New Publications Offered by the AMS

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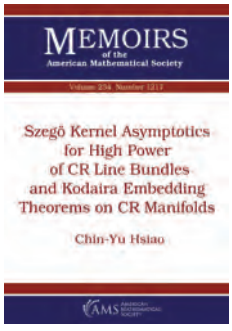
Algebra and Algebraic Geometry



Szegő Kernel Asymptotics for High Power of CR Line Bundles and Kodaira Embedding Theorems on CR Manifolds

Chin-Yu Hsiao, *Academia Sinica, Taipei, Taiwan*

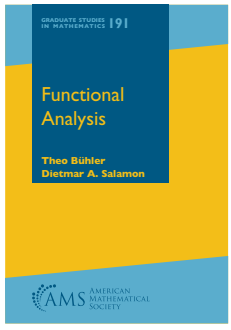
This item will also be of interest to those working in geometry and topology.

Contents: Introduction and statement of the main results; More properties of the phase $\varphi(x,y,s)$; Preliminaries; Semi-classical $\Box_{b,k}^{(q)}$ and the characteristic manifold for $\Box_{b,k}^{(q)}$; The heat equation for the local operatot $\Box_{s}^{(q)}$; Semi-classical Hodge decomposition theorems for $\Box_{s,k}^{(q)}$ in some non-degenerate part of Σ; Szegő kernel asymptotics for lower energy forms; Almost Kodaira embedding Theorems on CR manifolds; Asymptotic expansion of the Szegő kernel; Szegő kernel asymptotics and Kodairan embedding Theorems on CR manifolds with transversal CR S^1 actions; Szegő kernel asymptotics on some non-compact CR manifolds; The proof of Theorem 5.28; References.

Memoirs of the American Mathematical Society, Volume 254, Number 1217

June 2018, 140 pages, Softcover, ISBN: 978-1-4704-4101-2, 2010 *Mathematics Subject Classification:* 32V20, 32V30, **Individual member US$46.80**, List US$78, Institutional member US$62.40, Order code MEMO/254/1217

Analysis



Functional Analysis

Theo Bühler, and **Dietmar A. Salamon**, *ETH, Zurich, Switzerland*

Functional analysis is a central subject of mathematics with applications in many areas of geometry, analysis, and physics. This book provides a comprehensive introduction to the field for graduate students and researchers.

It begins in Chapter 1 with an introduction to the necessary foundations, including the Arzelà–Ascoli theorem, elementary Hilbert space theory, and the Baire Category Theorem. Chapter 2 develops the three fundamental principles of functional analysis (uniform boundedness, open mapping theorem, Hahn–Banach theorem) and discusses reflexive spaces and the James space. Chapter 3 introduces the weak and weak* topologies and includes the theorems of Banach–Alaoglu, Banach–Dieudonné, Eberlein–Šmulyan, Kreĭn–Milman, as well as an introduction to topological vector spaces and applications to ergodic theory. Chapter 4 is devoted to Fredholm theory. It includes an introduction to the dual operator and to compact operators, and it establishes the closed image theorem. Chapter 5 deals with the spectral theory of bounded linear operators. It introduces complex Banach and Hilbert spaces, the continuous functional calculus for self-adjoint and normal operators, the Gelfand spectrum, spectral measures, cyclic vectors, and the spectral theorem. Chapter 6 introduces unbounded operators and their duals. It establishes the closed image theorem in this setting and extends the functional calculus and spectral measure to unbounded self-adjoint operators on Hilbert spaces. Chapter 7 gives an introduction to strongly continuous semigroups and their infinitesimal generators. It includes foundational results about the dual semigroup and analytic semigroups, an exposition of measurable functions with values in a Banach space, and a discussion of solutions to the inhomogeneous equation and their regularity properties. The appendix establishes the equivalence of the Lemma of Zorn and the Axiom of Choice, and it contains a proof of Tychonoff's theorem.

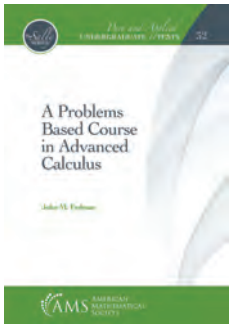
With 10 to 20 elaborate exercises at the end of each chapter, this book can be used as a text for a one-or-two-semester course on

functional analysis for beginning graduate students. Prerequisites are first-year analysis and linear algebra, as well as some foundational material from the second-year courses on point set topology, complex analysis in one variable, and measure and integration.

Contents: Foundations; Principles of functional analysis; The weak and weak* topologies; Fredholm theory; Spectral theory; Unbounded operators; Semigroups of operators; Zorn and Tychonoff; Bibliography; Notation; Index.

Graduate Studies in Mathematics, Volume 191

July 2018, 466 pages, Hardcover, ISBN: 978-1-4704-4190-6, LC 2017057259, 2010 *Mathematics Subject Classification:* 46-01, 47-01, **AMS members US$66.40**, List US$83, Order code GSM/191



A Problems Based Course in Advanced Calculus

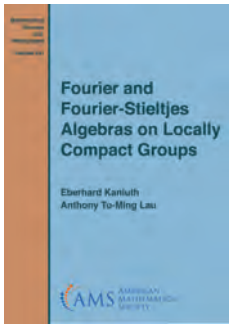
John M. Erdman, *Portland State University, OR*

This textbook is suitable for a course in advanced calculus that promotes active learning through problem solving. It can be used as a base for a Moore method or inquiry based class, or as a guide in a traditional classroom setting where lectures are organized around the presentation of problems and solutions. This book is appropriate for any student who has taken (or is concurrently taking) an introductory course in calculus. The book includes sixteen appendices that review some indispensable prerequisites on techniques of proof writing with special attention to the notation used the course.

Contents: Intervals; Toplogy of the real line; Continuous functions from $\mathbb{R}$ to $\mathbb{R}$; Sequences of real numbers; Connectedness and the intermediate value theorem; Compactness and the extreme value theorem; Limits of real valued functions; Differentiation of real valued functions; Metric spaces; Interiors, closures, and boundaries; The topology of metric spaces; Sequences in metric spaces; Uniform convergence; More on continuity and limits; Compact metric spaces; Sequenctial characterization of compactness; Connectedness; Complete spaces; A fixed point theorem; Vector spaces; Linearity; Norms; Continuity and linearity; The Cauchy integral; Differential calculus; Partial derivatives and iterated integrals; Computations in $\mathbb{R}^n$; Infinite series; The implicit function theorem; Higher order derivatives; Quantifiers; Sets; Special subsets of $\mathbb{R}$; Logical connectives; Writing mathematics; Set operations; Arithmetic; Order propertiers of $\mathbb{R}$; Natural numbers and mathematical induction; Least upper bounds and greatest lower bounds; Products, relations, and functions; Properties of functions; Functions that have inverses; Products; Finite and infinite sets; Countable and uncountable sets; Bibliography; Index.

