

2025

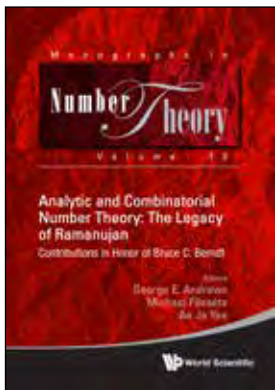
MATHEMATICS



Highlights

Mathematics Catalogue 2025

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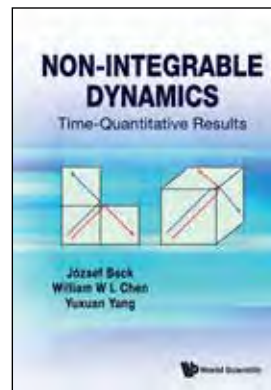
edited by **George E Andrews** (*The Pennsylvania State University, USA*), **Michael Filaseta** (*University of South Carolina, USA*) & **Ae Ja Yee** (*The Pennsylvania State University, USA*)

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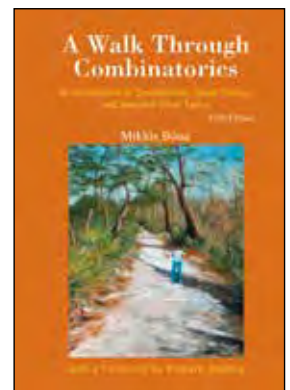
by **Paolo Perrone** (*University of Oxford, UK*)

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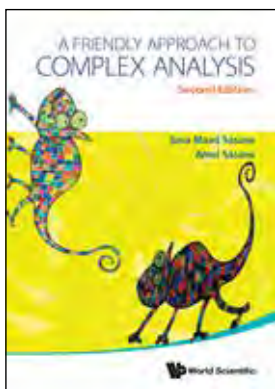
by **József Beck** (*Rutgers University, USA*), **William W L Chen** (*Macquarie University, Australia*) & **Yuxuan Yang** (*Beijing University of Posts and Telecommunications, China*)

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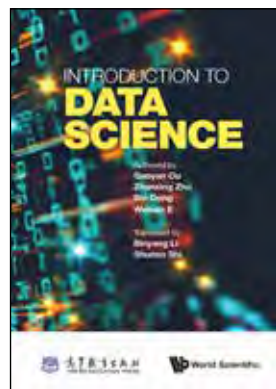
by **Miklós Bóna** (*University of Florida, USA*)

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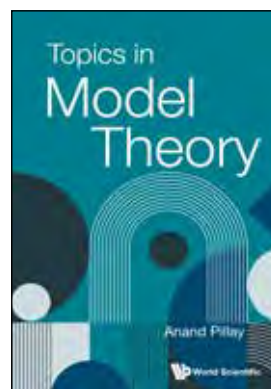
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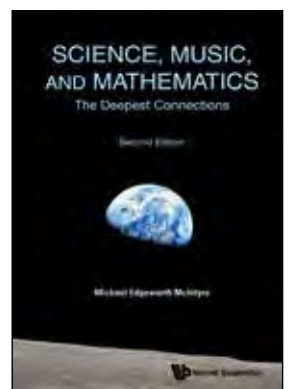
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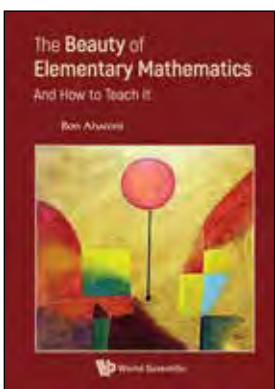
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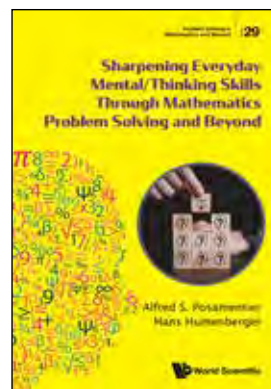
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by **Inavamsi Enaganti** (*Param Innovation Centre, India*), **Nivedita Ganesh** (*New York University, USA*) & **Bud Mishra** (*New York University, USA*)

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by **Derek Holton** (*University of Otago, New Zealand*)

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- Mechanical Engineering
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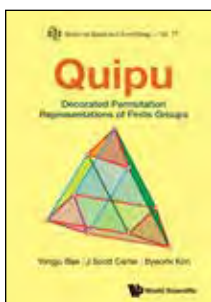
ALGEBRA AND RELATED TOPICS

Series on Knots and Everything - Vol 77

Quipu

Decorated Permutation Representations of Finite Groups

by **Yongju Bae** (*Kyungpook National University, South Korea*), **J Scott Carter** (*University of South Alabama, USA*) & **Byeorhi Kim** (*Pohang University of Science and Technology, South Korea*)



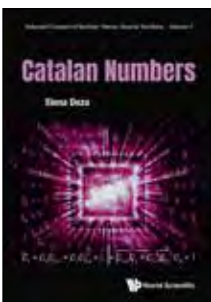
This book studies dihedral groups, dicyclic groups, other finite subgroups of the 3-dimensional sphere, and the 2-fold extensions of the symmetric group on 4 letters from the point of view of decorated string diagrams of permutations. These are our metaphorical quipu. As you might expect, the book is replete with illustrations.

550pp **Jul 2024**
978-981-129-275-0 **US\$158** **£145**
978-981-129-276-7(ebook) **US\$253** **£230**

Selected Chapters of Number Theory:
 Special Numbers - Vol 4

Catalan Numbers

by **Elena Deza** (*Moscow Pedagogical State University, Russia*)

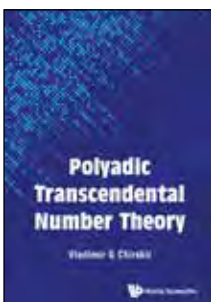


Catalan numbers, named after the French-Belgian mathematician Eugène Charles Catalan (1814 – 1894), arise in a variety of combinatorial problems. They have many interesting properties, a rich history, and numerous arithmetic, number-theoretical, analytical and combinatorial connections, as well as a variety of classical and modern applications. Considering the long list of open problems and questions related to the classical case, its relatives (Bell numbers, Motzkin numbers, Narayana numbers, etc.) and its generalizations, this book provides a broad perspective on the theory of this class of special numbers that will be useful and of interest to both professionals and a general audience.

290pp **Dec 2024**
978-981-129-322-1 **US\$98** **£90**
978-981-129-323-8(ebook) **US\$157** **£145**

Polyadic Transcendental Number Theory

by **Vladimir G Chirskii** (*Lomonosov Moscow State University, Russia*)



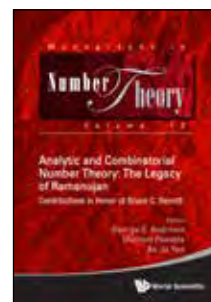
Polyadic Transcendental Number Theory outlines the extension of the Siegel – Shidlovskii method to a new class of F-series (also called Euler-type series). Analogues of Shidlovskii's famous theorems on E-functions are obtained. Arithmetic properties of infinite-dimensional vectors are studied, and therefore elements of direct products of rings of integer p -adic numbers are considered. Hermite – Padé approximations are used to investigate the values of hypergeometric series with algebraic irrational parameters.

200pp **Oct 2024**
978-1-80061-588-5 **US\$88** **£80**
978-1-80061-589-2(ebook) **US\$141** **£130**

Monographs in Number Theory - Vol 12

Analytic and Combinatorial Number Theory: The Legacy of Ramanujan

Contributions in Honor of Bruce C Berndt edited by **George E Andrews** (*The Pennsylvania State University, USA*), **Michael Filaseta** (*University of South Carolina, USA*) & **Ae Ja Yee** (*The Pennsylvania State University, USA*)

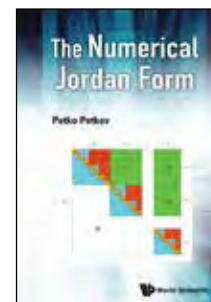


This volume reflects the contributions stemming from the conference *Analytic and Combinatorial Number Theory: The Legacy of Ramanujan* which took place at the University of Illinois at Urbana-Champaign on June 6 – 9, 2019. The conference included 26 plenary talks, 71 contributed talks, and 170 participants. As was the case for the conference, this book is in honor of Bruce C Berndt and in celebration of his mathematics and his 80th birthday.

650pp **Aug 2024**
978-981-127-736-8 **US\$168** **£155**
978-981-127-737-5(ebook) **US\$269** **£245**

The Numerical Jordan Form

by **Petko Petkov** (*Bulgarian Academy of Sciences, Bulgaria*)



The Numerical Jordan Form is the first book dedicated to exploring the algorithmic and computational methods for determining the Jordan form of a matrix, as well as addressing the numerical difficulties in finding it. Unlike the “pure” Jordan form, the numerical Jordan form preserves its structure under small perturbations of the matrix elements so that its determination presents a well-posed computational problem.

656pp **Jun 2024**
978-981-128-644-5 **US\$188** **£175**
978-981-128-645-2(ebook) **US\$301** **£275**

Lecture Notes Series, Institute for
 Mathematical Sciences, National University of
 Singapore - Vol 43

On the Langlands Program

Endoscopy and Beyond edited by **Wee Teck Gan** (*National University of Singapore, Singapore*), **Dihua Jiang** (*The University of Minnesota – Twin Cities, USA*), **Lei Zhang** (*National University of Singapore, Singapore*) & **Chen-Bo Zhu** (*National University of Singapore, Singapore*)



This is a collection of lecture notes from the minicourses in the December 2018 *Langlands Workshop: Endoscopy and Beyond*. The volume combines seven introductory chapters on trace formulas, local Arthur packets, and beyond endoscopy. It aims to introduce the endoscopy classification via a basic example of the trace formula for $SL(2)$.

448pp **May 2024**
978-981-128-581-3 **US\$158** **£145**
978-981-128-582-0(ebook) **US\$253** **£230**



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Starting Category Theory

by **Paolo Perrone** (*University of Oxford, UK*)

One of the central highlights of this work is the exploration of the Yoneda lemma and its profound implications, during which intuitive explanations are provided, as well as detailed proofs, and specific examples. This book covers aspects of category theory often considered advanced in a clear and intuitive way, with rigorous mathematical proofs. It investigates universal properties, coherence, the relationship between categories and graphs, and treats monads and comonads on an equal footing, providing theorems, interpretations and concrete examples.



464pp	May 2024	
978-981-128-600-1	US\$148	£135
978-981-128-601-8(ebook)	US\$237	£220

Krasner Hyperring Theory

by **Bijan Davvaz** (*Yazd University, Iran*) & **Violeta Leoreanu-Fotea** (*Alexandru Ioan Cuza University of Iasi, Romania*)

Krasner Hyperring Theory presents an elaborate study on hyperstructures, particularly Krasner hyperrings, across 10 chapters with extensive examples. It contains the results of the authors, but also of other researchers in the field, focusing especially on recent research. This book is especially addressed to doctoral students or researchers in the field, as well as to all those interested in this interesting part of algebra, with applications in other fields.

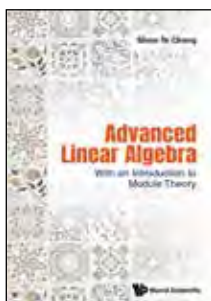


308pp	Mar 2024	
978-981-128-540-0	US\$108	£100
978-981-128-541-7(ebook)	US\$173	£160

Advanced Linear Algebra

With an Introduction to Module Theory by **Shou-Te Chang** (*National Chung Cheng University, Taiwan*)

Certain essential concepts in linear algebra cannot be fully explained in a first course. This is due to a lack of algebraic background for most beginning students. On the other hand, these concepts are taken for granted in most of the mathematical courses at graduate school level. This book will provide a gentle guidance for motivated students to fill the gap. It is not easy to find other books fulfilling this purpose. This book is a suitable textbook for a higher undergraduate course, as well as for a graduate student's self-study. The introduction of set theory and modules would be of particular interest to students who aspire to becoming algebraists.



There are three parts to this book. One is to complete the discussion of bases and dimension in linear algebra. In a first course, only the finite dimensional vector spaces are treated, and in most textbooks, it will assume the scalar field is the real number field. In this book, the general case of arbitrary dimension and arbitrary scalar fields is examined. To do so, an introduction to cardinality and Zorn's lemma in set theory is presented in detail. The second part is to complete the proof of canonical forms for linear endomorphisms and matrices. For this, a generalization of vector spaces, and the most fundamental results regarding modules are introduced to readers. This will provide the natural entrance into a full understanding of matrices. Finally, tensor products of vector spaces and modules are briefly discussed.

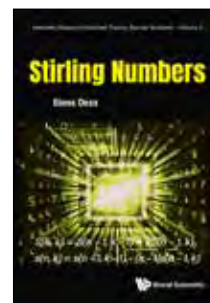
276pp	Feb 2024	
978-981-127-724-5(pbk)	US\$58	£55
978-981-127-635-4	US\$88	£80
978-981-127-636-1(ebook)	US\$141	£130

Selected Chapters of Number Theory:
Special Numbers - Vol 3

Stirling Numbers

by **Elena Deza** (*Moscow Pedagogical State University, Russia*)

This book collects much of the scattered material on the two subclasses of Stirling numbers to provide a holistic overview of the topic. From the combinatorial point of view, Stirling numbers of the second kind, $S(n, k)$, count the number of ways to partition a set of n different objects (i.e., a given n -set) into k non-empty subsets. Stirling numbers of the first kind, $s(n, k)$, give the number of permutations of n elements with k disjoint cycles. Both subclasses of Stirling numbers play an important role in Algebra: they form the coefficients, connecting well-known sets of polynomials.

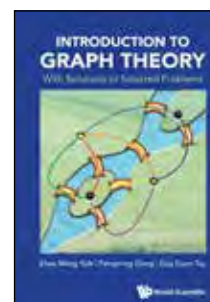


468pp	Jan 2024	
978-981-127-809-9	US\$158	£145
978-981-127-810-5(ebook)	US\$253	£230

Introduction to Graph Theory

With Solutions to Selected Problems by **Khee Meng Koh** (*National University of Singapore, Singapore*), **Fengming Dong** (*Nanyang Technological University, Singapore*) & **Eng Guan Tay** (*Nanyang Technological University, Singapore*)

Graph theory is an area in discrete mathematics which studies configurations (called graphs) involving a set of vertices interconnected by edges. This book is intended as a general introduction to graph theory.



The book builds on the verity that graph theory even at high school level is a subject that lends itself well to the development of mathematical reasoning and proof.

308pp	Jan 2024	
978-981-128-501-1(pbk)	US\$58	£55
978-981-128-481-6	US\$98	£90
978-981-128-482-3(ebook)	US\$157	£145

Abstract Algebra

by **Shaoqiang Deng** (*Nankai University, China*) & **Fuhai Zhu** (*Nanjing University, China*)

The aim of this book is to introduce the fundamental theories of groups, rings, modules, and fields, and help readers set up a solid foundation for algebra theory. The topics of this book are carefully selected and clearly presented. This is an excellent mathematical exposition, well-suited as an advanced undergraduate textbook or for independent study. The book includes many new and concise proofs of classical theorems, along with plenty of basic as well as challenging exercises.



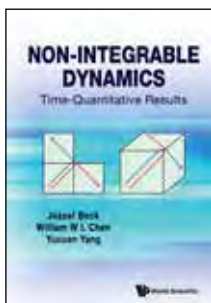
304pp	Dec 2023	
978-981-127-870-9(pbk)	US\$58	£55
978-981-127-766-5	US\$98	£90
978-981-127-767-2(ebook)	US\$157	£145

Non-Integrable Dynamics

Time-Quantitative Results

by **József Beck** (*Rutgers University, USA*), **William W L Chen** (*Macquarie University, Australia*) & **Yuxuan Yang** (*Beijing University of Posts and Telecommunications, China*)

The subject of this monograph is to describe orbits of slowly chaotic motion. The study of geodesic flow on the unit torus is motivated by the irrational rotation sequence, where the most outstanding result is the Kronecker – Weyl equidistribution theorem and its time-quantitative enhancements, including superuniformity. Another important result is the Khinchin density theorem on superdensity, a best possible form of time-quantitative density. The purpose of this monograph is to extend these classical time-quantitative results to some non-integrable flat dynamical systems.

