (growth and infection in biology, optimization in computer science, disordered media in physics), as well as other areas of mathematics, including analysis and geometry.
FPP was introduced in the 1960s as a random metric space.
Although it is simple to define, and despite years of work by leading researchers, many of its central problems remain unsolved.

Jan. 2018 161 pp.
9781470441838 7,520.

Pure and Applied Undergraduate Texts,

Vol. 30: Miller, S.: No. 511-161

Mathematics of Optimization:

How to Do Things Faster

Optimization Theory is an active area of research with numerous applications; many of the books are designed for engineering classes, and thus have an emphasis on problems from such fields.
Covering much of the same material, there is less emphasis on coding and detailed applications as the intended audience is more mathematical.
There are still several important problems discussed, but there is more emphasis on theory and less on the nuts and bolts of coding.
A constant theme of the text is the "why" and the"how" in the subject.

Dec. 2017 327 pp.
9781470441142 11,790.

Vol. 29: Lindstrom, T.: No. 511-104

Spaces:

An Introduction to Real Analysis

It is forward-looking in the sense that it first and foremost aims to provide students with the concepts and techniques they need in order to follow more advanced courses in mathematical analysis and neighboring fields.
The only prerequisites are a solid understanding of calculus and linear algebra.

Jan. 2018 369 pp.
9781470440626 15,210.

A. M. S.

Eilers, S. /Olesen, D.:
C*-Algebras and Their Automorphism Groups, 2nd ed. No. 511-079

C-Algebras and their Automorphism Groups, Second Edition is an updated edition of Gert Kjargard Pedersen's 1979 classic.
This edition reflects the wealth of novel results revealed over the past forty years. Revered for its writing clarity and elegant presentation of operator algebras, Pedersen's monograph is notable for reviewing partially ordered vector spaces and group automorphisms in unusual detail, diminishing von Neumann algebras as an ancillary to C-algebrae.

June 2018 460 pp.
9780128141229 21,370.

Kirkwood, J.:
Mathematical Physics with Partial Differential Equations, 2nd ed. No. 511-157

The new edition is based on the success of the first, with a continuing focus on clear presentation, detailed examples, mathematical rigor and a careful selection of topics.
It presents the familiar classical topics and methods of mathematical physics with more extensive coverage of the three most important partial differential equations in the field of mathematical physics - the heat equation, the wave equation and Laplace's equation.

Mar. 2018 576 pp.
9780128147597 22,230.

Motreanu, D.:
Nonlinear Differential Problems with Smooth and Nonsmooth Constraints No. 511-162

This research monograph systematically evaluates how to solve boundary value problems with smooth and nonsmooth constraints.
Primarily covering nonlinear elliptic eigenvalue problems and quasilinear elliptic problems using techniques amalgamated from a range of sophisticated nonlinear analysis domains, the work is suitable for PhD and other early career researchers seeking solutions to nonlinear differential equations.
Although an advanced work, the book is to a large extent self-contained and requires only graduate-level knowledge of functional analysis and topology.
Whenever suitable, open problems are stated and partial solutions proposed.

June 2018 304 pp.
9780128133866 29,920.

Skufca, J. /Powers, D.: No. 511-168
Boundary Value Problems and Partial Differential Equations, 7th ed.

This book remains the preeminent resource for upper division undergraduate and graduate students seeking to derive, solve and interpret explicit solutions involving partial differential equations with boundary and initial conditions.
Fully revised to reflect advances since the 2009 edition, this book aims to be comprehensive without affecting the accessibility and convenience of the original.
The main tool is Fourier analysis, but other techniques including Laplace transform, numerical methods, and separation of variables are introduced as well.

Apr. 2018 600 pp.
9780128128060 21,370.