Pure and Applied Undergraduate Texts, Volume 32

July 2018, 360 pages, Hardcover, ISBN: 978-1-4704-4246-0, LC 2017051409, 2010 *Mathematics Subject Classification:* 00A07; 00-01, **AMS members US$63.20**, List US$79, Order code AMSTEXT/32



Fourier and Fourier-Stieltjes Algebras on Locally Compact Groups

Eberhard Kaniuth, and **Anthony To-Ming Lau**, *University of Alberta, Edmonton, AB, Canada*

The theory of the Fourier algebra lies at the crossroads of several areas of analysis. Its roots are in locally compact groups and group representations, but it requires a considerable amount of functional analysis, mainly Banach algebras. In recent years it has made a major connection to the subject of operator spaces, to the enrichment of both. In this book two leading experts provide a road map to roughly 50 years of research detailing the role that the Fourier and Fourier-Stieltjes algebras have played in not only helping to better understand the nature of locally compact groups, but also in building bridges between abstract harmonic analysis, Banach algebras, and operator algebras. All of the important topics have been included, which makes this book a comprehensive survey of the field as it currently exists.

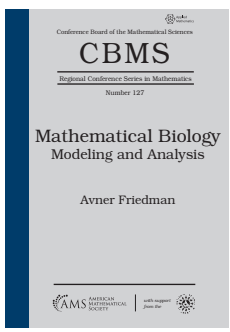
Since the book is, in part, aimed at graduate students, the authors offer complete and readable proofs of all results. The book will be well received by the community in abstract harmonic analysis and will be particularly useful for doctoral and postdoctoral mathematicians conducting research in this important and vibrant area.

Contents: Preliminaries; Basic theory of Fourier and Fourier-Stieltjes algebras; Miscellaneous further topics; Amenability properties of $A(G)$ and $B(G)$; Multiplier algebras of Fourier algebras; Spectral synthesis and ideal theory; Extension and separation properties of positive definite functions; Appendix; Bibliography; Index.

Mathematical Surveys and Monographs, Volume 231

June 2018, 306 pages, Hardcover, ISBN: 978-0-8218-5365-8, LC 2017052436, 2010 *Mathematics Subject Classification:* 43-02, 43A10, 43A20, 43A30, 43A25, 46-02, 22-02, **AMS members US$97.60**, List US$122, Order code SURV/231

Applications



Mathematical Biology

Modeling and Analysis

Avner Friedman, *Ohio State University, Columbus, OH*

The fast growing field of mathematical biology addresses biological questions using mathematical models from areas such as dynamical systems, probability, statistics, and discrete mathematics.

This book considers models that are described by systems of partial differential equations, and it focuses on modeling, rather than on numerical methods and simulations. The models studied

are concerned with population dynamics, cancer, risk of plaque growth associated with high cholesterol, and wound healing. A rich variety of open problems demonstrates the exciting challenges and opportunities for research at the interface of mathematics and biology.

This book primarily addresses students and researchers in mathematics who do not necessarily have any background in biology and who may have had little exposure to PDEs.

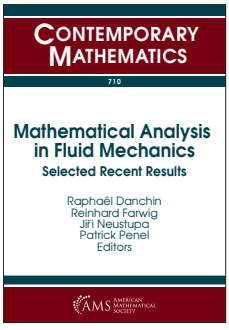
This item will also be of interest to those working in analysis.

Contents: Introductory biology; Introduction to modeling; Models of population dynamics; Cancer and the immune system; Parameters estimation; Mathematical analysis inspired by cancer models; Mathematical model of artherosclerosis: Risk of high cholesterol; Mathematical analysis inspired by the atherosclerosis model; Mathematical models of chronic wounds; Mathematical analysis inspired by the chronic wound model; Introduction to PDEs; Bibliography; Index.

CBMS Regional Conference Series in Mathematics, Number 127

August 2018, approximately 101 pages, Softcover, ISBN: 978-1-4704-4715-1, LC 2018015203, 2010 *Mathematics Subject Classification:* 35Q92, 35R35, 37N25, 49J10, 92C50, 92D25; 35B32, 35B35, 35B50, **AMS members US$41.60**, List US$52, Order code CBMS/127

Differential Equations



Mathematical Analysis in Fluid Mechanics

Selected Recent Results

Raphaël Danchin, *Université Paris-Est, Créteil, France*, **Reinhard Farwig**, *Technische Universität Darmstadt, Germany*, **Jiří Neustupa**, *Czech Academy of Sciences, Prague, Czech Republic*, and **Patrick Penel**, *Université du Sud-Toulon-Var, La Garde, France*, Editors

This volume contains the proceedings of the International Conference on Vorticity, Rotation and Symmetry (IV)—Complex Fluids and the Issue of Regularity, held from May 8–12, 2017, in Luminy, Marseille, France.

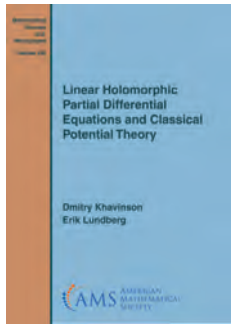
The papers cover topics in mathematical fluid mechanics ranging from the classical regularity issue for solutions of the 3D Navier-Stokes system to compressible and non-Newtonian fluids, MHD flows and mixtures of fluids. Topics of different kinds of solutions, boundary conditions, and interfaces are also discussed.

This item will also be of interest to those working in mathematical physics.

Contents: **H. Abels** and **M. Moser**, Well-posedness of a Navier-Stokes/mean curvature flow system; **M. Bulíček**, **J. Málek**, **V. Pråuša**, and **E. Süli**, PDE analysis of a class of thermodynamically compatible viscoelastic rate-type fluids with stress-diffusion; **D. Chamorro**, **P. G. Lemarié-Rieusset**, and **K. Mayoufi**, Local stability of energy estimates for the Navier-Stokes equations; **H. J. Choe** and **M. Yang**, Blow up criteria for the compressible Navier-Stokes equations; **W. Deng** and **P. Zhang**, Asymptotic stability of equilibrium to 3-D MHD system; **N. Filonov** and **T. Shilkin**, On some properties of weak solutions to elliptic equations with divergence-free drifts; **G. P. Galdi** and **M. Kyed**, Time-periodic solutions to the Navier-Stokes equations in the three-dimensional whole-space with a non-zero drift term: Asymptotic profile at spatial infinity; **T. Holding** and **E. Miot**, Uniqueness and stability for the Vlasov-Poisson system with spatial density in Orlicz spaces; **H. Kozono** and **S. Shimizu**, Strong solutions of the Navier-Stokes equations with singular data; **D. Maity** and **M. Tucsnak**, $L^p - L^q$-maximal regularity for some operators associated with linearized incompressible fluid-right body problems; **P. Maremonti**, On an interpolation inequality involving the Stokes operator; **K. Nakao** and **Y. Taniuchi**, Brezis-Gallouet-Wainger type inequality and its application to the Navier-Stokes equations; **T. Piasecki** and **M. Pokorný**, On steady solutions to a model of chemically reacting heat conducting compressible mixture with slip boundary conditions.