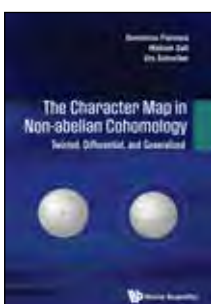


400pp **Sep 2023**
978-981-127-385-8 **US\$158** **£145**
978-981-127-386-5(ebook) **US\$253** **£235**

The Character Map in Non-abelian Cohomology

Twisted, Differential, and Generalized
 by **Domenico Fiorenza** (*Sapienza Università di Roma, Italy*), **Hisham Sati** (*New York University Abu Dhabi, UAE*) & **Urs Schreiber** (*New York University Abu Dhabi, UAE*)

"This book on nonabelian cohomology in the differentiable setting adds an original and coherent overall viewpoint to the theory of higher stacks that originated in the classical works of Grothendieck and Giraud and has seen a recent expansion in many directions. Viewed here through a lens of higher Lie theory, topics such as higher differential Chern characters constitute important new structures in differential homotopy, cohomology, and the K-theory of motives. Applications to physics are a central motivation for the study of higher Bianchi identities, leading the authors to find natural new differential forms of interest." Carlos Simpson



Université Côte d'Azur, CNRS, France

248pp **Sep 2023**
978-981-127-669-9 **US\$98** **£90**
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Latest Edition of All Time Bestseller!

A Walk Through Combinatorics

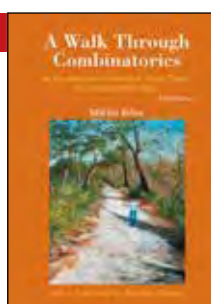
An Introduction to Enumeration, Graph Theory, and Selected Other Topics
 5th Edition

by **Miklós Bóna** (*University of Florida, USA*)

"This is still one of the best introductions to combinatorics."

Mathematical Association of America

"This book covers all of the basic results one would expect and a selection of advanced topics as well. There are many very good problems in it. The problems in this book are, as the kids say, awesome. This is a comprehensive book on combinatorics. Exposition is clear, coverage is massive, and the problems are plentiful and excellent."



SIGACT NEWS

New to this fifth edition of A Walk Through Combinatorics is the addition of Instant Check exercises — more than a hundred in total — which are located at the end of most subsections. As was the case for all previous editions, the exercises sometimes contain new material that was not discussed in the text, allowing instructors to spend more time on a given topic if they wish to do so. With a thorough introduction into enumeration and graph theory, as well as a chapter on permutation patterns (not often covered in other textbooks), this book is well suited for any undergraduate introductory combinatorics class.

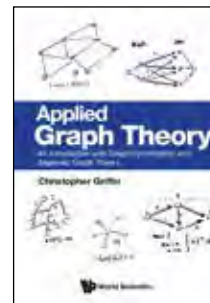
636pp **Aug 2023**
978-981-127-784-9 **US\$128** **£120**
978-981-127-785-6(ebook) **US\$205** **£190**

Applied Graph Theory

An Introduction with Graph Optimization and Algebraic Graph Theory

by **Christopher Griffin** (*Pennsylvania State University, USA*)

This book serves as an introduction to graph theory and its applications. It is intended for a senior undergraduate course in graph theory but is also appropriate for beginning graduate students in science or engineering. The book presents a rigorous (proof-based) introduction to graph theory while also discussing applications of the results for solving real-world problems of interest. The book is divided into four parts. Part 1 covers the combinatorial aspects of graph theory including a discussion of common vocabulary, a discussion of vertex and edge cuts, Eulerian tours, Hamiltonian paths and a characterization of trees. This leads to Part 2, which discusses common combinatorial optimization problems. Spanning trees, shortest path problems and matroids are all discussed, as are maximum flow problems. Part 2 ends with a discussion of graph coloring and a proof of the NP-completeness of the coloring problem. Part 3 introduces the reader to algebraic graph theory, and focuses on Markov chains, centrality computation (e.g., eigenvector centrality and page rank), as well as spectral graph clustering and the graph Laplacian. Part 4 contains additional material on linear programming, which is used to provide an alternative analysis of the maximum flow problem. Two appendices containing prerequisite material on linear algebra and probability theory are also provided.



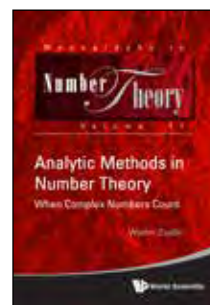
304pp **Aug 2023**
978-981-127-310-0 **US\$98** **£90**
978-981-127-311-7(ebook) **US\$157** **£145**

Monographs in Number Theory - Vol 11

Analytic Methods in Number Theory

When Complex Numbers Count
 by **Wadim Zudilin** (*Radboud University Nijmegen, The Netherlands*)

The present book takes a semi-systematic review of analytic achievements in number theory ranging from classical themes about primes, continued fractions, transcendence of π and resolution of Hilbert's seventh problem to some recent developments on the irrationality of the values of Riemann's zeta function, sizes of non-cyclotomic algebraic integers and applications of hypergeometric functions to integer congruences.

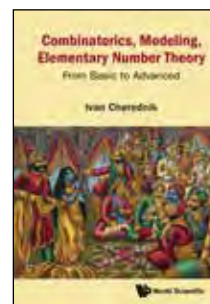


192pp **Sep 2023**
978-981-127-931-7 **US\$78** **£70**
978-981-127-932-4(ebook) **US\$125** **£115**

Combinatorics, Modeling, Elementary Number Theory

From Basic to Advanced
 by **Ivan Cherednik** (*The University of North Carolina at Chapel Hill, USA*)

This book is mostly based on the author's 25 years of teaching combinatorics to two distinct sets of students: first-year students and seniors from all backgrounds. The prerequisites are kept to a minimum; essentially, only high school algebra is required. The design is to go quickly from zero knowledge to advanced themes and various applications with a lot of topics intended for additional reading and research projects. It contains an all-inclusive collection of 135 problems and 275 exercises with four difficulty levels: solutions, hints and answers are provided.



392pp **Jun 2023**
978-981-126-539-6 **US\$118** **£110**
978-981-126-540-2(ebook) **US\$189** **£175**

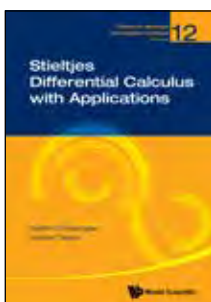
DIFFERENTIAL AND INTEGRAL EQUATIONS

Trends in Abstract and Applied Analysis - Vol 12

Stieltjes Differential Calculus with Applications

by **Svetlin G Georgiev** (Sorbonne University, France) & **Sanket Tikare** (Ramniranjan Jhunjhunwala College, India)

This monograph is the first published book that offers a comprehensive view of the fundamentals of Stieltjes calculus and its applications, making it approachable to newcomers and experts. It aims to provide an integrated approach to the foundations and recent developments in the area of the Stieltjes derivatives and the qualitative theory of the Stieltjes differential equations. Through eight pedagogically organized chapters, the authors examine a wide scope of the concept of the Stieltjes derivative and its applications. Each chapter focuses on theory, and proofs, and contains sufficient examples to enrich the reader's understanding.



350pp	Jan 2025	
978-981-129-422-8	US\$128	£120
978-981-129-423-5(ebook)	US\$205	£190

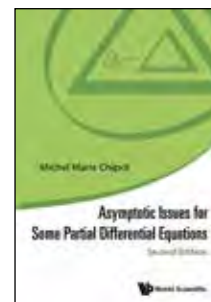
Asymptotic Issues for Some Partial Differential Equations

2nd Edition
by **Michel Marie Chipot** (University of Zurich, Switzerland)

Review of the First Edition:
"The monograph is well written and organized and recommended to graduate students and researchers in applied mathematics or engineering."

Zentralblatt MATH

The primary focus of the book is to explore the asymptotic behavior of problems formulated within cylindrical structures. Various physical applications are discussed, with certain topics such as fluid flows in channels being particularly noteworthy. Additionally, the book delves into the relevance of elasticity in the context of cylindrical bodies.

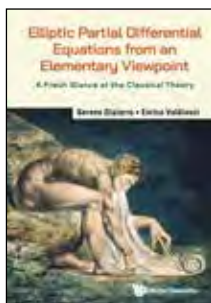


284pp	May 2024	
978-981-129-043-5	US\$98	£90
978-981-129-044-2(ebook)	US\$157	£145

Elliptic Partial Differential Equations from an Elementary Viewpoint

A Fresh Glance at the Classical Theory
by **Serena Dipierro** (University of Western Australia, Australia) & **Enrico Valdinoci** (University of Western Australia, Australia)

This is a textbook that covers several selected topics in the theory of elliptic partial differential equations which can be used in an advanced undergraduate or graduate course. The book considers many important issues such as existence, regularity, qualitative properties, and all the classical topics useful in the wide world of partial differential equations. It also includes applications with interesting examples. The structure of the book is flexible enough to allow different chapters to be taught independently. The book is friendly, welcoming, and written for a newcomer to the subject.

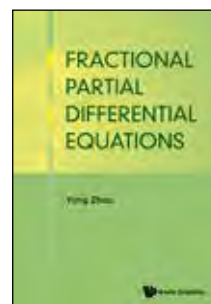


525pp	Dec 2024	
978-981-129-162-3(pbk)	US\$78	£70
978-981-129-079-4	US\$168	£155
978-981-129-080-0(ebook)	US\$269	£250

Fractional Partial Differential Equations

by **Yong Zhou** (Xiangtan University, China & Macau University of Science and Technology, China)

This monograph offers a comprehensive exposition of the theory surrounding time-fractional partial differential equations, featuring recent advancements in fundamental techniques and results. The topics covered encompass crucial aspects of the theory, such as well-posedness, regularity, approximation, and optimal control. The book delves into the intricacies of fractional Navier – Stokes equations, fractional Rayleigh – Stokes equations, fractional Fokker – Planck equations, and fractional Schrödinger equations, providing a thorough exploration of these subjects. Numerous real-world applications associated with these equations are meticulously examined, enhancing the practical relevance of the presented concepts.

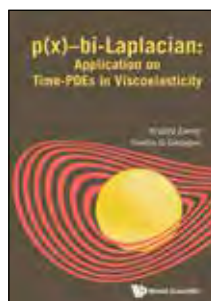


320pp	May 2024	
978-981-129-040-4	US\$128	£120
978-981-129-041-1(ebook)	US\$205	£190

p(x) – bi-Laplacian: Application on Time-PDEs in Viscoelasticity

Time-PDEs in Viscoelasticity
by **Khaled Zennir** (Qassim University, Saudi Arabia) & **Svetlin Georgiev** (Sorbonne University, France)

The main subject of our book is to use the $(p, p(x)$ and $p(x))$ -bi-Laplacian operator in some partial differential systems, where we developed and obtained many results in quantitative and qualitative point of view. To our knowledge there are no such references.

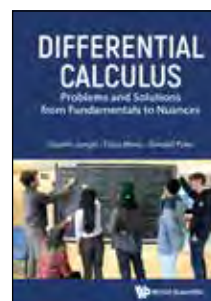


350pp	Sep 2024	
978-981-129-155-5	US\$138	£125
978-981-129-156-2(ebook)	US\$221	£205

Differential Calculus

Problems and Solutions from Fundamentals to Nuances
by **Veselin Jungić** (Simon Fraser University, Canada), **Petra Menz** (Simon Fraser University, Canada) & **Randall Pyke** (Simon Fraser University, Canada)

This volume contains more than 900 problems in differential calculus, covering limits, continuity, derivatives, and their applications. The applications are comprised of a variety of approximations, growth and decay, optimization, curve sketching techniques, and analytical tools to investigate properties of parametrically given planar curves. The problems are sorted by topic, each opening with a summary of the relevant mathematical notions and their properties.



328pp	Jan 2024	
978-981-127-389-6(pbk)	US\$58	£55
978-981-127-298-1	US\$98	£90
978-981-127-299-8(ebook)	US\$157	£145

GEOMETRY AND TOPOLOGY

Series on Knots and Everything - Vol 76

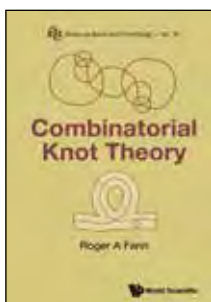
Combinatorial Knot Theory

by **Roger A Fenn** (*University of Sussex, UK*)

A classic knot is an embedded simple loop in 3-dimensional space. It can be described as a 4-valent planar graph or network in the horizontal plane, with the vertices or crossings corresponding to double points of a projection. In recent years, many different types of knot theories have been considered where the information stored at the crossings determines how the Reidemeister moves are used, if at all.

In this book, we look at all these new theories systematically in a way which any third-year undergraduate mathematics student would understand. This book can form the basis of an undergraduate course or as an entry point for a postgraduate studying topology.

180pp	Oct 2024	
978-981-129-272-9	US\$78	£70
978-981-129-273-6(ebook)	US\$125	£115



Algebra and Discrete Mathematics

Geometry of Crystallographic Groups

2nd Edition

by **Andrzej Szczepański**
(*University of Gdańsk, Poland*)

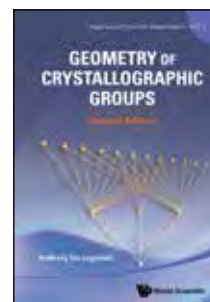
Review of the First Edition:

"This very precise and well written text is an extended version of the notes of the lectures given by the author at Gdańsk University for graduate students."

The European Mathematical Society

This Second Edition expands on the first, providing details of a new result of automorphism of crystallographic groups, and on Hantzsche-Wendt groups/manifolds.

260pp	Aug 2024	
978-981-128-659-9	US\$98	£90
978-981-128-660-5(ebook)	US\$157	£145



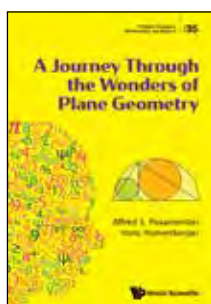
Problem Solving in Mathematics and Beyond - Vol 35

A Journey Through the Wonders of Plane Geometry

by **Alfred S Posamentier** (*City University of New York, USA*) & **Hans Humenberger** (*University of Vienna, Austria*)

Geometry is often seen as one of the most beautiful aspects of mathematics. This beauty is probably a result of the fact that one can "see" this aspect of mathematics. Most people are exposed to the very basic elements of geometry throughout their schooling, concentrated in the secondary school curriculum. High schools in the United States offer one year of concentrated geometry teaching, allowing students to observe how a mathematician functions, since everything that is accepted beyond the basic axioms must be proved. However, as the course is only one year long, a great amount of geometry remains to be exposed to the general audience. That is the challenge of this book, wherein we will present a plethora of amazing geometric relationships.

300pp	Oct 2024	
978-981-129-284-2	US\$98	£90
978-981-129-285-9(ebook)	US\$157	£145



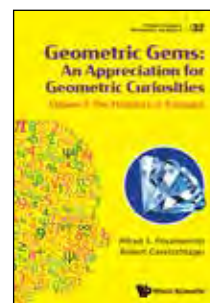
Problem Solving in Mathematics and Beyond - Vol 32

Geometric Gems: An Appreciation for Geometric Curiosities

Volume I: The Wonders of Triangles
by **Alfred S Posamentier** (*City University of New York, USA*) & **Robert Geretschläger** (*University of Graz, Austria*)

The book is intended to be widely appreciated by a general audience, and their love for geometry should be greatly enhanced through exploring these many unexpected relationships in geometry. Geometric Gems is also suitable for mathematics teachers, to enhance the education of their students with these highly motivating triangle properties.