Academic

Cambridge Studies in Advanced Mathematics,

Vol. 175: Navarro, G.: No. 511-115

Character Theory and the Mckay Conjecture

The McKay conjecture is the origin of the counting conjectures in the representation theory of finite groups. This book gives a comprehensive introduction to these conjectures, while assuming minimal background knowledge. Character theory is explored in detail along the way, from the very basics to the state of the art.
This includes not only older theorems, but some brand new ones too. New, elegant proofs bring the reader up to date on progress in the field, leading to the final proof that if all finite simple groups satisfy the inductive McKay condition, then the McKay conjecture is true.
Open questions are presented throughout the book, and each chapter ends with a list of problems, with varying degrees of difficulty.

July 2018 ....
9781108428446 11,110.

Vol. 173: Garrett, P.: No. 511-088

Modern Analysis of
Automorphic Forms by Example

This book provides a self-contained introduction to the theory and application of automorphic forms, using examples to illustrate several critical analytical concepts surrounding and supporting the theory of automorphic forms.
The featured critical results, which are proven carefully and in detail, include: discrete decomposition of cuspforms, meromorphic continuation of Eisenstein series, spectral decomposition of pseudo-Eisenstein series, automorphic Plancherel theorem, and automorphic Green's functions.
The book treats three instances, starting with some small unimodular examples, followed by adelic GL2, and finally GLn.
With numerous proofs and extensive examples, this classroom-tested introductory text is meant for a second-year or advanced graduate course in automorphic forms, and also as a resource for researchers working in automorphic forms, analytic number theory, and related fields.

May 2018 500 pp.
9781107154001 13,670.

Vol. 172: Ceccherini-Silberste, T. /Scarabotti, F.:
Discrete Harmonic Analysis No. 511-071

Representations, Number Theory, Expanders, and the Fourier Transform

This self-contained book introduces readers to discrete harmonic analysis with an emphasis on the Discrete Fourier Transform and the Fast Fourier Transform on finite groups and finite fields, as well as their noncommutative versions. It also features applications to number theory, graph theory, and representation theory of finite groups.
Beginning with elementary material on algebra and number theory, the book then delves into advanced topics from the frontiers of current research, including spectral analysis of the DFT, spectral graph theory and expanders, representation theory of finite groups and multiplicity-free triples, Tao's uncertainty principle for cyclic groups, harmonic analysis on GL(2,Fq), and applications of the Heisenberg group to DFT and FFT.

June 2018 ....
9781107182332 13,670.

Cambridge

Cambridge Tracts in Mathematics,

Vol. 212: Corvaja, P. /Zannier, U.: No. 511-074
Applications of Diophantine Approximation to
Integral Points and Transcendence

This introduction to the theory of Diophantine approximation pays special regard to Schmidt's subspace theorem and to its applications to Diophantine equations and related topics.
The geometric viewpoint on Diophantine equations has been adopted throughout the book. It includes a number of results, some published here for the first time in book form, and some new, as well as classical material presented in an accessible way. Graduate students and experts alike will find the book's broad approach useful for their work, and will discover new techniques and open questions to guide their research.
It contains concrete examples and many exercises (ranging from the relatively simple to the much more complex), making it ideal for self-study and enabling readers to quickly grasp the essential concepts.

June 2018 ....
9781108424943 21,370.

Australian Math. Society Lecture Series,

Vol. 27: Van Assche, W.: No. 511-171
Orthogonal Polynomials and
Painleve Equations

There are a number of intriguing connections between Painleve equations and orthogonal polynomials, and this book is one of the first to provide an introduction to these.
Researchers in integrable systems and non-linear equations will find the many explicit examples where Painleve equations appear in mathematical analysis very useful.
Those interested in the asymptotic behavior of orthogonal polynomials will also find the description of Painleve transcendants and their use for local analysis near certain critical points helpful to their work.
Rational solutions and special function solutions of Painleve equations are worked out in detail, with a survey of recent results and an outline of their close relationship with orthogonal polynomials.

Apr. 2018 ....
9781108441940 6,830.