Contemporary Mathematics, Volume 710

July 2018, approximately 244 pages, Softcover, ISBN: 978-1-4704-3646-9, LC 2018003589, 2010 *Mathematics Subject Classification:* 35B40, 35B65, 35Q30, 35Q35, 76D05, 76D07, 76N10, 76W05, **AMS members US$93.60**, List US$117, Order code CONM/710



Linear Holomorphic Partial Differential Equations and Classical Potential Theory

Dmitry Khavinson, *University of South Florida, Tampa, FL*, and **Erik Lundberg**, *Florida Atlantic University, Boca Raton, FL*

Why do solutions of linear analytic PDE suddenly break down? What is the source of these mysterious singularities, and how do they propagate? Is there a mean value property for harmonic functions in ellipsoids similar to that for balls? Is there a reflection principle for harmonic functions in higher dimensions similar to the Schwarz reflection principle in the plane? How far outside of their natural domains can solutions of the Dirichlet problem be extended? Where do the continued solutions become singular and why?

This book invites graduate students and young analysts to explore these and many other intriguing questions that lead to beautiful results illustrating a nice interplay between parts of modern analysis and themes in "physical" mathematics of the nineteenth century. To make the book accessible to a wide audience including students, the authors do not assume expertise in the theory of holomorphic PDE, and most of the book is accessible to anyone familiar with multivariable calculus and some basics in complex analysis and differential equations.

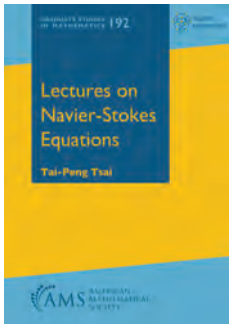
This item will also be of interest to those working in analysis.

Contents: Introduction: Some motivating questions; The Cauchy-Kovalevskaya theorem with estimates; Remarks on the Cauchy-Kovalevskaya theorem; Zerner's theorem; The method of globalizing families; Holmgren's uniqueness theorem; The

continuity method of F. John; The Bony-Schapira theorem; Applications of the Bony-Schapira theorem: Part I - Vekua hulls; Applications of the Bony-Schapira theorem: Part II - Szegő's theorem revisited; The reflection principle; The reflection principle (continued); Cauchy problems and the Schwarz potential conjecture; The Schwarz potential conjecture for spheres; Potential theory on ellipsoids: Part I - The mean value property; Potential theory on ellipsoids: Part II - There is no gravity in the cavity; Potential theory on ellipsoids: Part III - The Dirichlet problem; Singularities encountered by the analytic continuation of solutions to the Dirichlet problem; An introduction to J. Leray's principle on propagation of singularities through $\mathbb{C}^n$; Global propagation of singularities in $\mathbb{C}^n$; Quadrature domains and Laplacian growth; Other varieties of quadrature domains; Bibliography; Index.

Mathematical Surveys and Monographs, Volume 232

July 2018, 214 pages, Hardcover, ISBN: 978-1-4704-3780-0, LC 2017055519, 2010 *Mathematics Subject Classification:* 35A20, 31B20, 32A05, 30B40, 14P05, **AMS members US$97.60**, List US$122, Order code SURV/232



Lectures on Navier-Stokes Equations

Tai-Peng Tsai, *University of British Columbia, Vancouver, BC, Canada*

The book is an excellent contribution to the literature concerning the mathematical analysis of the incompressible Navier-Stokes equations. It provides a very good introduction to the subject, covering several important directions, and also presents a number of recent results, with an emphasis on non-perturbative regimes. The book is well written and both beginners and experts will benefit from it. It can also provide great material for a graduate course.

—Vladimir Šverák, University of Minnesota

This book is a graduate text on the incompressible Navier-Stokes system, which is of fundamental importance in mathematical fluid mechanics as well as in engineering applications. The goal is to give a rapid exposition on the existence, uniqueness, and regularity of its solutions, with a focus on the regularity problem. To fit into a one-year course for students who have already mastered the basics of PDE theory, many auxiliary results have been described with references but without proofs, and several topics were omitted. Most chapters end with a selection of problems for the reader.

After an introduction and a careful study of weak, strong, and mild solutions, the reader is introduced to partial regularity. The coverage of boundary value problems, self-similar solutions, the uniform L^3 class including the celebrated Escauriaza-Seregin-Šverák Theorem, and axisymmetric flows in later chapters are unique features of this book that are less explored in other texts.

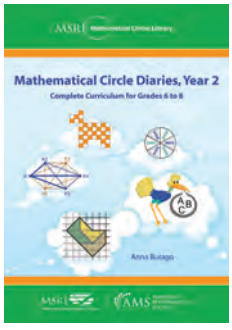
The book can serve as a textbook for a course, as a self-study source for people who already know some PDE theory and wish to learn more about Navier-Stokes equations, or as a reference for some of the important recent developments in the area.

Contents: Introduction; Steady states; Weak solutions; Strong solutions; Mild solutions; Partial regularity; Boundary value problem and bifurcation; Self-similar solutions; The uniform L^3 class; Axisymmetric flows; Bibliography; Index.

Graduate Studies in Mathematics, Volume 192

July 2018, 224 pages, Hardcover, ISBN: 978-1-4704-3096-2, LC 2017058342, 2010 *Mathematics Subject Classification:* 35Q30, 35Q35, 76D05, 76Dxx, **AMS members US$66.40**, List US$83, Order code GSM/192

General Interest



Mathematical Circle Diaries, Year 2

Complete Curriculum for Grades 6 to 8

Anna Burago, *Prime Factor Math Circle, Seattle, WA*

Mathematical circles, with their question-driven approach and emphasis on problem solving, expose students to the type of mathematics that stimulates the development of logical thinking, creativity, analytical abilities, and mathematical reasoning. These skills, while scarcely introduced at school, are in high demand in the modern world.

This book, a sequel to *Mathematical Circle Diaries, Year 1*, teaches how to think and solve problems in mathematics. The material, distributed among twenty-nine weekly lessons, includes detailed lectures and discussions, sets of problems with solutions, and contests and games. In addition, the book shares some of the know-how of running a mathematical circle. The book covers a broad range of problem-solving strategies and proofing techniques, as well as some more advanced topics that go beyond the limits of a school curriculum. The topics include invariants, proofs by contradiction, the Pigeonhole principle, proofs by coloring, double counting, combinatorics, binary numbers, graph theory, divisibility and remainders, logic, and many others. When students take science and computing classes in high school and college, they will be better prepared for both the foundations and advanced material. The book contains everything that is needed to run a successful mathematical circle for a full year.

This book, written by an author actively involved in teaching mathematical circles for fifteen years, is intended for teachers, math coaches, parents, and math enthusiasts who are interested in teaching math that promotes critical thinking. Motivated students can work through this book on their own.

In the interest of fostering a greater awareness and appreciation of mathematics and its connections to other disciplines and everyday life, MSRI and the AMS are publishing books in the Mathematical Circles Library series as a service to young people, their parents and teachers, and the mathematics profession.

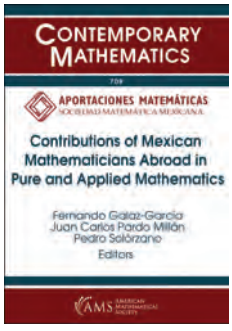
Titles in this series are co-published with the Mathematical Sciences Research Institute (MSRI).