396pp	Mar 2024	
978-981-128-191-4(pbk)	US\$48	£45
978-981-127-958-4	US\$98	£90
978-981-127-959-1(ebook)	US\$157	£145

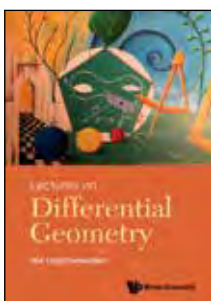


Lectures on Differential Geometry

by **Rui Loja Fernandes** (*University of Illinois Urbana-Champaign, USA*)

This book presents a concise introduction to differential geometry. It is aimed at advanced undergraduate students and first year graduate students who wish to have a basic solid knowledge of the subject, and it can serve as a starting point for more advanced reading. The book is organized into lectures, so it can easily be used as a textbook for a beginning graduate-level course in differential geometry.

300pp	Oct 2024	
978-981-125-336-2(pbk)	US\$68	£65
978-981-125-264-8	US\$98	£90
978-981-125-265-5(ebook)	US\$157	£145

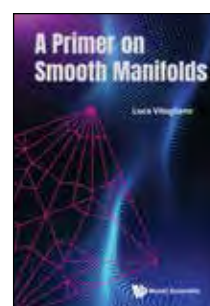


A Primer on Smooth Manifolds

by **Luca Vitagliano** (*University of Salerno, Italy*)

The book provides a first introduction to smooth manifolds, aimed at undergraduate students in Mathematics and Physics. The only prerequisites are the Linear Algebra and Calculus typically covered in the first two years. The presentation is as simple as possible, but it does not sacrifice the rigor.

300pp	Mar 2024	
978-981-128-394-9	US\$98	£90
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Complex Analytic Geometry

From the Localization Viewpoint
by **Tatsuo Suwa** (*Hokkaido University, Japan*)

Complex Analytic Geometry is a subject that could be termed, in short, as the study of the sets of common zeros of complex analytic functions. It has a long history and is closely related to many other fields of Mathematics and Sciences, where numerous applications have been found, including a recent one in the Sato hyperfunction theory.



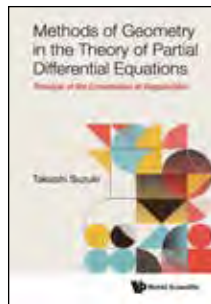
This book is concerned with, among others, local invariants that arise naturally in Complex Analytic Geometry and their relations with global invariants of the manifold or variety. The idea is to look at them as residues associated with the localization of some characteristic classes.

608pp **Apr 2024**
978-981-4374-70-5 **US\$198** **£180**
978-981-4374-71-2(ebook) **US\$317** **£290**

Methods of Geometry in the Theory of Partial Differential Equations

Principle of the Cancellation of Singularities
by **Takashi Suzuki** (*Osaka University, Japan*)

In spite of a huge number of insights derived from a variety of scientific fields in these five hundred years of the theory of differential equations, and its extensive developments in these one hundred years, several principles that ensure these successes are discovered very recently.



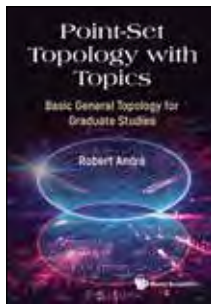
This monograph focuses on one of them: cancellation of singularities derived from interactions of multiple species, which is described by the language of geometry, in particular, that of global analysis.

416pp **Feb 2024**
978-981-128-789-3 **US\$138** **£125**
978-981-128-790-9(ebook) **US\$221** **£205**

Point-Set Topology with Topics

Basic General Topology for Graduate Studies
by **Robert André** (*University of Waterloo, Canada*)

This textbook can be used as introduction to a general topology course at undergraduate and graduate level courses. However, many parts of this book present topological concepts that apply directly to functional analysis, which will be of interest to scholars working in those fields.



824pp **Feb 2024**
978-981-127-733-7 **US\$188** **£175**
978-981-127-734-4(ebook) **US\$301** **£275**

A Royal Road to Topology

Convergence of Filters
by **Szymon Dolecki** (*Mathematical Institute of Burgundy, France*)

Topological spaces are a special case of convergence spaces. This textbook introduces topology within a broader context of convergence theory. The title alludes to advantages of the present approach, which is more gratifying than many traditional ones: you travel more comfortably through mathematical landscapes and you see more.

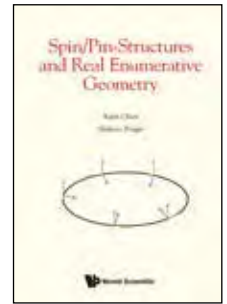


732pp **Jan 2024**
978-981-123-210-7 **US\$188** **£175**
978-981-123-211-4(ebook) **US\$301** **£275**

Spin/Pin-Structures and Real Enumerative Geometry

by **Xujia Chen** (*Harvard University, USA*) & **Aleksey Zinger** (*Stony Brook University, USA*)

Spin/Pin-structures on vector bundles have long featured prominently in differential geometry, in particular providing part of the foundation for the original proof of the renowned Atiyah – Singer Index Theory. More recently, they have underpinned the symplectic topology foundations of the so-called real sector of the mirror symmetry of string theory.



This semi-expository three-part monograph provides an accessible introduction to Spin- and Pin-structures in general, demonstrates their role in the orientability considerations in symplectic topology, and presents their applications in enumerative geometry.

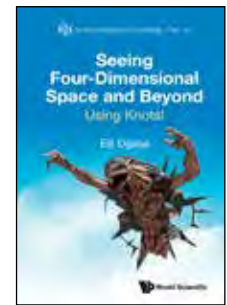
468pp **Jan 2024**
978-981-127-853-2 **US\$148** **£135**
978-981-127-854-9(ebook) **US\$237** **£220**

Series on Knots and Everything - Vol 74

Seeing Four-Dimensional Space and Beyond

Using Knots!
by **Eiji Ogasa** (*Meiji Gakuin University, Japan*)

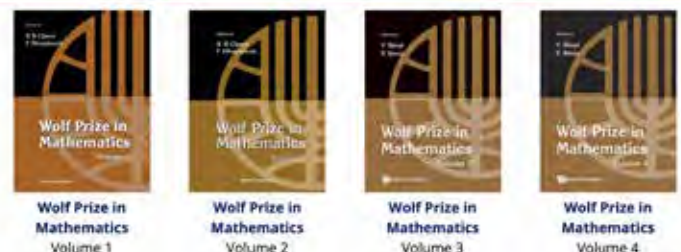
According to string theory, our universe exists in a 10- or 11-dimensional space. However, the idea the space beyond 3 dimensions seems hard to grasp for beginners. This book presents a way to understand four-dimensional space and beyond: with knots! Beginners can see high dimensional space although they have not seen it.



172pp **Aug 2023**
978-981-127-512-8 **US\$78** **£70**
978-981-127-515-9(ebook) **US\$125** **£115**

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MATHEMATICAL ANALYSIS

Lectures on Functional Analysis and Applications

2nd Edition

by **V S Pugachev & I N Sinitsyn**

(Russian Academy of Sciences, Russia)

This volume is not only intended for mathematicians who deal with applications of functional analysis, but also for those having only a moderate background in mathematics in their areas of work. The materials covered, which includes practically all the information on functional analysis that may be necessary for those working in various areas of mathematics applications, as well as the simplicity of presentation, differentiates this book from others. The method and style of presentation of materials make it digestible and easily understood by readers.

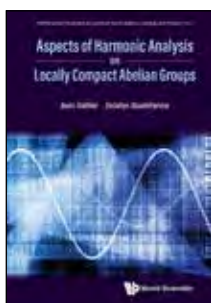


800pp	Aug 2025	
978-981-3203-18-1(pbk)	US\$88	£80
978-981-3203-17-4	US\$178	£165
978-981-3203-19-8(ebook)	US\$285	£260

Aspects of Harmonic Analysis on Locally Compact Abelian Groups

by **Jean Gallier** (University of Pennsylvania, USA) & **Jocelyn Quaintance** (University of Pennsylvania, USA)

Highlights of this book include the Bochner integral, the Haar measure, Radon functionals, the theory of Fourier analysis on the circle, and the theory of the discrete Fourier transform. After studying this book, the reader will have the preparation necessary for understanding the Peter – Weyl theorems for complete, separable Hilbert algebras, a key theoretical concept used in the construction of Gelfand pairs and equivariant convolutional neural networks.



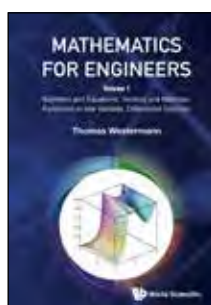
760pp	Jul 2024	
978-981-129-171-5	US\$188	£175
978-981-129-172-2(ebook)	US\$301	£275

Mathematics for Engineers

Volume 1: Numbers and Equations, Vectors and Matrices, Functions in one Variable, Differential Calculus by **Thomas Westermann** (University of Applied Sciences Karlsruhe, Germany)

The Karlsruhe University of Applied Sciences started an English-language Bachelor's program in Electrical Engineering in 2021. In order to support our international students with appropriate material, this three-volume textbook was written. Taking into account that different students will attend different mathematics courses, we decided to design three volumes of a series of mathematics books, each part for a single semester.

Mathematical terms are clearly motivated, systematically equated and visualized in many animations. Mathematical proofs are almost completely renounced. Instead, a lot of applications support not only the application of mathematics but also contribute to a better understanding of mathematics. Important formulas and statements are clearly highlighted in order to increase the readability of the books. More than 300 images and sketches support the character of modern textbooks. The color-coded layout provides a clear overview of the presentation of the content, e.g. by adding new terms and definitions in light grey, important statements and sentences in grey.

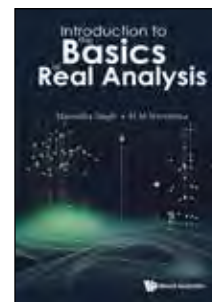


336pp	Jun 2024	
978-981-129-278-1(pbk)	US\$58	£55
978-981-129-234-7	US\$128	£120
978-981-129-235-4(ebook)	US\$205	£190

Introduction to the Basics of Real Analysis

by **Harendra Singh** (Post-Graduate College Ghazipur, India) & **H M Srivastava** (University of Victoria, Canada)

This book presents an introduction to the key topics in Real Analysis and makes the subject easily understood by the learners. The book is primarily useful for students of mathematics and engineering studying the subject of Real Analysis. It includes many examples and exercises at the end of chapters. This book is very authentic for students, instructors, as well as those doing research in areas demanding a basic knowledge of Real Analysis.



348pp	Nov 2023	
978-981-127-821-1	US\$108	£100
978-981-127-822-8(ebook)	US\$173	£160

Metric Spaces and Related Analysis

by **Subiman Kundu** (Indian Institute of Technology Delhi, India) & **Manisha Aggarwal** (University of Delhi, India)

This book offers the comprehensive study of one of the foundational topics in Mathematics, known as Metric Spaces. The book delivers the concepts in an appropriate and concise manner, at the same time rich in illustrations and exercise problems. Special focus has been laid on important theorems like Baire's Category theorem, Heine – Borel theorem, Ascoli – Arzela Theorem, etc. which play a crucial role in the study of metric spaces. Readers will also find brief discussions on various subtleties of continuity like subcontinuity, upper semi-continuity, lower semi-continuity, etc. The interested readers will be motivated to explore the special classes of functions between metric spaces to further extent. The book is useful for third and fourth year undergraduate students and it is also helpful for graduate students and researchers.



272pp	Nov 2023	
978-981-127-891-4	US\$88	£80
978-981-127-892-1(ebook)	US\$141	£130

A Friendly Approach to Complex Analysis

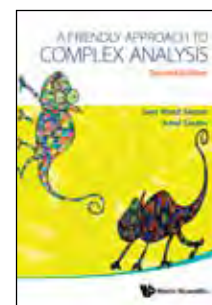
2nd Edition

by **Sara Maad Sasane** (Lund University, Sweden) & **Amol Sasane** (London School of Economics, UK)

"This book is 'friendly' because the treatment is rigorous and makes no concessions to lazy-mindedness. Another reason is that the narrative always conveys a sense of direction, and it makes many valuable comparisons with real and complex analysis. Overall, this is a very nice addition to the existing literature on complex analysis. It is rich in ideas and there is a very effective use of diagrams at key points in the text."

Mathematical Association of America

The second edition corrects errors from the first edition, and includes 89 new exercises, some of which cover auxiliary topics that were omitted in the first edition. Two new appendices have been added, one containing a detailed rigorous proof of the Cauchy Integral Theorem, and another providing background in real analysis needed to make the book self-contained.



220pp	Jul 2023	
978-981-127-410-7(pbk)	US\$48	£45
978-981-127-280-6	US\$88	£80
978-981-127-281-3(ebook)	US\$141	£130

NUMERICAL ANALYSIS AND APPROXIMATION

Series on Concrete and Applicable Mathematics - Vol 24

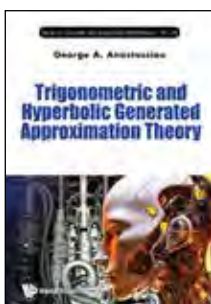
Trigonometric and Hyperbolic Generated Approximation Theory

by **George A Anastassiou**
(The University of Memphis, USA)

This monograph is a testimony of the impact over Computational Analysis of some new trigonometric and hyperbolic types of Taylor's formulae with integral remainders producing a rich collection of approximations of a very wide spectrum.

This volume covers perturbed neural network approximations by themselves and with their connections to Brownian motion and stochastic processes, univariate and multivariate analytical inequalities (both ordinary and fractional), Korovkin theory, and approximations by singular integrals (both univariate and multivariate cases).

848pp	Jan 2025	
978-981-129-385-6	US\$198	£180
978-981-129-386-3(ebook)	US\$317	£290



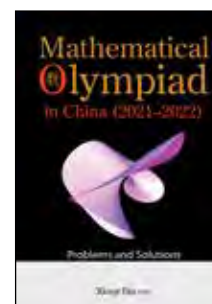
Mathematical Olympiad Series - Vol 22

Mathematical Olympiad in China (2021 – 2022)

Problems and Solutions
Editor-in-chief: **Bin Xiong**
(East China Normal University, China)

The authors of this book are coaches of the China national team. The materials of this book come from a series of two books (in Chinese) on *Forward to IMO: a collection of mathematical Olympiad problems (2021 – 2022)*. It is a collection of problems and solutions of the major mathematical competitions in China. It provides a glimpse of how the China national team is selected and formed.

432pp	Apr 2024	
978-981-128-454-0(pbk)	US\$48	£45
978-981-128-400-7	US\$98	£90
978-981-129-219-4(ebook)	US\$157	£145



The Selected Works of Roderick S C Wong

Volume 4
edited by **Dan Dai** (City University of Hong Kong, Hong Kong) & **Ding-Xuan Zhou** (The University of Sydney, Australia)

This book represents a distinguished collection of research papers authored by the esteemed Professor Roderick Wong, a globally recognized mathematician, and a pioneer in the field of applied mathematics. His brilliant academic journey has spanned across different continents, including North America and Hong Kong.

The book, showcasing Professor Wong's research papers, not only reflects his immense expertise and profound insights but also serves as a tribute to his remarkable achievements.

It is an invaluable resource for researchers and graduate students seeking to explore the frontiers of applied analysis, providing them with a rare opportunity to explore the intellectual legacy of a true luminary in the field.

550pp	Oct 2024	
978-981-129-085-5	US\$168	£155
978-981-129-086-2(ebook)	US\$269	£250



On Extended Hardy-Hilbert Integral Inequalities and Applications

by **Bicheng Yang** (Guangdong University of Education, China) & **Michael Th Rassias** (Hellenic Military Academy, Greece)

In the present monograph, applying weight functions, the idea of parametrization as well as techniques of real analysis and functional analysis, we prove some new Hilbert-type integral inequalities as well as their reverses with parameters. These inequalities constitute extensions of the well-known Hardy-Hilbert integral inequality. The equivalent forms and some equivalent statements of the best possible constant factors associated with several parameters are considered.

Efforts have been made for this monograph hopefully to be useful, especially to graduate students of mathematics, physics and engineering, as well as researchers in these domains.