Butler, S. /Cooper, J. /Hurlbert, G. (eds.): No. 511-067
Connections in Discrete Mathematics:
A Celebration of the Work of Ron Graham

Discrete mathematics has been rising in prominence in the past fifty years, both as a tool with practical applications and as a source of new and interesting mathematics.
The topics in discrete mathematics have become so well developed that it is easy to forget that common threads connect the different areas, and it is through discovering and using these connections that progress is often made.
For over fifty years, Ron Graham has been able to illuminate some of these connections and has helped to bring the field of discrete mathematics to where it is today.

May 2018 350 pp.
9781107153981/9781316607886 20,510./10,250. (Paper ed.)

Cambridge

Encyclopedia of Mathematics and its Applications,

Vol. 168: **Khrennikov, A. /Kozyrev, S. /Zuniga-Galindo, W.: Ultrametric Pseudodifferential Equations and Applications** No. 511-155

Starting from physical motivations and leading to practical applications, this book provides an interdisciplinary perspective on the cutting edge of ultrametric pseudodifferential equations. It shows the ways in which these equations link different fields including mathematics, engineering, and geophysics.
In particular, the authors provide a detailed explanation of the geophysical applications of p-adic diffusion equations, useful when modeling the flows of liquids through porous rock.
p-adic wavelets theory and p-adic pseudodifferential equations are also presented, along with their connections to mathematical physics, representation theory, the physics of disordered systems, probability, number theory, and p-adic dynamical systems.

June 2018 258 pp.
9781107188822 21,370.

Vol. 167: **Garcia, M. /Palacios, A.: Non-Associative Normed Algebras, Vol. 2: Representation Theory and the Zel'manov Approach** No. 511-086

This first systematic account of the basic theory of normed algebras, without assuming associativity, includes many new and unpublished results and is sure to become a central resource for researchers and graduate students in the field.
This second volume revisits JB*-triples, covers Zel'manov's celebrated work in Jordan theory, proves the unit-free variant of the Vidav-Palmer theorem, and develops the representation theory of alternative C*-algebras and non-commutative JB*-algebras.
This completes the work begun in the first volume, which introduced these algebras and discussed the so-called non-associative Gelfand-Naimark and Vidav-Palmer theorems.

May 2018 ....
9781107043114 29,910.

London Mathematical Society Student Texts,

Vol. 92: **Linckelmann, M.: The Block Theory of Finite Group Algebras, Vol. 2** No. 511-102

This is a comprehensive introduction to the modular representation theory of finite groups, with an emphasis on block theory.
The two volumes take into account classical results and concepts as well as some of the modern developments in the area. Volume 1 introduces the broader context, starting with general properties of finite group algebras over commutative rings, moving on to some basics in character theory and the structure theory of algebras over complete discrete valuation rings.
In Volume 2, blocks of finite group algebras over complete p-local rings take centre stage, and many key results which have not appeared in a book before are treated in detail. In order to illustrate the wide range of techniques in block theory, the book concludes with chapters classifying the source algebras of blocks with cyclic and Klein four defect groups, and relating these classifications to the open conjectures that drive block theory.

June 2018 ....
9781108425902/9781108441803 19,660./11,110. (Paper ed.)

Cambridge

Lecture Notes in Mathematics,

Vol. 2206: **Pollicott, M. /Urbanski, M.:** No. 511-165
Open Conformal Systems and
Perturbations of Transfer Operators

The focus of this book is on open conformal dynamical systems corresponding to the escape of a point through an open Euclidean ball. The ultimate goal is to understand the asymptotic behavior of the escape rate as the radius of the ball tends to zero. In the case of hyperbolic conformal systems this has been addressed by various authors.
The conformal maps considered in this book are far more general, and the analysis correspondingly more involved. The asymptotic existence of escape rates is proved and they are calculated in thecontext of (finite or infinite) countable alphabets, uniformly contracting conformal graph-directed Markov systems, and in particular,
conformal countablealphabet iterated function systems.
These results have direct applications to interval maps, rational functions and meromorphic maps.