Contents: Preliminaries; *Session plans:* Introduction; Checkerboard problems; Review: Math logic and other problem-solving strategies; Invariants; Proof by contradiction; Decimal

number system and problems on digits; Binary numbers I; Binary numbers II; Mathematical dominoes tournament; Pigeonhole principle; Geometric pigeonhole principle; Mathematical Olympiad I; Combinatorics I. Review; Combinatorics II. Combinations; Mathematical auction; Combinatorics III. Complements. Snake pit game; Combinatorics IV. Combinatorial conundrum; Magic squares and related problems; Double counting, or there is more than one way to cut a cake; Mathematical Olympiad II; Divisibility I. Review; Divisibility II. Relatively prime numbers; GCF and LCM; Divisibility III. Mathematical race game; Mathematical auction; Divisibility IV. Divisibility by 3 and remainders; Divisibility V. Divisibility and remainders; Graph theory I. Graphs and their applications; Graph theory II. Handshaking theorem; Graph theory III. Solving problems with graphs; Mathematical Olympiad III; *Mathematical contests and competitions:* Mathematical contests; Mathematical auction; Mathematical dominoes; Mathematical snake pit; Mathematical race; Mathematical Olympiad; Short entertaining math games; *More teaching advice:* How to be a great math circle teacher; What comes next?; Solutions; Appendix to Session 6; Bibliography.

MSRI Mathematical Circles Library, Volume 20

August 2018, approximately 351 pages, Softcover, ISBN: 978-1-4704-3718-3, LC 2017058792, 2010 *Mathematics Subject Classification:* 97A20, 97A80, 00A07, 00A08, 00A09, 97D50, **AMS members US$44**, List US$55, Order code MCL/20



Contributions of Mexican Mathematicians Abroad in Pure and Applied Mathematics

Fernando Galaz-García, *Karlsruher Institut Für Technologie, Germany*, **Juan Carlos Pardo Millán**, *Centro de Investigación en Matemáticas, Guanajuato, Mexico*, and **Pedro Solórzano**, *Instituto de Matemáticas-Oaxaca, UNAM, Oaxaco, Mexico*, Editors

This volume contains the proceedings of the Second Workshop of Mexican Mathematicians Abroad (II Reunión de Matemáticos Mexicanos en el Mundo), held from December 15–19, 2014, at Centro de Investigación en Matemáticas (CIMAT) in Guanajuato, Mexico.

This meeting was the second in a series of ongoing biannual meetings aimed at showcasing the research of Mexican mathematicians based outside of Mexico.

The book features articles drawn from eight broad research areas: algebra, analysis, applied mathematics, combinatorics, dynamical systems, geometry, probability theory, and topology. Their topics range from novel applications of non-commutative probability to graph theory, to interactions between dynamical systems and geophysical flows.

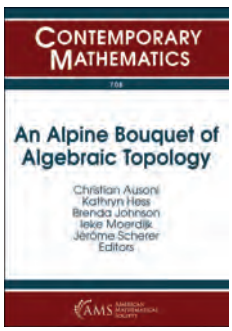
Several articles survey the fields and problems on which the authors work, highlighting research lines currently underrepresented in Mexico. The research-oriented articles provide either alternative approaches to well-known problems or new advances in active research fields. The wide selection of topics makes the book accessible to advanced graduate students and researchers in mathematics from different fields.

Contents: O. Arizmendi and **O. Juarez-Romero**, On bounds for the energy of graphs and digraphs; **P. Carrillo Rouse**, The Atiyah-Singer cobordism invariance and the tangent groupoid; **C. González-Tokman**, Multiplicative ergodic theorems for transfer operators: Towards the identification and analysis of coherent structures in non-autonomous dynamical systems; **R. Jiménez Rolland** and **J. Maya Duque**, Representation stability for the pure cactus group; **V. Kleptsyn** and **A. Rechtman**, Two proofs of Taubes' theorem on strictly ergodic flows; **H. Lange** and **A. Ortega**, The fibres of the Prym map of étale cyclic coverings of degree 7; **C. Lozano Huerta**, Extremal higher codimension cycles of the space of complete conics; **C. Meneses**, On Shimura's isomorphism and (Γ, G)-bundles on the upper-half plane; **M. Torres**, On the dual of BV; **C. Vargas**, A general solution to (free) deterministic equivalents.

Contemporary Mathematics, Volume 709

July 2018, approximately 163 pages, Softcover, ISBN: 978-1-4704-4286-6, LC 2017058161, 2010 *Mathematics Subject Classification:* 05C50, 58H05, 37H15, 20J06, 37C40, 14H40, 14N10, 30F35, 46E35, 46L54, **AMS members US$93.60**, List US$117, Order code CONM/709

Geometry and Topology



An Alpine Bouquet of Algebraic Topology

Christian Ausoni, *Université Paris 13, Villetaneuse, France*, **Kathryn Hess**, *École Polytechnique Fédérale de Lausanne, Switzerland*, **Brenda Johnson**, *Union College, Schenectady, NY*, **Ieke Moerdijk**, *Universiteit Utrecht, Netherlands*, and **Jérôme Scherer**, *École Polytechnique Fédérale de Lausanne, Switzerland*, Editors

This volume contains the proceedings of the Alpine Algebraic and Applied Topology Conference, held from August 15–21, 2016, in Saas-Almagell, Switzerland.

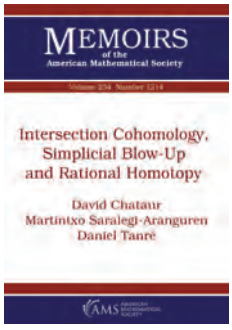
The papers cover a broad range of topics in modern algebraic topology, including the theory of highly structured ring spectra, infinity-categories and Segal spaces, equivariant homotopy theory, algebraic K-theory and topological cyclic, periodic, or Hochschild homology, intersection cohomology, and symplectic topology.

Contents: A. Baker, Characteristics for $\mathscr{E}_\infty$ ring spectra; **P. Boavida de Brito**, Segal objects and the Grothendieck construction; **D. Chataur**, **M. Saralegi-Aranguren**, and **D. Tanré**, Blown-up intersection cohomology; **C. Costoya**, **D. Méndez**, and **A. Viruel**, Homotopically rigid Sullivan algebras and their applications; **E. Dotto**, A Dundas-Goodwillie-McCarthy theorem

for split square-zero extensions of exact categories; **J. P. C. Greenlees**, Four approaches to cohomology theories with reality; **L. Hesselholt**, Topological Hochschild homology and the Hasse-Weil zeta function; **N. Kitchloo** and **J. Morava**, The stable symplectic category and a conjecture of Kontsevich; **M. Nakagawa** and **H. Naruse**, Universal Gysin formulas for the universal Hall-Littlewood functions; **B. Stonek**, Graded multiplications on iterated bar constructions; **K. Werndli**, Double homotopy (co)limits for relative categories.