204pp	Mar 2023	
978-981-126-709-3	US\$78	£70
978-981-126-710-9(ebook)	US\$125	£115



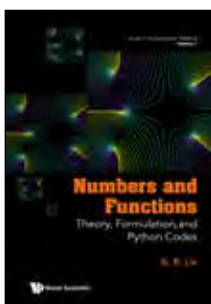
Series in Computational Methods - Vol 1

Numbers and Functions

Theory, Formulation, and Python Codes
by **G R Liu** (University of Cincinnati, USA)

This unique volume covers two fundamental elements of computational methods — numbers and functions. It provides an in-depth discussion of the behaviors of numbers, including both real and complex numbers. The discussion leads to the important closure properties of numbers, ensuring solution consistence and existence, and also possible failure in numerical computations in science and engineering.

250pp	Jul 2024	
978-981-128-762-6	US\$98	£90
978-981-128-763-3(ebook)	US\$157	£145



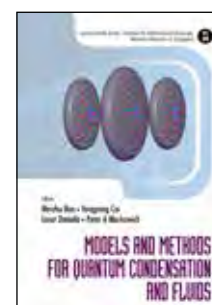
Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore - Vol 39

Models and Methods for Quantum Condensation and Fluids

edited by **Weizhu Bao** (National University of Singapore, Singapore), **Yongyong Cai** (Beijing Normal University, China), **Ionut Danaila** (Université de Rouen Normandie, France) & **Peter A Markowich** (King Abdullah University of Science and Technology, Saudi Arabia)

This invaluable volume collects six expanded lecture notes with self-contained tutorials. The coverage includes mathematical models and numerical methods for multidimensional solitons in linear and nonlinear potentials; Bose – Einstein condensation (BEC) with dipole-dipole interaction, higher order interaction and spin-orbit coupling; classical and quantum turbulence; and molecular dynamics process based on the first-principle in quantum chemistry.

360pp	Jan 2023	
978-981-126-604-1	US\$138	£125
978-981-126-605-8(ebook)	US\$221	£205

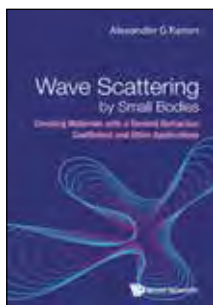


Wave Scattering by Small Bodies

Creating Materials with a Desired Refraction Coefficient and Other Applications

by **Alexander G Ramm** (*Kansas State University, USA*)

The book is a research monograph. An asymptotically exact solution of the many-body scattering problem is given under the assumption $a \ll d \ll \lambda$, where a is the characteristic size of a small particle, d is the smallest distance between particles and λ is the wavelength in the medium in which the particles are embedded. Scattering of scalar and electromagnetic waves is considered. Heat transfer theory in the medium in which many small bodies are embedded is developed. Quantum-mechanical theory of scattering by many potentials with small support is constructed.

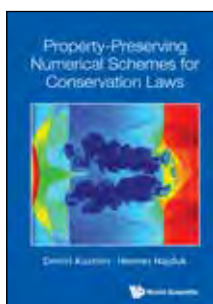


292pp **Oct 2023**
978-981-127-648-4 **US\$108** **£100**
978-981-127-649-1(ebook) **US\$173** **£160**

Property-Preserving Numerical Schemes for Conservation Laws

by **Dmitri Kuzmin** (*TU Dortmund University, Germany*) & **Hennes Hajduk** (*TU Dortmund University, Germany*)

High-order numerical methods for hyperbolic conservation laws do not guarantee the validity of constraints that physically meaningful approximations are supposed to satisfy. The finite volume and finite element schemes summarized in this book use limiting techniques to enforce discrete maximum principles and entropy inequalities. Spurious oscillations are prevented using artificial viscosity operators and/or essentially nonoscillatory reconstructions.



492pp **Sep 2023**
978-981-127-818-1 **US\$168** **£155**
978-981-127-819-8(ebook) **US\$269** **£245**

Essential Textbooks in Physics

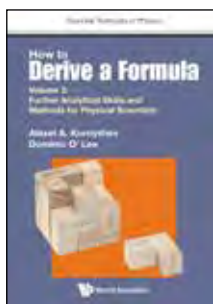
How to Derive a Formula

Volume 2: Further Analytical Skills and Methods for Physical Scientists

by **Alexei A Kornyshev** (*Imperial College London, UK*) & **Dominic O'Lee** (*Imperial College London, UK*)

This two-volume book *How to Derive a Formula* is an attempt to engage learners by presenting mathematical methods in as simple terms as possible, with more of an emphasis on skills as opposed to technical knowledge. Based on intuition and common sense rather than mathematical rigour, it teaches students from scratch using pertinent examples, many taken from across the physical sciences to demonstrate the application of the methods taught.

This book draws on humour and historical facts to provide an interesting new perspective on what a mathematics textbook could be.



768pp **Aug 2023**
978-1-80061-297-6(pbk) **US\$98** **£90**
978-1-80061-279-2 **US\$168** **£155**
978-1-80061-280-8(ebook) **US\$269** **£245**

Nonlinear Field Theories and Unexplained Phenomena in Nature

by **Alexander S Rabinowitch** (*HSE University, Russia*)

The book is devoted to several topical questions in modern mathematical and theoretical physics, astrophysics, geophysics, and cosmology that remain unsolved within the framework of the standard approaches. To them, one can attribute unexplained properties of the magnetic fields of stars and planets, puzzles of the Earth's atmosphere, the phenomenon of ball lightning, the problem of a qualitative description for nuclear forces and their well-known property of saturation, enigmatic properties of spiral galaxies, the problem of the cosmological singularity, mysteries of the dark matter and dark energy, amongst others. To find theoretical ways for understanding such phenomena, new nonlinear generalizations of the classical field theories and advanced methods to solve nonlinear equations arising in them are studied and presented in this book.

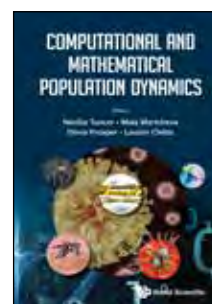


324pp **Jul 2023**
978-981-126-411-5 **US\$118** **£110**
978-981-126-412-2(ebook) **US\$189** **£175**

Computational and Mathematical Population Dynamics

edited by **Necibe Tuncer** (*Florida Atlantic University, USA*), **Maia Martcheva** (*University of Florida, USA*), **Olivia Prosper** (*University of Tennessee, Knoxville, USA*) & **Lauren Childs** (*Virginia Polytechnic Institute and State University, USA*)

This book is a collection of works that represent the recent advancements in computational and mathematical methods applied to population dynamics. It concentrates on both development of new tools as well as on innovative use of existing tools to obtain new understanding of biological systems. The volume introduces new state-of-the-art techniques for defining and solving numerically control problems in mathematical biology in which the control appears linearly. Such problems produce simpler optimal controls that can be implemented in practice.

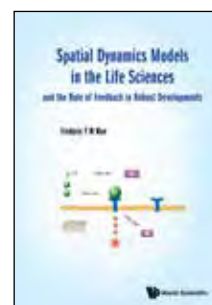


472pp **Jul 2023**
978-981-126-302-6 **US\$148** **£135**
978-981-126-303-3(ebook) **US\$237** **£220**

Spatial Dynamics Models in the Life Sciences and the Role of Feedback in Robust Developments

by **Frederic Y M Wan** (*University of California, Irvine, USA*)

Basic mathematical techniques for partial differential equations (PDE) with applications to the life sciences form an integral part of the core curriculum for programs in mathematical biology. Yet, students in such a program with an undergraduate training in biology are typically deficient in any exposure to PDE. This volume starts with simple first order PDE and progresses through higher order equations and systems but with interesting applications, even at the level of a single first order PDE with constant coefficients.



Similar to the two previous volumes by the author, another unique feature of the book is highlighting the scientific theme(s) of interest for the biological phenomena being modelled and analysed. In addition to temporal evolution of a biological phenomenon, its limiting equilibrium states and their stability, the possibility of locational variations leads to a study of additional themes such as (signal and wave) propagation, spatial patterning and robustness.

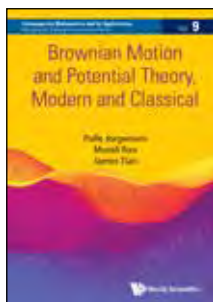
496pp **Jan 2023**
978-981-125-656-1 **US\$138** **£125**
978-981-125-657-8(ebook) **US\$221** **£205**

PROBABILITY AND STATISTICS

Contemporary Mathematics and Its Applications: Monographs, Expositions and Lecture Notes - Vol 9

Brownian Motion and Potential Theory, Modern and Classical

by **Palle Jorgensen** (University of Iowa, USA), **Murali Rao** (University of Florida, USA) & **James Tian** (The American Mathematical Society, USA)

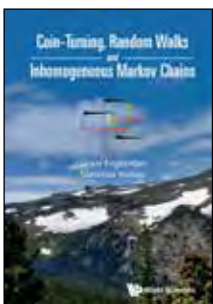


In this book, potential theory is presented in an inclusive and accessible manner, with the emphasis reaching from classical to modern, from analytic to probabilistic, and from Newtonian to abstract or axiomatic potential theory (including Dirichlet spaces). The reader is guided through stochastic analysis featuring Brownian motion in its early chapters to potential theory in its latter sections.

260pp	Dec 2024	
978-981-129-477-8(pbk)	US\$68	£65
978-981-129-431-0	US\$98	£90
978-981-129-432-7(ebook)	US\$157	£145

Coin-Turning, Random Walks and Inhomogeneous Markov Chains

by **János Engländer** (University of Colorado Boulder, USA) & **Stanislav Volkov** (Lund University, Sweden)

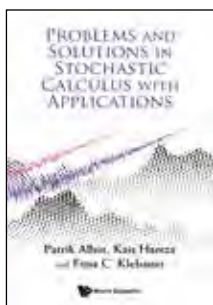


This research monograph explores new frontiers in Markov chains. Although time-homogeneous Markov chains are well understood, this is not at all the case with time-inhomogeneous ones. The book, after a review on the classical theory of homogeneous chains, including the electrical network approach, introduces several new models which involve inhomogeneous chains as well as related new types of random walks (for example, “coin turning”, “conservative” and “Rademacher” walk). Scaling limits, the breakdown of the classical limit theorems as well as recurrence and transience are investigated. The relationship with urn models is the subject of two chapters, providing additional connections to other parts of probability theory. Random walks on random graphs are discussed as well, as an area where the method of electric networks is especially useful. This is illustrated by presenting random walks in random environments and random labyrinths.

240pp	Dec 2024	
978-981-129-312-2	US\$98	£90
978-981-129-313-9(ebook)	US\$157	£145

Problems and Solutions in Stochastic Calculus with Applications

by **Patrik Albin** (Chalmers University, Sweden), **Kais Hamza** (Monash University, Australia) & **Fima C Klebaner** (Monash University, Australia)



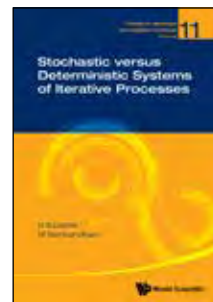
Problems and Solution in Stochastic Calculus exposes readers to distinct simple ideas and proofs in stochastic calculus and its applications. It is intended as a companion to the successful original title *Introduction to Stochastic Calculus with Applications* (3rd Edition) by Fima Klebaner. The current book is authored by three active researchers in the fields of probability, stochastic processes, and their applications in financial mathematics, mathematical biology, and more. The book features problems rooted in their ongoing research.

394pp	Aug 2024	
978-1-80061-560-1(pbk)	US\$58	£55
978-1-80061-557-1	US\$138	£125
978-1-80061-558-8(ebook)	US\$221	£205

Trends in Abstract and Applied Analysis - Vol 11

Stochastic versus Deterministic Systems of Iterative Processes

by **G S Ladde** (University of South Florida, USA) & **M Sambandham** (Morehouse College, USA)



Continuous state dynamic models can be reformulated into discrete state processes. Most literature in this subject was developed in the 1950s, and focused on the theory of systems of continuous and discrete-time deterministic; however, continuous-time and its approximation schemes of stochastic differential equations faced the solutions outlined above and made slow progress in developing problems. This monograph addresses these problems by presenting an account of stochastic versus deterministic issues in discrete state dynamic systems in a systematic and unified way.

356pp	May 2024	
978-981-128-747-3	US\$118	£110
978-981-128-748-0(ebook)	US\$189	£175

Objective Bayesian Inference

by **James O Berger** (Duke University, USA), **Jose M Bernardo** (University of Valencia, Spain) & **Dongchu Sun** (East China Normal University, China)

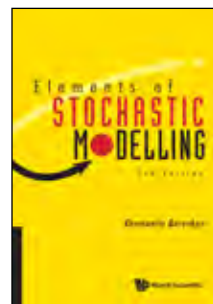


A widespread misconception is that Bayesian analysis is a more subjective theory of statistical inference than what is now called classical statistics. This is true neither historically nor in practice. Indeed, objective Bayesian analysis dominated the statistical landscape from roughly 1780 to 1930, long before ‘classical’ statistics or subjective Bayesian analysis were developed. It has been a subject of intense interest to a multitude of statisticians, mathematicians, philosophers, and scientists. The book, while primarily focusing on the latest and most prominent objective Bayesian methodology, does present much of this fascinating history.

380pp	Mar 2024	
978-981-128-490-8	US\$148	£135
978-981-128-491-5(ebook)	US\$237	£220

Elements of Stochastic Modelling

3rd Edition
by **Konstantin Borovkov** (The University of Melbourne, Australia)



“This book is a very readable and comprehensive introduction to the most important topics of stochastic modeling. Each chapter also contains a section with recommended literature, so that a reader who becomes interested in certain topics can easily find more details and additional mathematical results.”

Mathematical Reviews Clippings

“This is a very well-written brief introduction to stochastic modeling and related topics. This is a text that every professional in the field might want to consider adding to his bookshelf. For those instructors who like the choice of topics covered, it is also a nice candidate for a very advanced undergraduate or beginning graduate course in stochastic processes for students in various fields who have very good mathematical backgrounds and previous courses in probability theory.”

592pp	Mar 2024	
978-981-126-944-8(pbk)	US\$68	£65
978-981-126-838-0	US\$128	£120
978-981-126-839-7(ebook)	US\$205	£190

The American Statistician

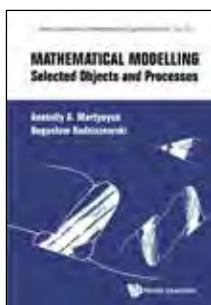
MATHEMATICAL MODELING AND COMPUTATION

Series on Advances in Mathematics for Applied Sciences

Mathematical Modelling

Selected Objects and Processes

by **Anatoliy A Martynyuk** (*S P Timoshenko Institute of Mechanics, Ukraine*) & **Boguslaw Radziszewski** (*Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland*)



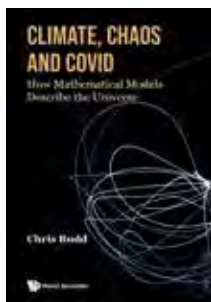
This is the first book on the problems of mathematical modeling that combines a generalized approach to the problem of mathematical modeling processes and phenomena in the real world with developing modeling methods in relation to specific objects and processes. Some of the problems discussed here include stability and bifurcation of simplified models of supply and demand, and resultants of various approaches, such as standardization, unification and partial order, data packaging.

350pp	Dec 2024	
978-981-129-065-7	US\$138	£125
978-981-129-066-4(ebook)	US\$221	£205

Climate, Chaos and COVID

How Mathematical Models Describe the Universe

by **Chris Budd** (*University of Bath, UK*)



“Chris Budd conveys the power and wonder of mathematics in stories — and, having gained your interest, explains the underlying mathematics. Discover how, during a boring sermon, Galileo observed the predictability of the swing of a pendulum, later explained by the mathematics of Newton. Mathematical models are relatively easy to develop for physical systems where the underlying equations are understood, and are also now being used in biological and social sciences. This was vital during the COVID-19 pandemic. Chris explains how models can describe population behaviour and also spells out their limitations. He uses analogies, quotes, and stories to enliven a complex topic. Look out for the glass of whisky and the warning ‘don’t eat the menu’.”