Mar. 2018 ....
9783319721781 7,030.

Vol. 2205: **Kadets, V. /Martin, M.:** No. 511-151
Spear Operators Between Banach Spaces

This monograph is devoted to the study of spear operators, that is, bounded linear operators G between Banach spaces X and Y satisfying that for every other bounded linear operator T:X\longrightarrow Y there exists a modulus-one scalar \omega such that\|G + \omega\,T\|=1+ \|T\|.
This concept extends the properties of the identity operator in those Banach spaces having numerical index one.
Many examples among classical spaces are provided, being one of them the Fourier transform on L_1. The relationships with the Radon-Nikodym proerty, with Asplund spaces and with the duality, and some isometric and isomorphic consequences are provided. Finally, Lipschitz operators satisfying the Lipschitz version of the equation above are studied.

May 2018 130 pp.
9783319713328 7,030.

Vol. 2204: **Hernandez-Lamoneda, L/Herrera, H.:** No. 511-147
Geometrical Themes Inspired by
the N-Body Problem

Presenting a selection of recent developments in geometrical problems inspired by the N-body problem, these lecture notes offer a variety of approaches to study them, ranging from variational to dynamical, while developing new insights, making geometrical and topological detours, and providing historical references. A. Guillot's notes aim to describe differential equations in the complex domain, motivated by the evolution of N particles moving on the plane subject to the influence of a magnetic field. Guillot studies such differential equations using different geometric structures on complex curves (in the sense of W. Thurston) in order to find isochronicity conditions. R. Montgomery's notes deal with a version of the planar Newtonian three-body equation.
Namely, he investigates the problem of whether every free homotopy class is realzed by a periodic geodesic.

Mar. 2018 ....
9783319714271 7,030.

Springer

Lecture Notes in Mathematics,

Vol. 2194: Nguyen, H. /Schwartz, L. (eds.): No. 511-116
Algebraic Topology:
VIASM 2012-2015

Held during algebraic topology special sessions at the Vietnam Institute for Advanced Studies in Mathematics, this set of notes consists of expanded versions of three courses given by G. Ginot, H.-W. Henn and G. Powell.
They are all introductory texts and can be used by PhD students and expertsin the field.
Among the three contributions, two concern stable homotopy of spheres: Henn focusses on the chromatic point of view, the Morava K(n)-localization and the cohomology of the Morava stabilizer groups.
Powell's chapter is concerned with the derived functors of the destabilization and iterated loop functors and provides a small complex to compute them.
Indications are given for the odd prime case.

Dec. 2017 147 pp.
9783319694337 7,030.

Fields Institute Communications,

Vol. 81: Gauthier, P. /Manolaki, M. /Gauthier, P. (eds.):
New Trends in Approximation Theory:
In Memory of Andre Boivin No. 511-254

The international conference entitled "New Trends in Approximation Theory" was held at the Fields Institute, in Toronto, from July 25 until July 29, 2016.
The conference was fondly dedicated to the memory of our unique friend and colleague, Andre Boivin, who gave tireless service in Canada until his very last moment of his life in October 2014.
The impact of his warm personality and his fine work on Complex Approximation Theory was reflected by the mathematical excellence and the wide research range of the 37 participants. In total there were 27 talks, delivered by well-established mathematicians and young researchers.

Nov. 2017 247 pp.
9781493975426 19,090.

Algebra and Applications,

Vol. 24: Bonnafe, C.: No. 511-062
Kazhdan-Lusztig Cells with
Unequal Parameters

This monograph provides a comprehensive introduction to the Kazhdan-Lusztig theory of cells in the broader context of the unequal parameter case.
Serving as a useful reference, the present volume offers a synthesis of significant advances made since Lusztig's seminal work on the subject was published in 2002.
The focus lies on the combinatorics of the partition into cells for general Coxeter groups, with special attention given to induction methods, cellular maps and the role of Lusztig's conjectures.
Using only algebraic and combinatorial methods, the author carefully develops proofs, discusses open conjectures, and presents recent research, including a chapter on the action of the cactus group.