Contemporary Mathematics, Volume 708

June 2018, 308 pages, Softcover, ISBN: 978-1-4704-2911-9, LC 2017055549, 2010 *Mathematics Subject Classification:* 11S40, 18Axx, 18Gxx, 19Dxx, 55Nxx, 55Pxx, 55Sxx, 55Uxx, 57Nxx, **AMS members US$93.60**, List US$117, Order code CONM/708



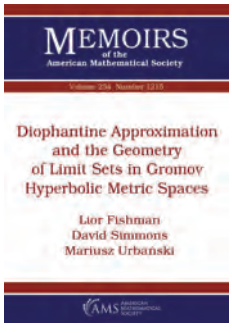
Intersection Cohomology, Simplicial Blow-Up and Rational Homotopy

David Chataur, *Université de Picardie Jules Verne, Amiens, France*, **Martintxo Saralegi-Aranguren**, *Université d'Artois, Lens, France*, and **Daniel Tanré**, *Université de Lille, Villeneuve d'Ascq, France*

Contents: Introduction; Simplicial blow-up; Rational algebraic models; Formality and examples; Appendix A. Topological setting; Bibliography; Index.

Memoirs of the American Mathematical Society, Volume 254, Number 1214

June 2018, 108 pages, Softcover, ISBN: 978-1-4704-2887-7, 2010 *Mathematics Subject Classification:* 55N33, 55P62, 57N80, **Individual member US$46.80**, List US$78, Institutional member US$62.40, Order code MEMO/254/1214



Diophantine Approximation and the Geometry of Limit Sets in Gromov Hyperbolic Metric Spaces

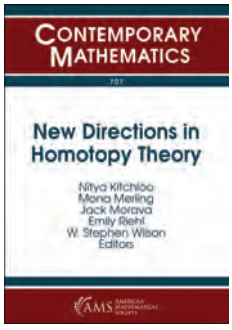
Lior Fishman, *University of North Texas, Denton, Texas*, **David Simmons**, *University of York, United Kingdom*, and **Mariusz Urbański**, *University of North Texas, Denton, Texas*

This item will also be of interest to those working in number theory.

Contents: Introduction; Gromov hyperbolic metric spaces; Basic facts about Diophantine approximation; Schmidt's game and McMullen's absolute game; Partition structures; Proof of Theorem 6.1 (Absolute winning of BA_ξ); Proof of Theorem 7.1 (Generalization of the Jarní–Besicovitch Theorem); Proof of Theorem 8.1 (Generalization of Khinchin's Theorem); Proof of Theorem 9.3 (BA_d has full dimension in $\Lambda_r(G)$); References.

Memoirs of the American Mathematical Society, Volume 254, Number 1215

June 2018, 137 pages, Softcover, ISBN: 978-1-4704-2886-0, 2010 *Mathematics Subject Classification:* 11J83, 20H10; 28A78, 37F35, **Individual member US$46.80**, List US$78, Institutional member US$62.40, Order code MEMO/254/1215



New Directions in Homotopy Theory

Nitya Kitchloo; **Mona Merling**, **Jack Morava**, **Emily Riehl**, and **W. Stephen Wilson**, *Johns Hopkins University, Baltimore, MD*, Editors

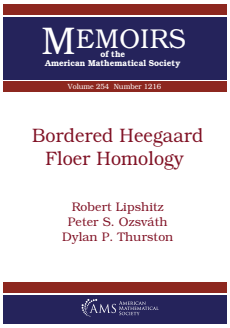
This volume contains the proceedings of the Second Mid-Atlantic Topology Conference, held from March 12–13, 2016, at Johns Hopkins University in Baltimore, Maryland.

The focus of the conference, and subsequent papers, was on applications of innovative methods from homotopy theory in category theory, algebraic geometry, and related areas, emphasizing the work of younger researchers in these fields.

Contents: **J. Heller** and **K. Ormsby**, The stable Galois correspondence for real closed fields; **J. L. Kass** and **K. Wickelgren**, An Étale realization which does NOT exist; **N. Kitchloo**, **V. Lorman**, and **W. S. Wilson**, Multiplicative structure on real Johnson-Wilson theory; **J. A. Lind** and **C. Malkiewich**, The Morita equivalence between parametrized spectra and module spectra; **C. McTague**, tmf is not a ring spectrum quotient of string bordism; **E. Peterson**, Cocycle schemes and $MU[2k, \infty)$-orientations; **K. Ponto** and **M. Shulman**, The linearity of fixed point invariants; **M. Szymik**, Homotopy coherent centers versus centers of homotopy categories; **G. Tabuada**, Recent developments on noncommutative motives; **I. Zakharevich**, The category of Waldhausen categories is a closed multicategory.

Contemporary Mathematics, Volume 707

June 2018, 194 pages, Softcover, ISBN: 978-1-4704-3774-9, LC 2017051421, 2010 *Mathematics Subject Classification:* 14Fxx, 18Dxx, 19Exx, 55Mxx, 55Nxx, 55Pxx, 55Rxx, **AMS members US$93.60**, List US$117, Order code CONM/707



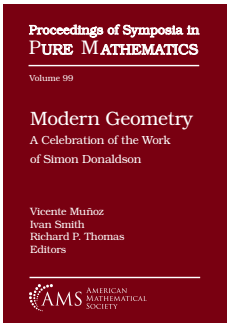
Bordered Heegaard Floer Homology

Robert Lipshitz, *University of Oregon, Eugene, Oregon*, **Peter S. Ozsváth**, *Princeton University, New Jersey*, and **Dylan P. Thurston**, *Indiana University, Bloomington, Indiana*

Contents: Introduction; $\mathcal{A}_\infty$ structures; The algebra associated to a pointed matched circle; Bordered Heegaard diagrams; Moduli spaces; Type D modules; Type A modules; Pairing theorem via nice diagrams; Pairing theorem via time dilation; Gradings; Bordered manifolds with torus boundary; Appendix A. Bimodules and change of framing; Index of definitions; Bibliography.

Memoirs of the American Mathematical Society, Volume 254, Number 1216

June 2018, 276 pages, Softcover, ISBN: 978-1-4704-2888-4, 2010 *Mathematics Subject Classification:* 57M25, 57R58, **Individual member US$46.80**, List US$78, Institutional member US$62.40, Order code MEMO/254/1216



Modern Geometry

A Celebration of the Work of Simon Donaldson

Vicente Muñoz, *Universidad Complutense de Madrid, Spain*, **Ivan Smith**, *University of Cambridge, United Kingdom*, and **Richard P. Thomas**, *Imperial College, London, United Kingdom*, Editors

This book contains a collection of survey articles of exciting new developments in geometry, written in tribute to Simon Donaldson to celebrate his 60th birthday. Reflecting the wide range of Donaldson's interests and influence, the papers range from algebraic geometry and topology through symplectic geometry and geometric analysis to mathematical physics. Their expository nature means the book acts as an invitation to the various topics described, while also giving a sense of the links between these different areas and the unity of modern geometry.

Contents: **G. Bèrczi**, **B. Doran**, and **F. Kirwan**, Graded linearisations; **A. Daemi** and **K. Fukaya**, Atiyah-Floer conjecture: A formulation, a strategy of proof and generalizations; **Y. Eliashberg**, Weinstein manifolds revisited; **N. Hitchin**, Remarks on Nahm's equations; **D. Joyce**, Conjectures on counting associative 3-folds in G_2-manifolds; **J. Li**, Toward an algebraic Donaldson-Floer theory; **H. Nakajima**, Introduction to a provisional mathematical definition of Coulomb branches of 3-dimesional $\mathcal{N} = 4$; **P. Ozsváth** and **Z. Szabó**, An overview of knot Floer homology; **R. Pandharipande**, Descendants for stable pairs on 3-folds; **J. Ross** and **D. Witt Nyström**, The Dirichlet problem for the complex homogeneous Monge-Ampère equation; **G. Székelyhidi**, Kähler-Einstein metrics; **A. Teleman**, Donaldson theory in non-Kählerian geometry; **E. Witten**, Two lectures on gauge theory and Khovanov homology.