Vicky Pope

Honorary Professor STEaPP University College London, UK
Editor in Chief of Climate Resilience and Sustainability

312pp	Apr 2023	
978-1-80061-304-1	US\$78	£70
978-1-80061-305-8(ebook)	US\$125	£115

Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore - Vol 40

Modeling and Simulation for Collective Dynamics

edited by **Weizhu Bao** (*National University of Singapore, Singapore*), **Peter A Markowich** (*King Abdullah University of Science and Technology, Saudi Arabia*), **Benoit Perthame** (*Sorbonne Université, France*) & **Eitan Tadmor** (*University of Maryland, USA*)



The thematic program *Quantum and Kinetic Problems: Modeling, Analysis, Numerics and Applications* was held at the Institute for Mathematical Sciences at the National University of Singapore, from September 2019 to March 2020. Leading experts presented tutorials and special lectures geared towards the participating graduate students and junior researchers. Readers will find in this significant volume four expanded lecture notes with self-contained tutorials.

244pp	Feb 2023	
978-981-126-613-3	US\$88	£80
978-981-126-614-0(ebook)	US\$141	£130

MATHEMATICAL FINANCE AND ECONOMICS

A General Mathematical Theory of the Dynamic Global Political Economy

by **David W K Yeung** (*Saint Petersburg State University, Russia & Hong Kong Shue Yan University, China*) & **Leon A Petrosyan** (*Saint Petersburg State University, Russia*)

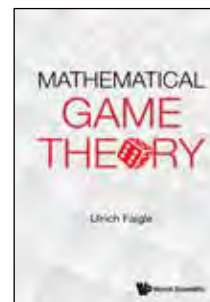


William Jevons (1866 and 1871) established a ground-breaking milestone with “A General Mathematical Theory of Political Economy” for economic analysis. Jevons’ work was praised as the start of the mathematical method in the discipline of economics, which is inherently a subject involved with mathematics and quantities. This book focuses on the most fast-evolving and encompassing area in political economy — the dynamic global political economy. Under the high level of globalization currently, intertemporal and cross-boundary interactive elements are present in political-economic encounters.

200pp	Dec 2024	
978-981-129-455-6	US\$88	£80
978-981-129-456-3(ebook)	US\$141	£130

Mathematical Game Theory

by **Ulrich Faigle** (*University of Cologne, Germany*)



“In this textbook, the author provides an introduction to mathematical game theory. The focus is on the mathematical properties of the models rather than on the applicability of the models to real-world situations. An advantage of that approach is that it allows the author to extend the scope of game theory by generalizing existing models to a wider framework of mathematical systems that may not have obvious applications in economics or other social settings.”

ZBMath Open This book takes a novel approach to the subject. Its focus is on mathematical models that apply to game theory in particular but exhibit a universal character and thus extend the scope of game theory considerably.

240pp	Mar 2022	
978-981-124-669-2	US\$78	£70
978-981-124-670-8(ebook)	US\$125	£115

Advanced Series on Statistical Science and Applied Probability - Vol 22

Stochastic Interest Rate Modeling with Fixed Income Derivative Pricing

3rd Edition

by **Nicolas Privault** (*Nanyang Technological University, Singapore*)



This book introduces the mathematics of stochastic interest rate modeling and the pricing of related derivatives, based on a step-by-step presentation of concepts with a focus on explicit calculations. The types of interest rates considered range from short rates to forward rates such as LIBOR and swap rates, which are presented in the HJM and BGM frameworks. The pricing and hedging of interest rate and fixed income derivatives such as bond options, caps, and swaptions, are treated using forward measure techniques. An introduction to default bond pricing and an outlook on model calibration are also included as additional topics.

372pp	Sep 2021	
978-981-122-660-1	US\$118	£110
978-981-122-661-8(ebook)	US\$189	£175

COMPUTER MATHEMATICS AND SCIENCE

World Scientific Series in Information Studies

Understanding Information and Its Role as a Tool

In Memory of Mark Burgin
 edited by **Marcin J Schroeder** (*Akita International University, Japan*)
 & **Wolfgang Hofkirchner** (*TU Wien, Austria & The Institute for a Global Sustainable Information Society (GSIS), Austria*)

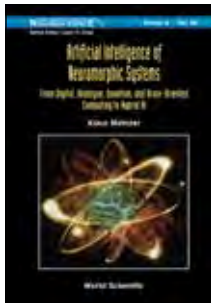
The book *Understanding Information and Its Role as a Tool: In Memory of Mark Burgin* has two parts which have self-explanatory titles classifying submissions into two categories. One of them is "Understanding Information: Theory and Foundations" and the other "Information Realm: Information as a Tool for Exploring Reality". The former is intended as an inquiry of the concept of information itself, the latter as an inquiry of the use of the concept of information as a methodological tool for diverse forms of inquiries.

530pp **Feb 2025**
978-981-129-491-4 **US\$168** **£155**
978-981-129-492-1(ebook) **US\$269** **£250**

World Scientific Series on Nonlinear Science
 Series A - Vol 99

Artificial Intelligence of Neuromorphic Systems

From Digital, Analogue, Quantum, and Brain-Oriented Computing to Hybrid AI
 by **Klaus Mainzer** (*Technical University of Munich, Germany*)



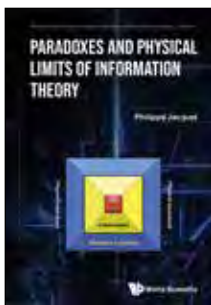
This book argues for neuromorphic systems as a technology of the future, which are oriented towards the energy efficiency of natural brains. Energy efficiency is a dramatic claim in times of environmental and climate challenges which should consider the sustainability goals of the United Nations (UN). Mathematically, neuromorphic computing is connected to analogue ('real') computing, which theoretically overcomes the limits of digital Turing computability. Therefore, the book also considers material sciences and engineering sciences which start to realize neuromorphic computing in hardware.

350pp **Dec 2024**
978-981-129-007-7 **US\$128** **£120**
978-981-129-008-4(ebook) **US\$205** **£190**

World Scientific Series on Quantum Algorithms, Information, and Learning - Vol 1

Paradoxes and Physical Limits of Information Theory

by **Philippe Jacquet** (*The National Institute for Research in Digital Science and Technology (INRIA), France*)



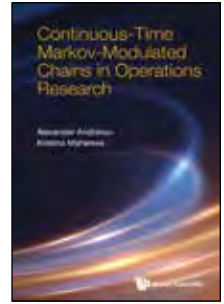
The unique compendium starts with a simplified version of the information theory which allows any beginner in math to embrace the mysterious concept of entropy without hitting hard the wall of probability theory. The volume continues with the full description of the information theory, enlightening source coding in the heart of the theory with data compression and self-prediction to get into the information age. Then it concludes with artificial intelligence and quantum information.

This useful reference text benefits professionals, researchers, academics and graduate students in the fields of information theory, probability theory, electromagnetism, machine learning and quantum theory.

300pp **Nov 2024**
978-981-129-359-7 **US\$108** **£100**
978-981-129-360-3(ebook) **US\$173** **£160**

Continuous-Time Markov-Modulated Chains in Operations Research

by **Alexander Andronov & Kristina Mahareva** (*Transport and Telecommunication Institute (TSI), Latvia*)



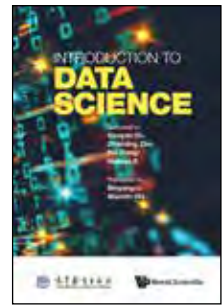
Probabilistic models are widely used for description and an analysis of various processes in system reliability, risk, queuing, data communication, logistic and storage systems.

The book contains various applications of the theory of continuous-time Markov-modulated processes in operation research. All analytical results are illustrated by numerical computations. Used algorithms allow overcoming computation difficulties successfully. For example, a calculation of transient probabilities of states for a continuous-time finite Markov chain uses eigenvalues and eigenvectors of the corresponding matrix (generator). In a more complex case of differential or integral equations, such a simple explicit form of a solution is missing. The explicit form of solution is presented by means of infinity sums of functions.

228pp **May 2024**
978-981-128-615-5 **US\$88** **£80**
978-981-128-616-2(ebook) **US\$141** **£130**

Introduction to Data Science

by **Gaoyan Ou** (*Beijing Institute of Big Data Research, China*), **Zhanxing Zhu** (*Peking University, China*), **Bin Dong** (*Peking University, China*) & **Weinan E** (*Beijing Institute of Big Data Research, China*)



Translated by: **Binyang Li & Shumin Shi**

The book systematically introduces the basic contents of data science, including data preprocessing and basic methods of data analysis, handling special problems (e.g. text analysis), deep learning, and distributed systems. In addition to systematically introducing the basic content of data science from a theoretical point of view, the book also provides a large number of data analysis practice cases.

444pp **Dec 2023**
978-981-126-389-7 **US\$148** **£135**
978-981-126-390-3(ebook) **US\$237** **£220**

Linear Algebra for Data Science

by **Moshe Haviv** (*The Chinese University of Hong Kong, Shenzhen, China & The Hebrew University of Jerusalem, Israel*)



This book serves as an introduction to linear algebra for undergraduate students in data science, statistics, computer science, economics, and engineering. The book presents all the essentials in rigorous (proof-based) manner, describes the intuition behind the results, while discussing some applications to data science along the way.

The book comes with two parts, one on vectors, the other on matrices. The former consists of four chapters: vector algebra, linear independence and linear subspaces, orthonormal bases and the Gram-Schmidt process, linear functions. The latter comes with eight chapters: matrices and matrix operations, invertible matrices and matrix inversion, projections and regression, determinants, eigensystems and diagonalizability, symmetric matrices, singular value decomposition, and stochastic matrices. The book ends with the solution of exercises which appear throughout its twelve chapters.

256pp **Jul 2023**
978-981-127-622-4 **US\$78** **£70**
978-981-127-623-1(ebook) **US\$125** **£115**

MATHEMATICAL LOGIC AND FOUNDATIONS

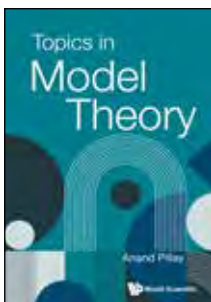
Topics in Model Theory

by **Anand Pillay** (*University of Notre Dame, USA*)

This book has two chapters. The first is a modern or contemporary account of stability theory. A focus is on the local (formula-by-formula) theory, treated a little differently from in the author's book *Geometric Stability Theory*. There is also a survey of general and geometric stability theory, as well as applications to combinatorics (stable regularity lemma) using pseudofinite methods.

The second is an introduction to "continuous logic" or "continuous model theory," drawing on the main texts and papers, but with an independent point of view. This chapter includes some historical background, including some other formalisms for continuous logic and a discussion of hyperimaginaries in classical first order logic.

152pp	May 2024	
978-981-124-399-8(pbk)	US\$28	£25
978-981-124-380-6	US\$58	£55
978-981-124-381-3(ebook)	US\$98	£90



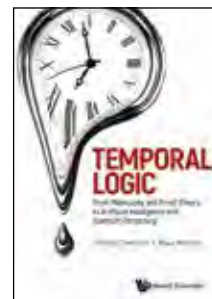
Temporal Logic

From Philosophy and Proof Theory to Artificial Intelligence and Quantum Computing

by **Stefania Centrone** (*Technical University of Munich, Germany*) & **Klaus Mainzer** (*Technical University of Munich, Germany*)

The book culminates in an outlook on trendsetting applications of temporal logics in future technologies such as artificial intelligence and quantum technology. However, it will not be sufficient, as in traditional temporal logic, to start from the everyday understanding of time. Since the 20th century, physics has fundamentally changed the modern understanding of time, which now also determines technology. In temporal logic, we are only just beginning to grasp these differences in proof theory which needs interdisciplinary cooperation of proof theory, computer science, physics, technology, and philosophy.

220pp	Jun 2023	
978-981-126-853-3	US\$78	£70
978-981-126-854-0(ebook)	US\$125	£115

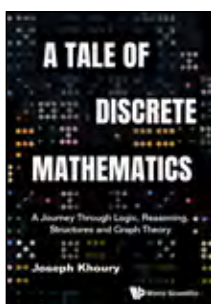


A Tale of Discrete Mathematics

A Journey Through Logic, Reasoning, Structures and Graph Theory
by **Joseph Khoury** (*University of Ottawa, Canada*)

Topics covered in Discrete Mathematics have become essential tools in many areas of studies in recent years. This is primarily due to the revolution in technology, communications, and cyber security. The book treats major themes in a typical introductory modern Discrete Mathematics course: Propositional and predicate logic, proof techniques, set theory (including Boolean algebra, functions and relations), introduction to number theory, combinatorics and graph theory.

820pp	Apr 2024	
978-981-128-578-3	US\$148	£135
978-981-128-579-0(ebook)	US\$237	£220



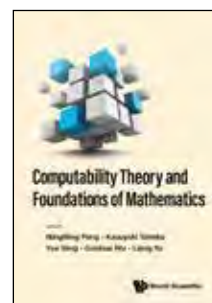
Computability Theory and Foundations of Mathematics

Proceedings of the 9th International Conference on Computability Theory and Foundations of Mathematics
The 9th International Conference on Computability Theory and Foundations of Mathematics

Wuhan, China, 21 – 27 March 2019
edited by **NingNing Peng** (*Wuhan University of Technology, China*), **Kazuyuki Tanaka** (*Tohoku University, Japan*), **Yue Yang** (*National University of Singapore, Singapore*), **Guohua Wu** (*Nanyang Technological University, Singapore*) & **Liang Yu** (*Nanjing University, China*)

This volume features the latest scientific developments in the fields of computability theory and logical foundations of mathematics as well as applications. The scope involves the topics of Computability Theory, Reverse Mathematics, Nonstandard Analysis, Proof Theory, Set Theory, Philosophy of Mathematics, Constructive Mathematics, Theory of Randomness and Computational Complexity Theory.

196pp	Jun 2022	
978-981-125-928-9	US\$98	£90
978-981-125-929-6(ebook)	US\$157	£145



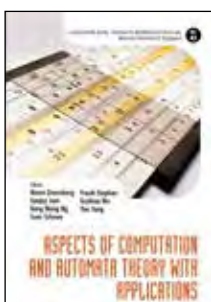
Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore - Vol 42

Aspects of Computation and Automata Theory with Applications

edited by **Noam Greenberg** (*Victoria University of Wellington, New Zealand*), **Sanjay Jain** (*National University of Singapore, Singapore*), **Keng Meng Ng** (*Nanyang Technological University, Singapore*), **Sven Schewe** (*University of Liverpool, UK*), **Frank Stephan** (*National University of Singapore, Singapore*), **Guohua Wu** (*Nanyang Technological University, Singapore*) & **Yue Yang** (*National University of Singapore, Singapore*)

This volume results from two programs that took place at the Institute for Mathematical Sciences at the National University of Singapore: *Aspects of Computation — in Celebration of the Research Work of Professor Rod Downey* (21 August to 15 September 2017) and *Automata Theory and Applications: Games, Learning and Structures* (20 – 24 September 2021).

492pp	Nov 2023	
978-981-127-862-4	US\$158	£145
978-981-127-863-1(ebook)	US\$253	£235

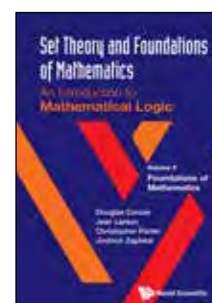


Set Theory and Foundations of Mathematics: An Introduction to Mathematical Logic

Volume II: Foundations of Mathematics
by **Douglas Cenzer** (*University of Florida, USA*), **Jean Larson** (*University of Florida, USA*), **Christopher Porter** (*Drake University, USA*) & **Jindřich Zapletal** (*University of Florida, USA*)

This book provides an introduction to mathematical logic and the foundations of mathematics. It will help prepare students for advanced study in set theory and mathematical logic as well as other areas of mathematics, such as analysis, topology, and algebra. The presentation of finite state and Turing machines leads to the Halting Problem and Gödel's Incompleteness Theorem, which have broad academic interest, particularly in computer science and philosophy.

