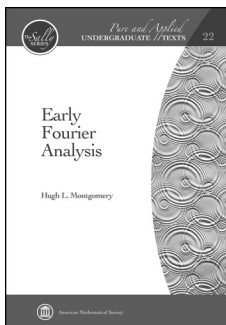# New Publications Offered by the AMS

To subscribe to email notification of new AMS publications, please go to www.ams.org/bookstore-email.

Analysis

Early Fourier Analysis

Hugh L. Montgomery, *University of Michigan, Ann Arbor, MI*

Hugh Montgomery has written a book which both students and faculty should appreciate. I wish it had been written 15 years ago so I could have shared it with students. It is a gem.

–Richard Askey, University of Wisconsin-Madison

Montgomery has written an exquisite text combining basic material, exciting examples, advanced topics, wonderful historical notes, and excellent exercises. It is absolutely compelling and masterful!

—*John Benedetto, University of Maryland*

This nice book is likely to be especially successful. l feel that the author has managed admirably to bring to light both the beauty and the usefulness of Fourier's idea, thus making the first introduction to Fourier analysis a joy for undergraduates. All the details are included in a way that is both attractive and easy for students to follow.

—*Palle Jorgensen, University of Iowa, author of "Wavelets Through a Looking Glass"*

Fourier Analysis is an important area of mathematics, especially in light of its importance in physics, chemistry, and engineering. Yet it seems that this subject is rarely offered to undergraduates. This book introduces Fourier Analysis in its three most classical settings: The Discrete Fourier Transform for periodic sequences, Fourier Series for periodic functions, and the Fourier transform for functions on the real line.

The presentation is accessible for students with just three or four terms of calculus, but the book is also intended to be suitable for a junior-senior course, for a capstone undergraduate course, or for beginning graduate students. Material needed from real analysis is quoted without proof, and issues of Lebesgue measure theory are treated rather informally. Included are a number of applications of Fourier Series, and Fourier Analysis in higher dimensions is briefly sketched. A student may eventually want to move on to Fourier Analysis discussed in a more advanced way, either by way of more general orthogonal systems, or in the language of Banach spaces, or of locally compact commutative groups, but the experience of the classical setting provides a mental image of what is going on in an abstract setting.

Contents: Background; Complex numbers; The discrete Fourier transform; Fourier coefficients and first Fourier series; Summability of Fourier series; Fourier series in mean square; Trigonometric polynomials; Absolutely convergent Fourier series; Convergence of Fourier series; Applications of Fourier series; The Fourier transform; Higher dimensions; Appendix B. The binomial theorem; Appendix C. Chebyshev polynomials; Appendix F. Applications of the fundamental theorem of algebra; Appendix I. Inequalities; Appendix L. Topics in linear algebra; Appendix O. Orders of magnitude; Appendix T. Trigonometry; References; Notation; Index.

Pure and Applied Undergraduate Texts, Volume 22

January 2015, 388 pages, Hardcover, ISBN: 978-1-4704-1560-0, LC 2014035196, 2010 *Mathematics Subject Classification:* 42-01, **AMS members US$61.60**, List US$77, Order code AMSTEXT/22

Applications
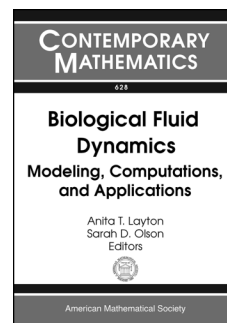
Biological Fluid Dynamics: Modeling, Computations, and Applications

Anita T. Layton, *Duke University, Durham, NC,* and **Sarah D. Olson**, *Worcester Polytechnic Institute, MA,* Editors

This volume contains the Proceedings of the AMS Special Session on Biological Fluid Dynamics: Modeling, Computations, and Applications, held on October 13, 2012, at Tulane University, New Orleans, Louisiana.

In recent years, there has been increasing interest in the development and application of advanced computational techniques for simulating fluid motion driven by immersed flexible structures. That interest is motivated, in large part, by the multitude of applications in physiology and biology. In some biological systems, fluid motion is driven by active biological tissues, which are typically constructed of fibers that are surrounded by fluid. Not only do the fibers hold the tissues together, they also transmit forces that ultimately result in

fluid motion. In other examples, the fluid may flow through conduits such as blood vessels or airways that are flexible or active. That is, those conduits may react to and affect the fluid dynamics.

This volume responds to the widespread interest among mathematicians, biologists, and engineers in fluid-structure interactions problems. Included are expository and review articles in biological fluid dynamics. Applications that are considered include ciliary motion, upside-down jellyfish, biological feedback in the kidney, peristalsis and dynamic suction pumping, and platelet cohesion and adhesion.