Proceedings of Symposia in Pure Mathematics, Volume 99

July 2018, 416 pages, Hardcover, ISBN: 978-1-4704-4094-7, 2010 *Mathematics Subject Classification:* 32J25, 32L05, 53C07, 53C44, 53D35, 53D40, 53D50, 57R55, 57R57, 57R58, **AMS members US$106.40**, List US$133, Order code PSPUM/99

Math Education

Tactile Learning Activities in Mathematics

A Recipe Book for the Undergraduate Classroom

Julie Barnes, *Western Carolina University, Cullowhee, NC*, and **Jessica M. Libertini**, *Virginia Military Institute, Lexington, VA*, Editors

Q: What do feather boas, cookies, and paper shredders have in common?

A: They are all ingredients that have the potential to help your undergraduate students understand a variety of mathematical concepts. In this book, 43 faculty from a wide range of institutional settings share a total of 64 hands-on activities that allow students to physically engage with mathematical ideas ranging from the basics of precalculus to special topics appropriate for upper-level courses. Each learning activity is presented in an easy-to-read recipe format that includes a list of supplies; a narrative briefly describing the reasons, logistics, and helpful hints for running the activity; and a page that can be used as a handout in class. Purchase of the book also includes access to electronic printable versions of the handouts.

With so many activities, it might be hard to decide where to start. For that reason, there are four indices to help the reader navigate this book: a concept index, a course index, an author index, and a main ingredient index. In addition to providing activities for precalculus, calculus, commonly required mathematics courses for majors, and more specialized upper-level electives, there is also a section describing how to modify many of the activities to fit into a liberal arts mathematics class.

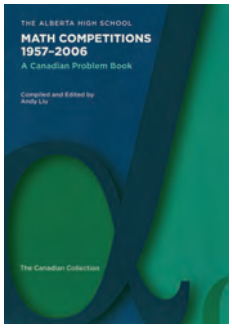
Whether you are new to using hands-on activities in class or are more experienced, the authors hope that this book will encourage and inspire you to explore the possibilities of using more hands-on activities in your classes.

Bon appétit!

Contents: *Appetizers (before calculus):* Precalculus; *Main courses (calculus):* Differential calculus; Integral calculus; Multivariable calculus; *Desserts (upper level courses):* Sophomore/junior courses; Junior/senior courses; Concept index; Author index; Main ingredient index; Course index.

Classroom Resource Materials, Volume 54

August 2018, approximately 314 pages, Hardcover, ISBN: 978-1-4704-4351-1, LC 2017057965, 2010 *Mathematics Subject Classification:* 97-01, 00-01, 26-01, 97-00, **AMS members US$36**, List US$45, Order code CLRM/54



The Alberta High School Math Competitions 1957–2006

A Canadian Problem Book

Andy Liu, Editor

Although there were some older contests in the Maritime region and in Lower and Upper Canada, the Alberta High School Mathematics Competition was the first and oldest in Canada to be run on a provincial scale. Started in 1957, the competition recently celebrated its fiftieth anniversary. These fifty years can be broken down to three periods, Ancient (1957–1966), Medieval (1967–1983) and Modern (1984–2006), with very distinctive flavors which reflect what was taught in the schools of the day. The first two periods are primarily of historical interest. During the Modern period, the talented problem committee was led by the world renowned problemist Murray Klamkin and composed many innovative and challenging problems.

In this book, you will find all the problems and answers for the first 50 years of the competition, up to 2005/2006, and full solutions are provided to those from the Modern period, often supplemented with multiple solutions or additional commentaries. Taken together, this unique collection of problems represent an interesting and valuable resource for students today preparing for these types of mathematics contests.

The Alberta High School Mathematics Competitions 1957–2006: A Canadian Problem Book is published by the American Mathematical Society (AMS) in collaboration with the Canadian Mathematical Society (CMS).

Problem Books, Volume 22

January 2008, 281 pages, Hardcover, ISBN: 978-0-88385-830-1, LC 2009933078, **Individual member US$30**, List US$40, Institutional member US$32, Order code PRB/22

Problems from Murray Klamkin

Andy Liu and **Bruce Shawyer**, Editors

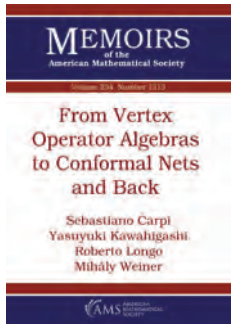
Murray Klamkin was a dedicated problem solver and problem proposer who left indelible marks on the problemist community. After working in industry and academe in the United States, he spent the last 30 of his 84 years in Canada. He was famous for his Quickies, problems that have quick and neat solutions. In this book, you will find all of the problems that he proposed for *Crux Mathematicorum*, including all of his Quickies. His problems covered a very wide range of topics and show a great deal of insight into what is possible in these areas. The problems are arranged into sets according to topic, and the lightly edited solutions are as published in *Crux Mathematicorum*.

This title is published by the American Mathematical Society (AMS) in collaboration with the Canadian Mathematical Society (CMS).

Problem Books, Volume 21

January 2009, 247 pages, Hardcover, ISBN: 978-0-88385-828-8, LC 2008939094, **Individual member US$48.75**, List US$65, Institutional member US$52, Order code PRB/21

Mathematical Physics



From Vertex Operator Algebras to Conformal Nets and Back

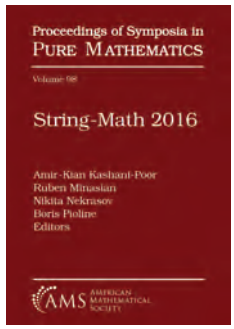
Sebastiano Carpi, *Università di Chieti-Pescara "G. d'Annunzio", Italy*, **Yasuyuki Kawahigashi**, *University of Tokyo, Japan*, **Roberto Longo**, *Università di Roma "Tor Vergata", Italy*, and **Mihály Weiner**, *Budapest University of Technology and Economics, Hungary*

This item will also be of interest to those working in algebra and algebraic geometry.

Contents: Introduction; Preliminaries on von Neumann algebras; Preliminaries on conformal nets; Preliminaries on vertex algebras; Unitary vertex operator algebras; Energy bounds and strongly local vertex operator algebras; Covariant subnets and unitary subalgebras; Criteria for strong locality and examples; Back to vertex operators; Appendix A. Vertex algebra locality and Wightman locality; Appendix B. On the Bisognano-Wichmann property for representations of the Möbius group; Bibliography.