Jan. 2018 352 pp.
9783319707358 22,110.

Springer

Springer Monographs in Mathematics

Crabb, M. /Ranicki, A.: No. 511-075

The Geometric Hopf Invariant and Surgery Theory

Written by leading experts in the field, this monograph provides homotopy theretic foundations for surgery theory on higher-dimensional manifolds.
Presenting classical ideas in a modern framework, the authors carefully highlight how their results relate to existing results in the erature.
The central result of the book expresses algebraic surgery theory in terms of the geometric Hopf invariant, a construction in stable homotopy theory which captures the double points of immersions.
Serving as a valuable reference, this work is aimed at graduate students and researchers interested in understanding how the algebraic and geometric topology fit together in the surgery theory of manifolds.

Jan. 2018 407 pp.
9783319713052 22,110.

Bang-Jensen, J. /Gutin, G.: No. 511-285

Classes of Directed Graphs

This edited volume offers a detailed account on the theory of directed graphs from the perspective of important classes of digraphs, with each chapter written by experts on the topic.
Outlining fundamental discoveries and new results obtained over recent years, this book provides a comprehensive overview of the latest research in the field.
It covers core new results on each of the classes discussed, including chapters on tournaments, planar digraphs, acyclic digraphs, Euler digraphs, graph products, directed width parameters, and algorithms.
Detailed indices ease navigation while more than 120 open problems and conjectures ensure that readers are immersed in all aspects of the field.
Classes of Directed Graphs provides a valuable reference for graduate students and researchers in computer science, mathematics and operations research.

Mar. 2018 638 pp.
9783319718392 22,110.

Universitext

Loh, C.: No. 511-105

Geometric Group Theory: An Introduction

Inspired by classical geometry, geometric group theory has in turn provided a variety of applications to geometry, topology, group theory, number theory and graph theory.
This carefully written textbook provides a rigorous introduction to this rapidly evolving field whose methods have proven to be powerful tools in neighbouring fields such as geometric topology.
Geometric group theory is the study of finitely generated groups via the geometry of their associated Cayley graphs.
It turns out that the essence of the geometry of such groups is captured in the key notion of quasi-isometry, a large-scale version of isometry whose invariants include growth types, curvature conditions, boundary constructions, and amenability.

Feb. 2018 391 pp.
9783319722535 13,460.

Springer

Horihata Kazuhiro :

A New Method of No. 511-148

Constructing Brakke's Motion

The paper entitled "Convergence of the Allen-Cahn equation to Brakke's motion by mean curvature" by T Ilmanen constructs Brakke's motion from Allen-Cahn equation, which is one of the measure theoretic approaches to motion by mean curvature.
This book first proposes a new idea that involves a new equation of the Allen-Cahn type to construct Brakke's motion; secondly explaining how to construct it through Ilmanen's approach as easily as possible.
Contents: *Introduction *Mean Curvature Flow
*Approximation of Mean Curvature Flow
*New Partial Differential Equations of Allen-Cahn Type
*Ilmanen's Approach to Construct Brakke's Motion
Appendices: - Preparation on ODE and PDE - Background on the Geometric Measure Theory

Aug. 2018 400 pp.
9789813228580 23,600.

Series on Knots and Everything,

Vol. 62: **McNair, J. /Dennis, L. /Kauffman, L. (eds.):**

The Mereon Matrix: No. 511-200

Everything Connected through (K)nothing, 2nd ed.

In this richly illustrated book, the contributors describe the Mereon Matrix, its dynamic geometry and topology. Through the definition of eleven First Principles, it offers a new perspective on dynamic, whole and sustainable systems that may serve as a template information model.
This template has been applied to a set of knowledge domains for verification purposes: pre-life-evolution, human molecular genetics and biological evolution, as well as one social application on classroom management.