256pp	Mar 2022	
978-981-124-384-4	US\$68	£65
978-981-124-385-1(ebook)	US\$109	£100



GENERAL PURE AND APPLIED MATHEMATICS

Mathematics for Biosciences

From Theory to Worked Examples and Applications
by **Elspeith F Garman** (*University of Oxford, UK*) &
Nicola Laurieri (*University of Oxford, UK*)

Mathematics for Biosciences aims to bridge the gap among students in the Biosciences between those who are equipped with mathematical training, and those without. It is carefully curated to provide those students who did not study maths to a higher level in secondary school with the relevant mathematical skills and tools required for the successful understanding of their chosen discipline within the Biosciences. This textbook is not simply a compendium of the necessary mathematical tools: where appropriate, the material will be developed beyond the level needed just to 'get by', in order to extend the students' mathematical skills to a working knowledge of some of the more advanced concepts of the topic under consideration.

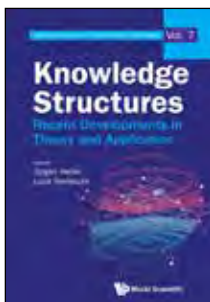
350pp	Nov 2024		
978-1-80061-608-0(pbk)	US\$58	£55	
978-1-80061-603-5	US\$128	£120	
978-1-80061-604-2(ebook)	US\$205	£190	

Advanced Series on Mathematical Psychology - Vol 7

Knowledge Structures

Recent Developments in Theory and Application

edited by **Jürgen Heller** (*University of Tübingen, Germany*) & **Luca Stefanutti** (*University of Padua, Italy*)



Starting from a concise but comprehensive introduction to the foundations of KST, this state-of-the-art review volume for the first time brings together the most important theoretical developments and extensions of the last decade and presents new areas of application beyond education, with contributions by key researchers in their respective fields.

Among the important advances covered by this book are (1) a comprehensive treatment of probabilistic models in KST; (2) polytomous extensions of the theory; (3) KST-based psychological diagnostics and neuropsychological assessment; (4) the representation and assessment of cognitive skills in problem solving, as well as procedural skills. In addition, this book also includes an overview of available software for the application of KST.

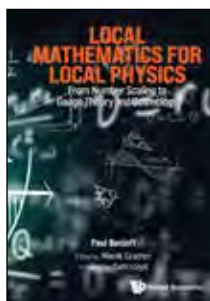
300pp	Aug 2024		
978-981-128-047-4	US\$108	£100	
978-981-128-048-1(ebook)	US\$173	£160	

Local Mathematics for Local Physics

From Number Scaling to Gauge Theory and Cosmology
by **Paul Benioff**

Edited by: **Marek Czachor** (*Gdańsk University of Technology, Poland*)

Foreword by: **Seth Lloyd** (*Massachusetts Institute of Technology, USA*)

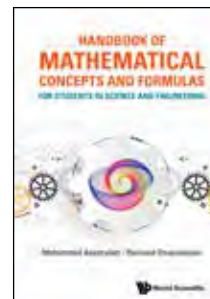


The author first introduces the concept of the value field and uses it to reformulate the basic framework of number theory, calculus, and vector spaces and bundles. The book moves on to find applications to classical field theory, quantum mechanics and gauge theory. The last two chapters address the relationship between theory and experiment, and the possible physical consequences of both the existence and non-existence of the value field. The book is open-ended, and the list of open questions is certainly longer than the set of proposed answers.

296pp	Feb 2024		
978-1-80061-496-3	US\$98	£90	
978-1-80061-497-0(ebook)	US\$157	£145	

Handbook of Mathematical Concepts and Formulas for Students in Science and Engineering

by **Mohammad Asadzadeh** &
Reimond Emanuelsson (*Chalmers University of Technology, Sweden*)



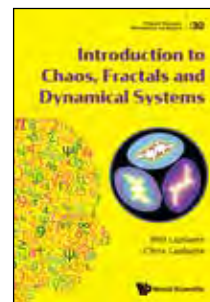
This book is a comprehensive collection of the main mathematical concepts, including definitions, theorems, tables, and formulas, that students of science and engineering will encounter in their studies and later careers. *Handbook of Mathematical Concepts and Formulas* introduces the latest mathematics in an easily accessible format. It familiarizes readers with key mathematical and logical reasoning, providing clear routes to approach questions and problems.

668pp	Jan 2024		
978-1-80061-331-7	US\$188	£175	
978-1-80061-332-4(ebook)	US\$301	£275	

Problem Solving in Mathematics and Beyond - Vol 29

Introduction to Chaos, Fractals and Dynamical Systems

by **Phil Laplante** (*Penn State University, USA*) & **Chris Laplante** (*Agilent Technologies, USA*)

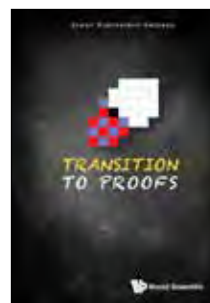


This book offers a fun and enriching introduction to chaos theory, fractals and dynamical systems, and on the applications of fractals to computer generated graphics and image compression. Introduction to Chaos, Fractals and Dynamical Systems particularly focuses on natural and human phenomenon that can be modeled as fractals, using simple examples to explain the theory of chaos and how it affects all of us. Then, using straightforward mathematic and intuitive descriptions, computer generated graphics and photographs of natural scenes are used to illustrate the beauty of fractals and their importance in our world. Finally, the concept of Dynamical Systems, that is, time-dependent systems, the foundation of Chaos and Fractal, is introduced. Everyday examples are again used to illustrate concepts, and the importance of understanding how these vital systems affect our lives.

216pp	Aug 2023		
978-981-127-390-2(pbk)	US\$38	£35	
978-981-127-324-7	US\$78	£70	
978-981-127-325-4(ebook)	US\$125	£115	

Transition to Proofs

by **Simon Rubinstein-Salzedo** (*Euler Circle, USA*)



This textbook is aimed at transitioning high-school students who have already developed proficiency in mathematical problem solving from numerical-answer problems to proof-based mathematics. It serves to guide students on how to write and understand mathematical proofs. It covers proof techniques that are commonly used in several areas of mathematics, especially number theory, combinatorics, and analysis. In addition to just teaching the mechanics of proofs, this book showcases key materials in these areas, thus introducing readers to interesting mathematics along with proof techniques.

376pp	Sep 2023		
978-981-127-232-5(pbk)	US\$48	£45	
978-981-127-208-0	US\$118	£110	
978-981-127-209-7(ebook)	US\$189	£175	

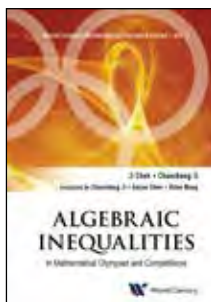
MATHEMATICS EDUCATION

World Century Mathematical Olympiad Series - Vol 2

Algebraic Inequalities

In Mathematical Olympiad and Competitions

by **Ji Chen** (*Ningbo University, China*),
Chaocheng Ji (*Ningbo High School, China*)
 Translated by: **Chaocheng Ji** (*Ningbo High School, China*), **Huyue Shen** (*Zhenhai High School, China*) & **Ruhe Wang** (*Zhenhai High School, China*)



The focus of this book is algebraic inequalities.

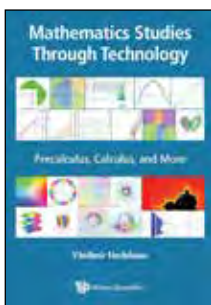
Not only is it the current Mathematical Olympiad hot topic, it is also the basis of geometric inequalities. In addition, the book involves some analysis on inequality.

This book serves as a good reference in the field of algebraic inequalities as faced in problems found in a Mathematical Olympiad.

200pp	Feb 2027	
978-1-938134-92-0(pbk)	US\$38	£35
978-1-938134-95-1	US\$68	£65

Mathematics Studies Through Technology

Precalculus, Calculus, and More
 by **Vladimir Nodelman** (*Holon Institute of Technology, Israel*)



This book caters to both prospective and current mathematics educators at the school and university levels, along with their students and anyone intrigued by the possibilities of integrating software into mathematics education.

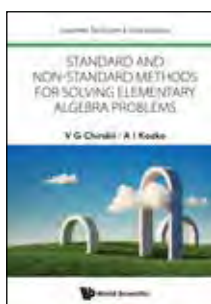
Mathematics, being a unified science, is best comprehended when its cohesive nature is emphasized and demonstrated to students. Educational software assumes a pivotal role in achieving this pedagogical goal.

500pp	Sep 2024	
978-981-129-013-8	US\$148	£135
978-981-129-014-5(ebook)	US\$237	£220

Essential Textbooks in Mathematics

Standard and Non-Standard Methods for Solving Elementary Algebra Problems

by **V G Chirskii** (*Moscow State University, Russia & RANEP, Russia*) & **A I Kozko** (*Moscow State University, Russia & RANEP, Russia*)



Solving elementary algebra lies at the heart of this basic textbook. Some of the topics addressed include inequalities with rational functions, equations and inequalities with modules, exponential, irrational, and logarithmic equations and inequalities, problems with trigonometric functions. Special attention is paid to methods for solving problems containing parameters.

The book takes care to introduce topics with a description of the basic properties of the functions under study, as well as simple, typical tasks necessary for the initial study of the subject. Each topic concludes with problems for readers to solve, some of which may require serious effort to solve. Many of these problems were specifically created for this book and are set at university entrance exam or mathematical Olympiads level, but solutions are provided in all cases.

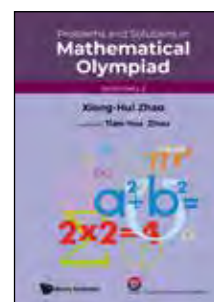
234pp	Sep 2024	
978-1-80061-586-1(pbk)	US\$38	£35
978-1-80061-571-7	US\$78	£70
978-1-80061-572-4(ebook)	US\$125	£115

Problems and Solutions in Mathematical Olympiad

Secondary 2

by **Xiong-Hui Zhao** (*Hunan Institute of Science and Technology, China*)

Translated by: **Tian-You Zhou** (*Shanghai High School, China*)



The series is created in line with the mathematics cognition and intellectual development levels of the students in the corresponding grades. All hot mathematics topics of the competition are included in the volumes and are organized into chapters where concepts and methods are gradually introduced to equip the students with necessary knowledge until they can finally reach the competition level. In each chapter, well-designed problems including those collected from real competitions are provided so that the students can apply the skills and strategies they have learned to solve these problems. Detailed solutions are provided selectively.

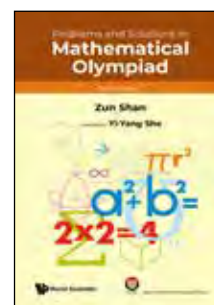
400pp	Jul 2024	
978-981-128-743-5(pbk)	US\$48	£45
978-981-128-723-7	US\$98	£90
978-981-128-724-4(ebook)	US\$157	£145

Problems and Solutions in Mathematical Olympiad

Secondary 1

by **Zun Shan** (*Nanjing Normal University, China*)

Translated by: **Yi-Yang She** (*Shanghai High School, China*)



The series is created in line with the mathematics cognition and intellectual development levels of the students in the corresponding grades. All hot mathematics topics of the competition are included in the volumes and are organized into chapters where concepts and methods are gradually introduced to equip the students with necessary knowledge until they can finally reach the competition level. In each chapter, well-designed problems including those collected from real competitions are provided so that the students can apply the skills and strategies they have learned to solve these problems. Detailed solutions are provided selectively.

364pp	Jun 2024	
978-981-128-742-8(pbk)	US\$48	£45
978-981-128-720-6	US\$98	£90
978-981-128-721-3(ebook)	US\$157	£145

Proceedings of the 14th International Congress on Mathematical Education

(In 2 Volumes)

Volume I

Volume II: Invited Lectures

The 14th International Congress on Mathematical Education
 Shanghai, China, 11 – 18 July 2021
 edited by **Jianpan Wang** (*East China Normal University, China*)



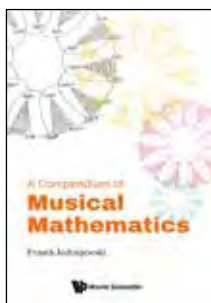
The International Congress on Mathematical Education (ICME) is the largest international conference on mathematics education in the world. This quadrennial event is organized under the auspices of the International Commission on Mathematical Instruction (ICMI). This book, the Proceedings of ICME-14, presents the latest trends in mathematics education research and mathematics teaching practices at all levels. Each chapter covers an extensive range of topics in mathematics education.

1612pp	Jul 2024	
978-981-128-937-8(Set)	US\$580	535

A Compendium of Musical Mathematics

by **Franck Jedrzejewski**
(Paris-Saclay University, France)

The purpose of this book is to provide a concise introduction to the mathematical theory of music, opening each chapter to the most recent research. Despite the complexity of some sections, the book can be read by a large audience. Many examples illustrate the concepts introduced. The book is divided into 9 chapters.

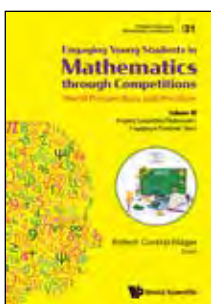


288pp	Apr 2024	
978-981-128-436-6	US\$98	£90
978-981-128-437-3(ebook)	US\$157	£145

Problem Solving in Mathematics and Beyond - Vol 31

Engaging Young Students in Mathematics through Competitions — World Perspectives and Practices

Volume III — Keeping Competition Mathematics Engaging in Pandemic Times
edited by **Robert Geretschläger**



Engaging Young Students in Mathematics through Competitions presents a wide range of topics relating to mathematics competitions and their meaning in the world of mathematical research, teaching and entertainment. Following the earlier two volumes, contributors explore a wide variety of fascinating problems of the type often presented at mathematics competitions. In this new third volume, many chapters are directly related to the challenges involved in organizing competitions under Covid-19, including many positive aspects resulting from the transition to online formats.

344pp	Feb 2024	
978-981-127-928-7	US\$108	£100
978-981-127-929-4(ebook)	US\$173	£160

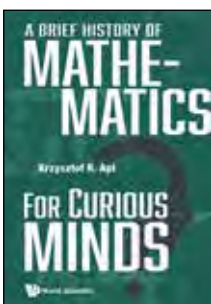
A Brief History of Mathematics for Curious Minds

by **Krzysztof R Apt** (*Centrum Wiskunde & Informatica (CWI), The Netherlands & University of Warsaw, Poland*)

"I couldn't put down this delightful book. It's an absolutely marvelous tour of millennia of mathematics, full of tidbits that were new to me." L N Trefethen

FRS, University of Oxford and Harvard University
author of *An Applied Mathematician's Apology*
(Society for Industrial and Applied Mathematics, 2022)

"This is an excellent book aimed at a general audience. Its goal is to introduce the layman to a history of mathematics in such a way that the reader will appreciate its importance for the understanding of our world, not only from a technical perspective — as the tool scientists use to get their results — but also — and perhaps most importantly — from the philosophical point of view. It is a book every person interested in Science, Philosophy, and History will want to read."