Memoirs of the American Mathematical Society, Volume 254, Number 1213

June 2018, 85 pages, Softcover, ISBN: 978-1-4704-2858-7, 2010 *Mathematics Subject Classification:* 17B69, 46L60, 81T05, **Individual member US$46.80**, List US$78, Institutional member US$62.40, Order code MEMO/254/1213



String-Math 2016

Amir-Kian Kashani-Poor, *École Normale Supérieure, Paris, France*, **Ruben Minasian**, *Institut de Physique Théorique du CEA, Saclay, Gif-sur-Yvette, France*, **Nikita Nekrasov**, *Simons Center for Geometry and Physics, Stony Brook, NY*, and **Boris Pioline**, *Laboratoire de Physique Théorique et Hautes Energies, Paris, France*, Editors

This volume contains the proceedings of the conference String-Math 2016, which was held from June 27–July 2, 2016, at Collége de France, Paris, France.

String-Math is an annual conference covering the most significant progress at the interface of string theory and mathematics. The two fields have had a very fruitful dialogue over the last thirty years, with string theory contributing key ideas which have opened entirely new areas of mathematics and modern mathematics providing powerful concepts and tools to deal with the intricacies of string and quantum field theory.

The papers in this volume cover topics ranging from supersymmetric quantum field theories, topological strings, and conformal nets to moduli spaces of curves, representations, instantons, and harmonic maps, with applications to spectral theory and to the geometric Langlands program.

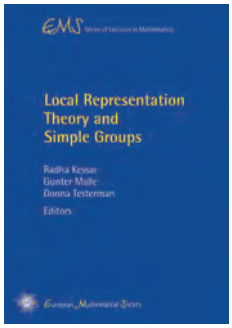
Contents: M. Bullimore, Three-dimensional $\mathcal{N} = 4$ gauge theories in omega background; **S. Cremonesi**, 3d supersymmetric gauge theories and Hilbert series; **R. Kodera** and **H. Nakajima**, Quantized Coulomb branches of Jordan quiver gauge theories and cyclotomic rational Cherednik algebras; **A. Balasubramanian** and **J. Teschner**, Supersymmetric field theories and geometric Langlands: The other side of the coin; **O. Dumitrescu**, A journey from the Hitchin section to the oper moduli; **D. Gaiotto**, S-duality of boundary conditions and the Geometric Langlands program; **P. Gavrylenko** and **O. Lisovyy**, Pure SU(2) gauge theory partition function and generalized Bessel kernel; **L. Katzarkov**, **P. Pandit**, and **C. Simpson**, Reduction for $SL(3)$ pre-buildings; **A. Henriques**, Conformal nets are factorization algebras; **A. Polishchuk**, Contracting the Weierstrass locus to a point; **M. Mariño**, Spectral theory and mirror symmetry.

Proceedings of Symposia in Pure Mathematics, Volume 98

June 2018, 294 pages, Hardcover, ISBN: 978-1-4704-3515-8, LC 2017052181, 2010 *Mathematics Subject Classification:* 14D24, 14H60, 14D21, 14J33, 58E20, 81T60, 81T30, **AMS members US$106.40**, List US$133, Order code PSPUM/98

New AMS-Distributed Publications

Algebra and Algebraic Geometry



Local Representation Theory and Simple Groups

Radha Kessar, *City University of London, United Kingdom*, **Gunter Malle**, *University of Kaiserslautern, Germany*, and **Donna Testerman**, *EPF Lausanne, Switzerland*

The book contains extended versions of seven short lecture courses given during a semester programme on Local Representation Theory and Simple Groups, held at the Centre Interfacultaire Bernoulli of the EPF Lausanne. These courses focused on modular representation theory of finite groups, modern Clifford theoretic methods, the representation theory of finite reductive groups, as well as on various applications of character theory and representation theory, for example, to base sizes and to random walks.

These lectures are intended to form a good starting point for graduate students and researchers who wish to familiarize themselves with the foundations of the topics covered here. Furthermore, they give an introduction to current research directions, including the state of some open problems in the field.

A publication of the European Mathematical Society (EMS). Distributed within the Americas by the American Mathematical Society.

EMS Series of Lectures in Mathematics, Volume 29

May 2018, 369 pages, Softcover, ISBN: 978-3-03719-185-9, 2010 *Mathematics Subject Classification:* 20Bxx, 20Cxx, 20Gxx, **AMS members US$46.40**, List US$58, Order code EMSSERLEC/29

Brackets in the Pontryagin Algebras of Manifolds

Gwénaël Massuyeau, *Université de Strasbourg and CNRS, Dijon, France*, and **Vladimir Turaev**, *Indiana University, Bloomington*

A fundamental geometric object derived from an arbitrary topological space M with a marked point $\star$ is the space of loops in M based at $\star$. The Pontryagin algebra A of $(M, \star)$ is the singular homology of this loop space with the graded algebra structure induced by the standard multiplication of loops. When M is a smooth oriented manifold with boundary and $\star$ is chosen on ∂M, the authors define an "intersection" operation $A \otimes A \to A \otimes A$.

The authors prove that this operation is a double bracket in the sense of Michel Van den Bergh satisfying a version of the Jacobi identity. The authors show that their double bracket induces Gerstenhaber brackets in the representation algebras of A. These results extend the authors' previous work on surfaces, where A is the group algebra of the fundamental group of a surface and the Gerstenhaber brackets in question are the usual Poisson brackets on the moduli spaces of representations of such a group.

The present work is inspired by the results of William Goldman on surfaces and by the ideas of string topology due to Moira Chas and Dennis Sullivan.

This item will also be of interest to those working in geometry and topology.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Mémoires de la Société Mathématique de France, Number 154

April 2018, 138 pages, Softcover, ISBN: 978-2-85629-876-3, 2010 *Mathematics Subject Classification:* 17B63, 55N33, 55P50, 57R19, **AMS members US$41.60**, List US$52, Order code SMFMEM/154

Analysis

Factorization of Non-Symmetric Operators and Exponential *H*-Theorem

M. P. Gualdani, *University of Texas at Austin, Texas*, **S. Mischler**, *Université Paris IX-Dauphine, France*, and **C. Mouhot**, *University of Cambridge, UK*

The authors present an abstract method for deriving decay estimates on the resolvents and semigroups of non-symmetric operators in Banach spaces in terms of estimates in another smaller reference Banach space. The core of the method is a high-order quantitative factorization argument on the resolvents and semigroups, and it makes use of a semigroup commutator condition of regularization.

The authors then apply this approach to the Fokker-Planck equation, to the kinetic Fokker-Planck equation in the torus, and to the linearized Boltzmann equation in the torus. Thanks to the latter results and to a non-symmetric energy method, the authors obtain the first constructive proof of exponential decay, with sharp rate, towards global equilibrium for the full non-linear Boltzmann equation for hard spheres, conditionally to some smoothness and (polynomial) moment estimates; this solves a conjecture about the optimal decay rate of the relative entropy in the *H*-theorem.