Apr. 2018 950 pp.
9789813233553 3,380.

Steeb, W.-H.: No. 511-208/209

Problems and Solutions in Differential Geometry, Lie Series, Differential Forms, Relativity and Applications

This volume presents a collection of problems and solutions in differential geometry with applications.
Both introductory and advanced topics are introduced in an easy-to-digest manner, with the materials of the volume being self-contained.
In particular, curves, surfaces, Riemannian and pseudo-Riemannian manifolds, Hodge duality operator, vector fields and Lie series, differential forms, matrix-valued differential forms, Maurer-Cartan form, and the Lie derivative are covered.
Readers will find useful applications to special and general relativity, Yang-Mills theory, hydrodynamics and field theory.
Besides the solved problems, each chapter contains stimulating supplementary problems and software implementations are also included.
The volume will not only benefit students in mathematics, applied mathematics and theoretical physics, but also researchers in the field of differential geometry.

Dec. 2017 296 pp.
9789813230828/9789813232969 13,340./8,210. (Paper ed.)

World Scientific Publishing

Panoramas et syntheses,

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Following Faltings and Vojta's work proving the Mordell-Lang conjecture for abelian varieties and Raynaud's work proving the Manin-Mumford conjecture, many new Diophantine questions appeared, often described as problems of unlikely intersections. The arithmetic of moduli spaces of abelian varieties and more generally Shimura varieties has been parallely developed, around the central Andre-Oort conjecture.
These two themes can be placed in a common frame
--- the Zilber-Pink conjecture.

Nov. 2017 284 pp.
9782856298565 13,670.

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Dec. 2017 149 pp.
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This work gives a detailed structure theory for semisimple Lie algebras over arbitrary fields of characteristic 0.
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9784864970488 7,963.

Vol. 74: **Oguiso Keiji /Birkar, C. / Ishii Shihoko /Takayama Shigeharu : Higher Dimensional Algebraic Geometry in Honour of Professor Yujiro Kawamata's sixtieth birthday** No. 511-034

In this conference, there are 25 invited talks including a talk by Professor Kawamata himself "Log canonical divisors and positivity - Past, Present and Future" and talks by his former students, Y. Toda, who is also one of invited speakers of ICM 2014, and T. Yasuda.
All the speakers are outstanding, very active mathematicians in the world in various generations, as you may find in the program of the conference.
The number of participants are more than 200 from all over the world, as you may see from the picture!
This proceedings volume is open for all the participants who are willing to contribute.
We are very happy to have 20 papers again from very active top level mathematicians all over the world, including several invited speakers of the conference, his former students, Y. Ito, D. Matsushita, Y. Toda and T. Yasuda, and one of his coauthors, Y. Namikawa.

Nov. 2017 456 pp.
9784864970464 8,334.

MSJ Memoirs,

Vol. 36: **Katayama Soichiro : Global solutions and the asymptotic behavior for nonlinear wave equations with small initial data** No. 511-024

In the study of the Cauchy problem for nonlinear wave equations with small initial data, the case where the nonlinearity has the critical power is of special interest.
In this case, depending on the structure of the nonlinearity, one may observe global existence and finite time blow-up of solutions.
In 80's, Klainerman introduced a sufficient condition, called the null condition, for the small data global existence in the critical case.
Recently, weaker sufficient conditions are also Studied.
This volume offers a comprehensive survey of the theory of nonlinear wave equations, including the classical local existence theorem, the global existence in the supercritical case, the finite time blow-up and the lifespan estimate in the critical case, and the global existence under the null condition in two and three space dimensions.
The main tool here is the so-called vector field method.
This volume also contains recent progress in the small data global existence under some conditions weaker than the null condition, and it is shown that a wide variety of the asymptotic behavior is observed under such weaker conditions.
This volume is written not only for researchers, but also for graduate students who are interested in nonlinear wave equations.

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