J M Almira
Universidad de Murcia, Spain

author of *Norbert Wiener: A Mathematician Among Engineers*
(World Scientific, 2022)

224pp	Jan 2024	
978-981-128-149-5(pbk)	US\$38	£35
978-981-128-044-3	US\$68	£65
978-981-128-045-0(ebook)	US\$109	£100

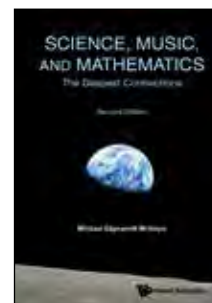
Science, Music, and Mathematics

The Deepest Connections
2nd Edition

by **Michael Edgeworth McIntyre**
(University of Cambridge, UK)

"Michael Edgeworth McIntyre is one of the world leading researchers on the fluid dynamics of our climate system. As such he is an expert on the mathematical nature of our home, Planet Earth. But remarkably, were it not for the flap of a butterfly's wings, he may have become a professional classical violinist. In this remarkable book, McIntyre weaves together these three themes — science, music, and mathematics — into a unified whole. The result is a lucid and unique discussion, buzzing with infectious enthusiasm, of the deep interrelationships between the arts and the sciences. The book should appeal to anyone interested in what makes us the creative species we are." Professor Timothy Palmer CBE FRS

Author of *The Primacy of Doubt*;
Royal Society Research Professor in Climate Physics,
Senior Alumni Fellow, Oxford Martin Institute;
Professorial Fellow at Jesus College, University of Oxford



236pp	Aug 2023	
978-981-127-850-1(pbk)	US\$24	£20
978-981-127-697-2	US\$68	£65
978-981-127-698-9(ebook)	US\$109	£100

International & Multidisciplinary Pedagogy

Discoveries, Innovations, Challenges & Successes

by **Michael A Radin** (*Rochester Institute of Technology, USA*)

The book's primary objectives are to welcome you to the abundant and meaningful international and multidisciplinary education discovery journey. You will grow from exposure to other cultures and their practices and I daresay, become better teachers in your local as well as on-line environments. Most every local classroom is multi-cultural as well. The students have different backgrounds and different ways of internalizing information meaningfully.

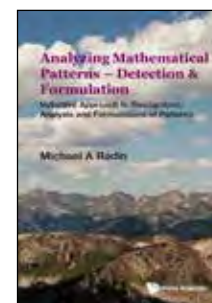
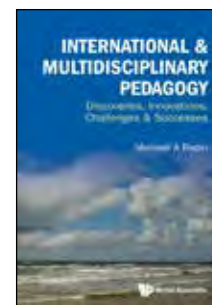
172pp	Jan 2023	
978-981-126-211-1(pbk)	US\$38	£35
978-981-126-107-7	US\$78	£70
978-981-126-108-4(ebook)	US\$125	£115

Analyzing Mathematical Patterns — Detection & Formulation

Inductive Approach to Recognition, Analysis and Formulations of Patterns
by **Michael A Radin** (*Rochester Institute of Technology, USA*)

The book's objectives are to expose students to analyzing and formulating various patterns such as linear, quadratic, geometric, piecewise, alternating, summation-type, product-type, recursive and periodic patterns. The book will present various patterns graphically and analytically and show the connections between them. Graphical presentations include patterns at same scale, patterns at diminishing scale and alternating patterns.

252pp	Jan 2023	
978-981-126-210-4(pbk)	US\$58	£55
978-981-126-104-6	US\$98	£90
978-981-126-105-3(ebook)	US\$157	£145



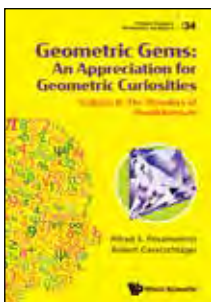
POPULAR AND RECREATIONAL MATHEMATICS

Problem Solving in Mathematics and Beyond - Vol 34

Geometric Gems: An Appreciation for Geometric Curiosities

Volume II: The Wonders of Quadrilaterals
by **Alfred S Posamentier** (*City University of New York, USA*) & **Robert Geretschläger** (*University of Graz, Austria*)

The book is intended to be widely appreciated by a general audience, and their love for geometry should be greatly enhanced through exploring these many unexpected relationships in geometry. *Geometric Gems* is also suitable for mathematics teachers, to enhance the education of their students with these highly motivating quadrilateral properties.



320pp	Sep 2024	
978-981-129-229-3(pbk)	US\$38	£35
978-981-129-144-9	US\$88	£80
978-981-129-145-6(ebook)	US\$141	£130

The Mischief of Math

Short Stories of Clowns, Contortionists, and Court-Jesters

by **Inavamsi Enaganti** (*Param Innovation Centre, India*), **Nivedita Ganesh** (*New York University, USA*) & **Bud Mishra** (*New York University, USA*)

Illustrated by: **Alexander Lu**

Embark on a whimsical odyssey through the realms of ethics in AI bots, logic, game theory, paradoxes, biases, fake data detection, graph theory, and so much more! Within these pages you'll find a collection of fictional short stories that weave together the intriguing, the counterintuitive and the downright quirky with bold characters from every walk of life.



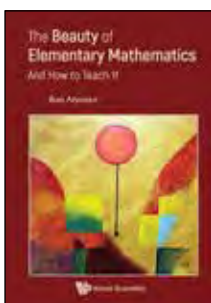
188pp	Jul 2024	
978-981-128-802-9(pbk)	US\$25	£25
978-981-128-759-6	US\$48	£45
978-981-128-760-2(ebook)	US\$98	£90

The Beauty of Elementary Mathematics

And How to Teach It

by **Ron Aharoni** (*Technion, Israel Institute of Technology, Haifa, Israel*)

Why is 2 times 3 equal to 3 times 2? One may think this is an axiom, but it has a proof, and a beautiful one at that. Elementary mathematics is as deep and as beautiful as higher mathematics. It includes some of the most important mathematical discoveries ever, for example the concept of the number, and the place-value method of representing numbers. We are so accustomed to this method, that we forget how clever and beautiful it is — resulting in its incredible efficacy.



All this was a surprise for the author, a university professor of mathematics, when he went to teach in elementary school. He realized that good teaching of elementary mathematics requires understanding its fine points and conveying their beauty to the students. Sensing the beauty and understanding go hand in hand.

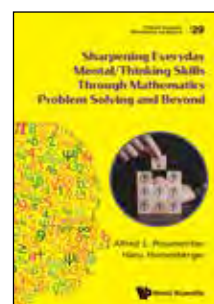
200pp	Jul 2024	
978-981-127-874-7(pbk)	US\$48	£45
978-981-127-815-0	US\$88	£80
978-981-127-816-7(ebook)	US\$141	£130

Problem Solving in Mathematics and Beyond - Vol 30

Sharpening Everyday Mental/Thinking Skills Through Mathematics Problem Solving and Beyond

by **Alfred S Posamentier** (*City University of New York, USA*) & **Hans Humenberger** (*University of Vienna, Austria*)

Mathematics is a subject taught from kindergarten through to high school, and yet it is the one subject that most adults are almost proud to admit to not having been very good at, and, therefore, tend to avoid it where they can. However, one of the key factors in mathematics is its ability to enable us to solve everyday problems. When we consider “the worst-case scenario” of the situation, it is analogous to solving a mathematical problem by considering extremes. Or, we might consider the best path to take from point A to point B, where geometric relationships can be helpful. This book is intended to demonstrate a variety of neglected aspects of mathematics, in order to demonstrate the power and beauty of the field of mathematics beyond where most people, students, and teachers believe is possible.



340pp	Feb 2024	
978-981-127-639-2(pbk)	US\$48	£45
978-981-127-394-0	US\$108	£100
978-981-127-395-7(ebook)	US\$173	£160

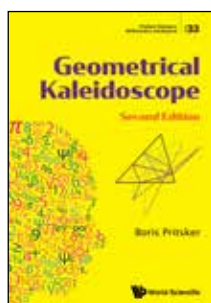
Problem Solving in Mathematics and Beyond - Vol 33

Geometrical Kaleidoscope

2nd Edition

by **Boris Pritsker**

The goal of the book is to provide insight into many enjoyable and fascinating aspects of geometry, and to reveal interesting geometrical properties. The emphasis is on the practical applications of theory in the problem-solving process. The chapters cover a myriad of topics among which are the classic theorems and formulas such as Archimedes' Law of the Lever, the Pythagorean Theorem, Heron's formula, Brahmagupta's formula, Appollonius's Theorem, Euler's line properties, the Nine-Point Circle, Fagnano's Problem, the Steiner-Lehmus Theorem, Napoleon's Theorem, Ceva's Theorem, Menelaus's Theorem, Pompeiu's Theorem, and Morley's Miracle. The book focuses on geometric thinking — what it means, how to develop it, and how to recognize it.



188pp	Apr 2024	
978-981-128-560-8(pbk)	US\$28	£25
978-981-128-527-1	US\$58	£55
978-981-128-528-8(ebook)	US\$98	£90

Mathematical Olympiad Series - Vol 21

Problem Solving Methods and Strategies in High School Mathematical Competitions

by **Bin Xiong & Yijie He** (*East China Normal University, China*)

Translated by: **Yongming Liu** (*East China Normal University, China*)

This book not only introduces important methods and strategies for solving problems in mathematics competition, but also discusses the basic principles behind them and the mathematical way of thinking. It may be used as a valuable textbook for a mathematics competition course or a mathematics education course at undergraduate and graduate level. It can also serve as a reference book for students and teachers in primary and secondary schools.



300pp	Mar 2024	
978-981-127-868-6(pbk)	US\$38	£35
978-981-127-742-9	US\$68	£65
978-981-127-743-6(ebook)	US\$109	£100

Wu Wenjun

A Biography in Pictures

by **Tianxin Cai** (*Zhejiang University, China*)

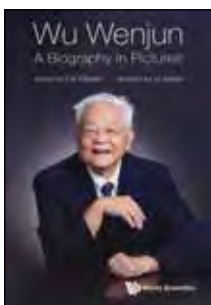
Translated by: **Bin Tang** (*Beihang University, China*)

Illustrated by: **Yanan Li**

This book depicts the fascinating life story of Wu Wenjun, a renowned mathematician who made significant contribution in the field of topology, ancient Chinese mathematics, and mathematics mechanization. He was a recipient of the Highest Science and Technology Award, the highest scientific award in China, as well as the Shaw Prize in Mathematics.

Through vivid illustrations and eloquent writing, this book recounts rarely known anecdotes and significant events from Wu Wenjun's life through his childhood, education, and scientific career, offering insights into his life values.

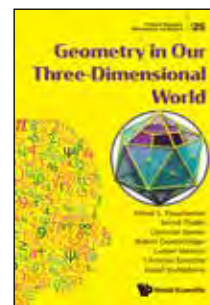
124pp	Jul 2023	
978-981-127-595-1	US\$68	£65
978-981-127-596-8(ebook)	US\$109	£100



Problem Solving in Mathematics and Beyond - Vol 25

Geometry in Our Three-Dimensional World

by **Alfred S Posamentier** (*The City University of New York, USA*), **Bernd Thaller** (*University of Graz, Austria*), **Christian Dorner** (*University of Vienna, Austria*), **Robert Geretschläger** (*BRG Kepler HS, Graz, Austria*), **Guenter Maresch** (*University of Salzburg, Austria*), **Christian Spreitzer** (*University College of Teacher Education Lower Austria, Austria*) & **David Stuhlpfarrer** (*University College of Teacher Education Styria, Austria*)



"This book can be an engagingly written resource for a general audience, emphasizing useful aspects of stereometry."

ZBMath Open

The book presents a comprehensive overview of various aspects of three-dimensional geometry that can be experienced on a daily basis. By covering the wide range of topics — from the psychology of spatial perception to the principles of 3D modelling and printing, from the invention of perspective by Renaissance artists to the art of Origami, from polyhedral shapes to the theory of knots, from patterns in space to the problem of optimal packing, and from the problems of cartography to the geometry of solar and lunar eclipses — this book provides deep insight into phenomena related to the geometry of space and exposes incredible nuances that can enrich our lives.

440pp	Dec 2021	
978-981-123-774-4(pbk)	US\$48	£45
978-981-123-710-2	US\$118	£110
978-981-123-711-9(ebook)	US\$189	£175

My Mathematical Universe

People, Personalities, and the Profession

by **Krishnaswami Alladi** (*University of Florida, USA*)

"This is a richly detailed and fascinating account by one of the most influential mathematicians of our time, of the people he has known, the mathematics he has enjoyed, and the challenges he has encountered."

David M Bressoud
Macalester College, Minnesota

Former President of the Mathematical Association of America

"I heard about Krishnaswami Alladi from my father, the late Professor M V Subbarao, about 50 years ago when Alladi was just an undergraduate student. I was a great admirer of Krishnaswami's father Alladi Ramakrishnan who combined academic excellence with institution building. Professor Krishnaswami is a worthy successor to his father's legacy and this fine autobiography details both his research accomplishments and his contributions to the profession."

M Vidyasagar
SERB National Science Chair, IIT Hyderabad,
Fellow of the Royal Society



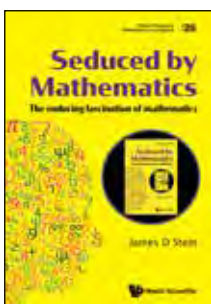
772pp	Jan 2023	
978-981-126-305-7	US\$98	£90
978-981-126-306-4(ebook)	US\$157	£145

Problem Solving in Mathematics and Beyond - Vol 28

Seduced by Mathematics

The enduring fascination of mathematics
by **James D Stein** (*California State University, USA*)

"Topics covered include numbers, arithmetic, analytic geometry, calculus, complex numbers, probability, and infinite series. These topics stick more closely to the high school and university curriculum than typical recreational math books; and the examples are almost all accessible to a reader with a high school background. This is consistent with the author's stated intention of writing a book to demonstrate to the skeptical why one should love mathematics."



zbMATH

224pp	Aug 2022	
978-981-125-635-6(pbk)	US\$28	£25
978-981-125-546-5	US\$58	£55
978-981-125-547-2(ebook)	US\$98	£90

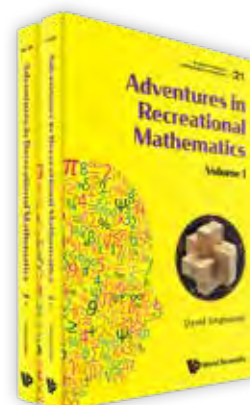
Problem Solving in Mathematics and Beyond - Vol 21

Adventures in Recreational Mathematics

(In 2 Volumes)

by **David Singmaster** (*London South Bank University, UK*)

This set of two books provides readers with an adventure into previously unknown origins of ancient puzzles, which could be traced back to their Medieval, Chinese, Arabic and Indian sources. The puzzles are fully described, many with illustrations, adding interest to their history and relevance to contemporary mathematical concepts. These are musings of a respected historian of recreational mathematics.



496pp	Nov 2021	
978-981-122-630-4(Set)(pbk)	US\$48	£45
978-981-122-564-2(Set)	US\$108	£100
978-981-125-161-0(Set)(ebook)	US\$173	£160

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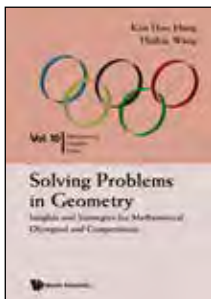
Solving Problems in Geometry
Insights and Strategies for Mathematical Olympiad and Competitions
by **Kim Hoo Hang** (NTU, Singapore)
& **Haibin Wang** (NUS High School of Mathematics and Science, Singapore)

"This book is a useful reference for faculty members involved in contest preparation or teaching Euclidean geometry at the college level."

MAA Reviews

This new volume of the Mathematical Olympiad Series focuses on the topic of geometry. Basic and advanced theorems commonly seen in Mathematical Olympiad are introduced and illustrated with plenty of examples. Special techniques in solving various types of geometrical problems are also introduced, while the authors elaborate extensively on how to acquire an insight and develop strategies in tackling difficult geometrical problems.

356pp	Jul 2017	
978-981-4590-72-3	US\$58	£48
978-981-4583-74-9(pbk)	US\$34	£28
978-981-4583-75-6(ebook)	US\$98	£80



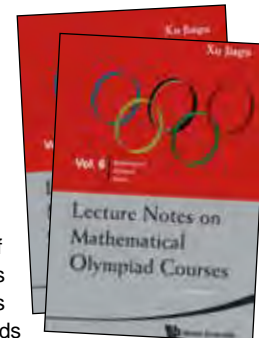
Mathematical Olympiad Series - Vol 6

Lecture Notes on Mathematical Olympiad Courses
For Junior Section
(In 2 Volumes)
by **Jiagu Xu** (Former Professor of Mathematics, Fudan University, China)

This book is based on the lecture notes of the mathematical Olympiad training courses conducted by the author in Singapore. Its scope and depth not only covers and exceeds the usual syllabus, but introduces a variety concepts and methods in modern mathematics.