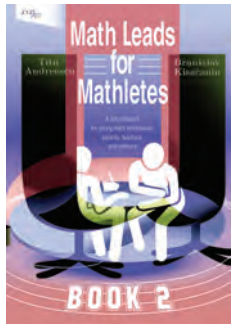
This item will also be of interest to those working in differential equations.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Mémoires de la Société Mathématique de France, Number 153

April 2018, 137 pages, Softcover, ISBN: 978-2-85629-874-9, 2010 *Mathematics Subject Classification:* 47D06, 34G10, 34K30, 35P15, 47H20, 37L05, 47J35, 54H15, 58D07, 35Q84, 76P05, 82B40, 82D05, **AMS members US$41.60**, List US$52, Order code SMFMEM/153

General Interest



Math Leads for Mathletes (Book 2)

A Rich Resource for Young Math Enthusiasts, Parents, Teachers, and Mentors

Titu Andreescu, *University of Texas at Dallas*, and **Branislav Kisačanin**, *NVIDIA Corporation and AwesomeMath*

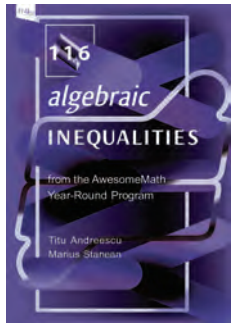
Math Leads for Mathletes (*Book 2*) is part of the Math Leads for Mathletes series, providing more challenging units for young math problem solvers and many others! The book draws on the authors' experience working with young mathletes and on the collective wisdom of mathematics educators around the world to help parents and mentors challenge and teach their aspiring math problem solvers. The topics contained in this book are best suited for middle schoolers, although students who discovered competitive mathematics in later grades will also benefit from the material. This book will help students advance in several directions important in competitive mathematics: algebra, combinatorics, geometry, and number theory. It presents a variety of problem solving strategies and challenges readers to explain their solutions, write proofs, and explore connections with other problems.

This item will also be of interest to those working in math education.

A publication of XYZ Press. Distributed in North America by the American Mathematical Society.

XYZ Series, Volume 30

April 2018, 230 pages, Hardcover, ISBN: 978-0-9968745-5-7, 2010 *Mathematics Subject Classification:* 00A05, 00A07, 97U40, 97D50, **AMS members US$43.96**, List US$54.95, Order code XYZ/30



116 Algebraic Inequalities from the AwesomeMath Year-Round Program

Titu Andreescu, *University of Texas at Dallas*, and **Marius Stanean**, *Science Consultant with INDECO Software*

This book would certainly help Olympiad students who wish to prepare for the study of inequalities, a topic now of frequent use at various competitive levels. The inequalities from each section are ordered increasingly by the number of variables: one, two, three, four, and multivariables. Each problem has at least one complete solution and many problems have multiple solutions, useful in developing the necessary array of mathematical machinery for competitions.

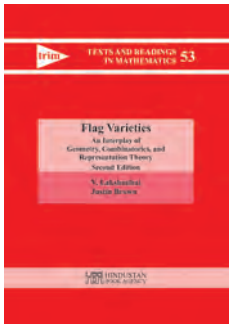
This item will also be of interest to those working in math education.

A publication of XYZ Press. Distributed in North America by the American Mathematical Society.

XYZ Series, Volume 29

April 2018, 216 pages, Hardcover, ISBN: 978-0-9968745-8-8, 2010 *Mathematics Subject Classification:* 00A05, 00A07, 97U40, 97D50, **AMS members US$39.96**, List US$49.95, Order code XYZ/29

Geometry and Topology



Flag Varieties: An Interplay of Geometry, Combinatorics, and Representation Theory

Second Edition

V. Lakshmibai, *Northeastern University, Boston, MA*, and **Justin Brown**, *Northeastern University, Boston, MA*

Flag varieties are important geometric objects. Because of their richness in geometry, combinatorics, and representation theory, flag varieties may be described as an interplay of all three of these fields.

This book gives a detailed account of this interplay. In the area of representation theory, the book presents a discussion on the representation theory of complex semisimple Lie algebras as well as the representation theory of semisimple algebraic groups; in addition, the representation theory of symmetric groups is also discussed. In the area of algebraic geometry, the book gives a detailed account of the Grassmannian varieties, flag varieties, and their Schubert subvarieties. Because of the root system connections, many of the geometric results admit elegant combinatorial description, a typical example being the description of the singular locus of a Schubert variety. This discussion is carried out as a consequence of standard monomial theory (abbreviated SMT). Thus, the book includes SMT and some important applications—singular loci of Schubert varieties, toric degenerations of Schubert varieties, and the relationship between Schubert varieties and classical invariant theory.

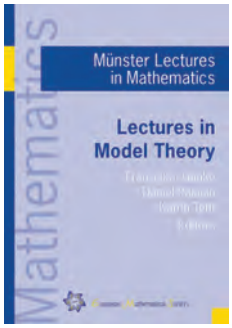
In the second edition, two recent results on Schubert varieties in the Grassmannian have been added. The first result gives a free resolution of certain Schubert singularities. The second result is about certain Levi subgroup actions on Schubert varieties in the Grassmannian and derives some interesting geometric and representation-theoretic consequences.

A publication of Hindustan Book Agency; distributed within the Americas by the American Mathematical Society. Maximum discount of 20% for all commercial channels.

Hindustan Book Agency

May 2018, 325 pages, Hardcover, ISBN: 978-93-86279-70-5, 2010 *Mathematics Subject Classification:* 14M15, **AMS members US$52**, List US$65, Order code HIN/76

Logic and Foundations



Lectures in Model Theory

Franziska Jahnke, *University of Münster, Germany*, **Daniel Palacín**, *Hebrew University of Jerusalem, Israel*, and **Katrin Tent**, *University of Münster, Germany*, Editors

Model theory is a thriving branch of mathematical logic with strong connections to other fields of mathematics. Its versatility has recently led to spectacular applications in areas ranging from diophantine geometry, algebraic number theory and group theory to combinatorics.

This volume presents lecture notes from a spring school in model theory which took place in Münster, Germany. The notes are aimed at Ph.D. students but should also be accessible to undergraduates with some basic knowledge in model theory. They contain the core of stability theory (Bays, Palacín), two chapters connecting generalized stability theory with group theory (Clausen and Tent, Simon), as well as introductions to the model theory of valued fields (Hils, Jahnke) and motivic integration (Halupczok).

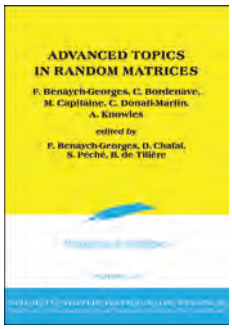
This item will also be of interest to those working in discrete mathematics and combinatorics.

A publication of the European Mathematical Society (EMS). Distributed within the Americas by the American Mathematical Society.

EMS Münster Lectures in Mathematics, Volume 2

May 2018, 222 pages, Softcover, ISBN: 978-3-03719-184-2, 2010 *Mathematics Subject Classification:* 03C45, 03C60, 03C98; 05E15, 12J20, 12L12, 14E18, 20E18, **AMS members US$38.40**, List US$48, Order code EMSMLM/2

Probability and Statistics



Advanced Topics in Random Matrices

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This book provides three accessible panoramas and syntheses on advanced topics in random matrix theory: (1) local semicircle law for Wigner matrices and applications to eigenvectors delocalization, rigidity of eigenvalues, and fourth moment theorem; (2) spectrum of random graphs, recent advances on eigenvalues and eigenvectors, and open problems; and (3) deformed random matrices and free probability, unified understanding of various asymptotic phenomena, such as spectral measure description, localization and fluctuations of extremal eigenvalues, and eigenvectors behavior.

This item will also be of interest to those working in discrete mathematics and combinatorics.

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