Contents: S. D. Olson and A. T. Layton, Simulating biofluid-structure interactions with an immersed boundary framework—A review; L. T. Zhang, C. Wang, and X. Wang, The development and advances of the immersed finite element method; K. J. Karpman, Simulating mucociliary transport using the method of regularized Stokeslets; K. Leiderman, E. L. Bouzarth, and H.-N. Nguyen, A regularization method for the numerical solution of doubly-periodic Stokes flow; Y.-N. Young, Dynamics of a primary cilium in time-periodic flows; S. D. Olson, Motion of filaments with planar and helical bending waves in a viscous fluid; A. Baird, T. King, and L. A. Miller, Numerical study of scaling effects in peristalsis and dynamic suction pumping; T. Skorczewski, B. Griffith, and A. L. Fogelson, Multi-bond models for platelet adhesion and cohesion; C. L. Hamlet and L. A. Miller, Effects of grouping behavior, pulse timing, and organism size on fluid flow around the upside-down jellyfish, *Cassiopea xamachana*; A. T. Layton, Impacts of facilitated urea transporters on the urine-concentrating mechanism in the rat kidney; H. Ryu and A. Layton, Feedback-mediated dynamics in a model of coupled nephrons with compliant short loop of Henle.

Contemporary Mathematics, Volume 628

November 2014, 240 pages, Softcover, ISBN: 978-0-8218-9850-5, LC 2014011913, 2010 *Mathematics Subject Classification:* 76M25, 76Z05, 74F10, 35Q92, 92C35, 92B05, 92C05, 92C10, 62P10, **AMS members US\$72.80**, List US\$91, Order code CONM/628

Differential Equations
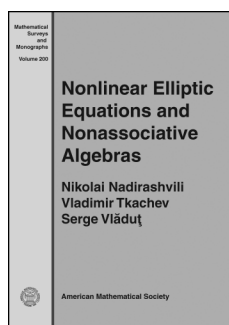
Nonlinear Elliptic Equations and Nonassociative Algebras

Nikolai Nadirashvili, *Aix-Marseille University, France*, **Vladimir Tkachev**, *Linköping University, Sweden*, and **Serge Vlăduţ**, *Aix-Marseille University, France*

This book presents applications of noncommutative and nonassociative algebras to constructing unusual (nonclassical and singular) solutions to fully nonlinear elliptic partial differential equations of second order. The methods described in the book are used to solve a longstanding problem of the existence of truly weak, nonsmooth viscosity solutions. Moreover, the authors provide an almost complete description of homogeneous solutions to fully nonlinear elliptic equations. It is shown that even in the very restricted setting of "Hessian equations", depending only on the eigenvalues

of the Hessian, these equations admit homogeneous solutions of all orders compatible with known regularity for viscosity solutions provided the space dimension is five or larger. To the contrary, in dimension four or less the situation is completely different, and our results suggest strongly that there are no nonclassical homogeneous solutions at all in dimensions three and four.

Thus this book gives a complete list of dimensions where nonclassical homogeneous solutions to fully nonlinear uniformly elliptic equations do exist; this should be compared with the situation of, say, ten years ago when the very existence of nonclassical viscosity solutions was not known.

Contents: Nonlinear elliptic equations; Division algebras, exceptional Lie groups, and calibrations; Jordon algebras and the Cartan isoparametric cubics; Solutions from trialities; Solutions from isoparametric forms; Cubic minimal cones; Singular solutions in calibrated geometries; Bibliography; Notation; Index.

Mathematical Surveys and Monographs, Volume 200

January 2015, 240 pages, Hardcover, ISBN: 978-1-4704-1710-9, LC 2014028806, 2010 *Mathematics Subject Classification:* 17Cxx, 17Dxx, 35J60; 16H05, 17A35, 49Q05, 53C38, **AMS members US\$72**, List US\$90, Order code SURV/200

General Interest
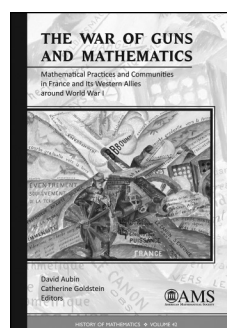
The War of Guns and Mathematics

Mathematical Practices and Communities in France and Its Western Allies around World War I

David Aubin, *Sorbonne Universités, Université Pierre et Marie Curie, Institut de mathématiques de Jussieu-Paris Rive Gauche, France*, and **Catherine Goldstein**, *CNRS, Institut de mathématiques de Jussieu-Paris Rive Gauche, France*, Editors

For a long time, World War I has been shortchanged by the historiography of science. Until recently, World War II was usually considered as the defining event for the formation of the modern relationship between science and society. In this context, the effects of the First World War, by contrast, were often limited to the massive deaths of promising young scientists.

By focusing on a few key places (Paris, Cambridge, Rome, Chicago, and others), the present book gathers studies representing a broad spectrum of positions adopted by mathematicians about the conflict, from militant pacifism to military, scientific, or ideological mobilization. The use of mathematics for war is thoroughly examined.