In each lecture, the concepts, theories and methods are taken as the core. The examples are served to explain and enrich their intension and to indicate their applications. Besides, appropriate number of test questions is available for reader's practice and testing purpose. Their detailed solutions are also conveniently provided.

376pp	Dec 2009	
978-981-4293-53-2(Set)(pbk)	US\$40	£33



Mathematical Olympiad Series - Vol 8

Lecture Notes on Mathematical Olympiad Courses
For Senior Section
(In 2 Volumes)
by **Jiagu Xu** (Former Professor of Mathematics, Fudan University, China)

"In addition to harder problems based on traditional teaching subjects, readers are also introduced to a variety of notions, ideas and advanced techniques from modern mathematics that are not included into standard school curricula. The book is warmly recommended to school teacher searching for original ideas and challenging problems, as well as to students interested in improving their problem solving skills."

Zentralblatt MATH

This book is based on the lecture notes of the mathematical Olympiad training courses conducted by the author in Singapore.

556pp	Mar 2012	
978-981-4368-94-0(Set)(pbk)	US\$72	£60



Mathematical Olympiad Series - Vol 1

A First Step to Mathematical Olympiad Problems
by **Derek Holton** (University of Otago, New Zealand)

"This book continues the tradition making national and international mathematical competition problems available to a wider audience and is bound to appeal to anyone interested in mathematical problem solving. The reviewer recommends this book to all students curious about elementary mathematics and how to learn it through solving problems. Teachers would find this book to be a welcome resource for organizing their activities at a high level."

Zentralblatt MATH

The material contained in this book provides an introduction to the main mathematical topics covered in the IMO, which are: Combinatorics, Geometry and Number Theory. In addition, there is a special emphasis on how to approach unseen questions in Mathematics, and model the writing of proofs. Full answers are given to all questions

292pp	Aug 2009	
978-981-4273-87-9(pbk)	US\$35	£29
978-981-4273-88-6(ebook)	US\$98	£80

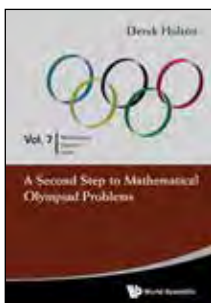


Mathematical Olympiad Series - Vol 7

A Second Step to Mathematical Olympiad Problems
by **Derek Holton** (University of Otago, New Zealand & University of Melbourne, Australia)

The material contained in this book provides an introduction to the main mathematical topics covered in the IMO, which are: Combinatorics, Geometry and Number Theory. In addition, there is a special emphasis on how to approach unseen questions in Mathematics, and model the writing of proofs. Full answers are given to all questions. Though A Second Step to Mathematical Olympiad Problems is written from the perspective of a mathematician, it is written in a way that makes it easily comprehensible to adolescents. This book is also a must-read for coaches and instructors of mathematical competitions.

312pp	Jul 2011	
978-981-4327-87-9(pbk)	US\$38	£32
978-981-4335-13-3(ebook)	US\$98	£80



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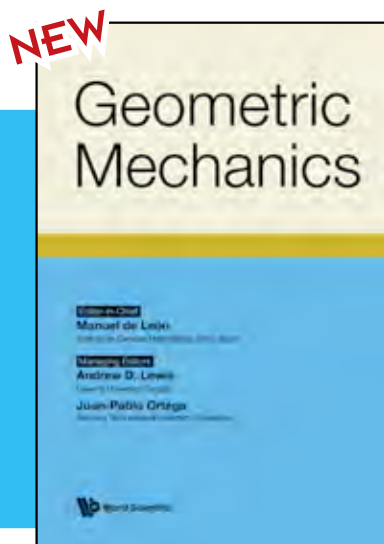
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ISSN (print): 2972-4589

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Geometric Mechanics is a field that applies geometric methods in mechanics, dynamics, control, transport, stochastic processes, data science, and learning, using both pure and applied mathematics.

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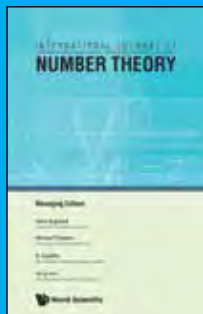
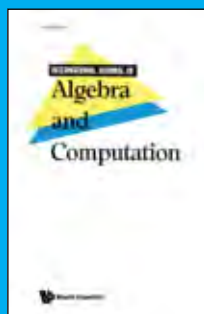
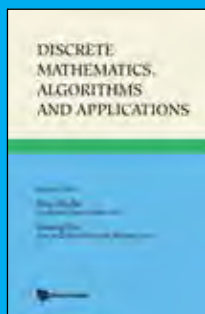
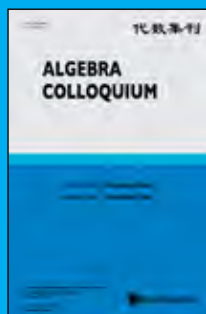
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- Data in applied mathematics, ranging from mathematical biology to theoretical physics;
- Data Science & Theoretical Physics: especially in relation to the string landscape;
- Machine-Learning & Mathematical Structures: in parallel with XenaProject, Coq and LEAN projects in automated theorem proving;
- Machine-Learning applications to Applied Mathematical sciences;
- New techniques in machine-learning inspired from theoretical physics, especially from quantum field theory and statistical mechanics;
- Interpretability Methods in Machine Learning;
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Algebra and Related Topics



Algebra Colloquium (AC)

Print / Online ISSN: 1005-3867 / 0219-1733
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This is an international mathematical journal founded at the beginning of 1994. It is edited by the Academy of Mathematics & Systems Science, Chinese Academy of Sciences, jointly with Suzhou University, and published quarterly in English in every March, June, September and December. Algebra Colloquium carries original research articles of high level in the field of pure and applied algebra. This journal aims to reflect the latest developments in algebra and promote international academic exchanges.

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Discrete Mathematics, Algorithms and Applications (DMAA)

Print / Online ISSN: 1793-8309 / 1793-8317
<https://www.worldscientific.com/dmaa>



IMPACT FACTOR
0.6

The aim of this journal is to advance and promote the theory and applications of discrete mathematics, which is a research area in mathematics with applications in computer science, industrial engineering, bio-informatics, chemistry and communication networks. The journal encourages contributions from the two important parts of discrete mathematics, graph theory and combinatorics. The former includes structural graph theory, extremal graph theory, algebraic graph theory, random graphs and internet graphs. The latter consists of combinatorial design, combinatorial enumeration, coding theory, combinatorial probabilistic method, etc.

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International Journal of Algebra and Computation (IJAC)

Print / Online ISSN: 0218-1967 / 1793-6500
<https://www.worldscientific.com/ijac>



IMPACT FACTOR
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This journal publishes high quality original research papers in combinatorial, algorithmic and computational aspects of algebra (including combinatorial and geometric group theory and semigroup theory, algorithmic aspects of universal algebra, computational and algorithmic commutative algebra, probabilistic models related to algebraic structures, random algebraic structures), and gives a preference to papers in the areas of mathematics represented by the editorial board.

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This journal publishes original research papers and review articles on all areas of Number Theory, including elementary number theory, analytic number theory, algebraic number theory, arithmetic algebraic geometry, geometry of numbers, diophantine equations, diophantine approximation, transcendental number theory, probabilistic number theory, modular forms, multiplicative number theory, additive number theory, partitions, and computational number theory.

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Print / Online ISSN: 0219-4988 / 1793-6829
<https://www.worldscientific.com/jaa>



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This journal publishes papers both on theoretical and on applied aspects of Algebra. There is special interest in papers that point out innovative links between areas of Algebra and fields of application. As the field of Algebra continues to experience tremendous growth and diversification, we intend to provide the mathematical community with a central source for information on both the theoretical and the applied aspects of the discipline. While the journal will be primarily devoted to the publication of original research, extraordinary expository articles that encourage communication between algebraists and experts on areas of application as well as those presenting the state of the art on a given algebraic sub-discipline will be considered.

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Random Matrices: Theory and Applications (RMTA)

Print / Online ISSN: 2010-3263 / 2010-3271
<https://www.worldscientific.com/rmta>



IMPACT FACTOR
0.9

This journal publishes high quality papers on all aspects regarding random matrices, both theory and applications. These areas will include, but not be limited to, spectral theory, new ensembles (those not generally considered in classical random matrix theory), and applications to a wide variety of areas, including high dimensional data analysis, wireless communications, finance, and economics. Only papers that contain original, innovative and correct results, which deepen our understanding on the theory of random matrices and its applications, will be considered for publications.

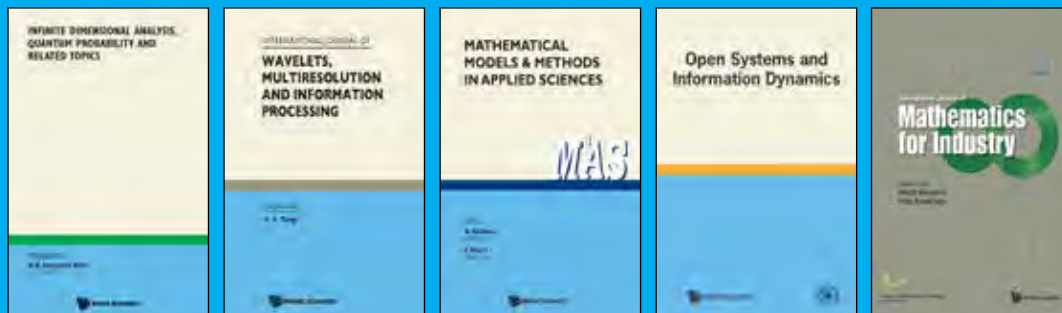
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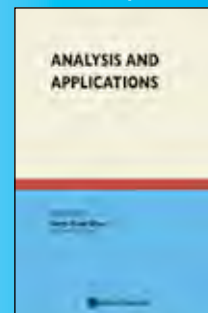
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Applied Mathematics



Mathematical Analysis

**Infinite Dimensional Analysis, Quantum Probability and Related Topics (IDAQP)**

Print / Online ISSN: 0219-0257 / 1793-6306

<https://www.worldscientific.com/idaqp>IMPACT FACTOR
0.6

In the past few years the fields of infinite dimensional analysis and quantum probability have undergone increasingly significant developments and have found many new applications, in particular, to classical probability and to different branches of physics. The number of first-class papers in these fields has grown at the same rate. This is currently the only journal which is devoted to these fields.

Managing Editor**B V Rajarama Bhat**, *R. V. College P.O., India***co-Managing Editor****Un Cig Ji**, *Chungbuk National University, Korea***Open Systems & Information Dynamics (OSID)**

Print / Online ISSN: 1230-1612 / 1793-7191

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1.3

The aim of this journal is to promote interdisciplinary research in mathematics, physics, engineering and life sciences centered around the issues of broadly understood information processing, storage and transmission, in both quantum and classical settings. Our special interest lies in the information-theoretic approach to phenomena dealing with dynamics and thermodynamics, control, communication, filtering, memory and cooperative behaviour, etc., in open complex systems.

Editor-in-Chief**D. Chruściński**, *Nicolaus Copernicus University, Poland***International Journal of Wavelets, Multiresolution and Information Processing (IJWIP)**

Print / Online ISSN: 0219-6913 / 1793-690X

<https://www.worldscientific.com/ijwip>IMPACT FACTOR
0.9

This journal considers the current state-of-the-art theories of wavelet analysis, multiresolution and information processing as well as their applications. This journal aims at publishing papers in both the theories and applications, concentrating on the practical applications of the wavelets, multiresolution and information processing to all areas in science and engineering.

Editor-in-Chief**Yuan Y Tang**, *University of Macau, China***Managing Editor****Luoqing Li**, *Hubei University, China***Mathematical Models and Methods in Applied Sciences (M3AS)**

Print / Online ISSN: 0218-2025 / 1793-6314

<https://www.worldscientific.com/m3as>IMPACT FACTOR
3.6

The purpose of this journal is to provide a medium of exchange for scientists engaged in applied sciences (physics, mathematical physics, natural, and technological sciences) where there exists a non-trivial interplay between mathematics, mathematical modelling of real systems and mathematical and computer methods oriented towards the qualitative and quantitative analysis of real physical systems.

Editors**Nicola Bellomo**, *Politecnico di Torino, Italy***Franco Brezzi**, *IMATI - CNR, Italy***International Journal of Mathematics for Industry (IJMI)**

Print / Online ISSN: 2661-3352 / 2661-3344

<https://www.worldscientific.com/ijmi>IMPACT FACTOR
0.3

This journal is dedicated to enhancing the interaction between mathematics and industrial applications as a two-way process. It publishes original research articles that illustrate how, through the utilization of mathematical results, questions about industrial problems including various scientific questions potentially connected to industrial problems are answered to yield new insight for both industry and mathematics.

Editors-in-Chief**Masato Wakayama**, *Kyushu University, Japan***Philip Broadbridge**, *La Trobe, Australia***Analysis and Applications (AA)**

Print / Online ISSN: 0219-5305 / 1793-6861

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2.0

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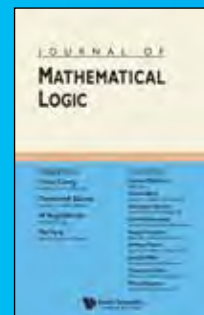
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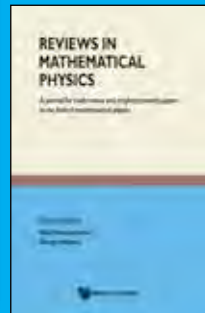
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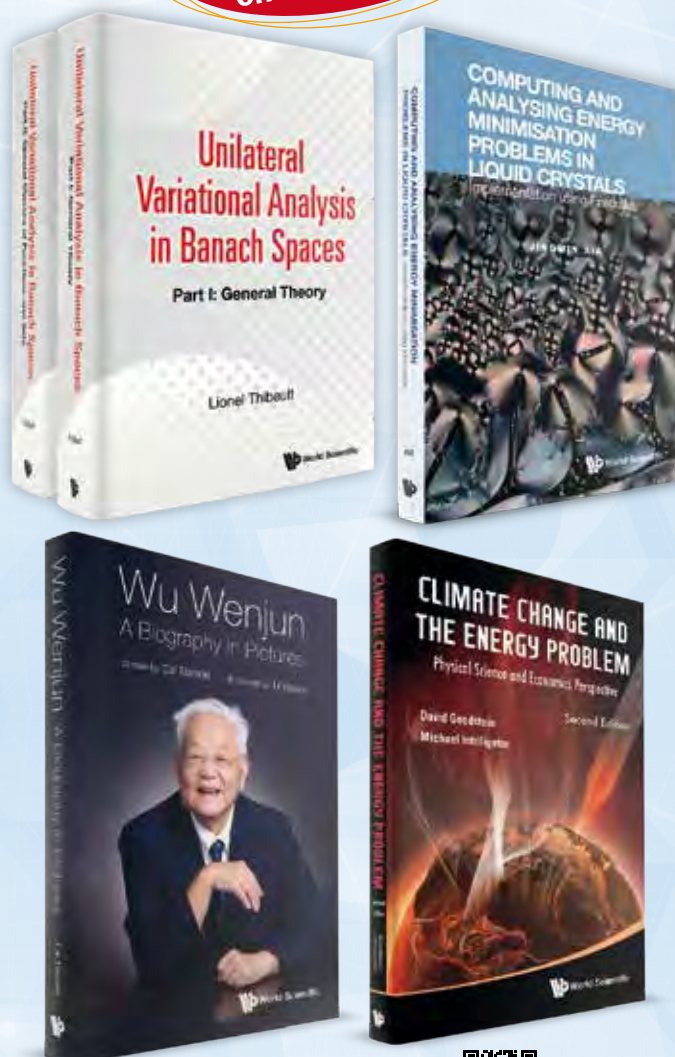
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