This book suggests a new vision of the long-term influence of World War I on mathematics and mathematicians. Continuities and discontinuities in the structure and organization of the mathematical sciences are discussed, as well as their images in various milieux. Topics of research and the values with which they were defended

are scrutinized. This book, in particular, proposes a more in-depth evaluation of the issue of modernity and modernization in mathematics.

The issue of scientific international relations after the war is revisited by a close look at the situation in a few Allied countries (France, Britain, Italy, and the USA). The historiography has emphasized the place of Germany as the leading mathematical country before WWI and the absurdity of its postwar ostracism by the Allies. The studies presented here help explain how dramatically different prewar situations, prolonged interaction during the war, and new international postwar organizations led to attempts at redrafting models for mathematical developments.

Contents: D. Aubin and **C. Goldstein**, Placing World War I in the history of mathematics; *Starting Up:* **J. Barrow-Green**, Cambridge mathematicians' responses to the First World War; **D. Aubin**, **H. Gispert**, and **C. Goldstein**, The total war of Paris mathematicians; *Joining In:* **P. Nastasi** and **R. Tazzioli**, Italian mathematicians and the First World War: Intellectual debates and institutional innovations; **T. Archibald**, **D. Dumbaugh**, and **D. Kent**, A mobilized community: Mathematicians in the United States during the First World War; *Moving On:* **J.-L. Chabert** and **C. Gilain**, Debating the place of mathematics at the École polytechnique around World War I; **D. Aubin**, "I'm just a mathematician": Why and how mathematicians collaborated with military ballisticians at Gâvre; *Crossing Through:* **L. Rollet** and **P. Nabonnand**, Why aerodynamics failed to take off in Nancy: An unexpected casualty of World War I; Index.

History of Mathematics, Volume 42

October 2014, 391 pages, Hardcover, ISBN: 978-1-4704-1469-6, LC 2014012563, 2010 *Mathematics Subject Classification:* 01-02, 01A60, 65-03, 70-03, 97-03, **AMS members US$100.80**, List US$126, Order code HMATH/42
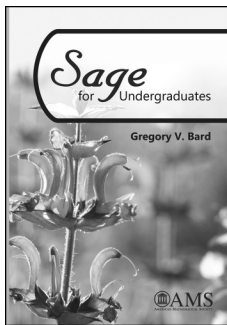
Sage for Undergraduates

Gregory V. Bard, *University of Wisconsin–Stout, Menomonie, WI*

Professor Bard has provided a valuable service by carefully explaining everything an undergraduate student of mathematics, or a teacher of these topics, needs to get started with Sage quickly and easily. It will also be useful for any student or teacher of another STEM discipline. There is an excellent mix of the most frequently used commands, along with warnings about common pitfalls or caveats. I highly recommend it for anyone new to Sage, or who desires an overview of the system's impressive capabilities.

—*Robert A. Beezer, University of Puget Sound*

This book is a sort of "Missing Manual" that explains how Sage can be used in a range of standard mathematics courses, instead of targeting specialists like much existing Sage documentation. The depth of content is very impressive, and describes—in a single coherent narrative—how to successfully use Sage for a wide swath of undergraduate applied topics.

—*William Stein, University of Washington, Seattle*

As the open-source and free competitor to expensive software like Maple™, Mathematica®, Magma, and MATLAB®, Sage offers anyone with access to a web browser the ability to use cutting-edge mathematical software and display his or her results for others, often with stunning graphics. This book is a gentle introduction to Sage for

undergraduate students toward the end of Calculus II (single-variable integral calculus) or higher-level course work such as Multivariate Calculus, Differential Equations, Linear Algebra, or Math Modeling.

The book assumes no background in computer science, but the reader who finishes the book will have learned about half of a first semester Computer Science I course, including large parts of the Python programming language. The audience of the book is not only math majors, but also physics, engineering, finance, statistics, chemistry, and computer science majors.

This item will also be of interest to those working in number theory, analysis, and applications.

Contents: Welcome to Sage!; Fun projects using Sage; Advanced plotting techniques; Advanced features of Sage; Programming in Sage and Python; Building interactive webpages with Sage; What to do when frustrated!; Transitioning to SageMathCloud; Other resources for Sage; Linear systems with infinitely many solutions; Installing Sage on your personal computer; Index of commands by name and by section.

February 2015, approximately 362 pages, Softcover, ISBN: 978-1-4704-1111-4, 2010 *Mathematics Subject Classification:* 15-04, 34-04, 65-04, 90-04, 97M10; 11-04, 12-04, 28-04, 40-04, 68U05, **All Individuals US$21.75**, List US$29, Institutional member US$23.20, Order code MBK/87
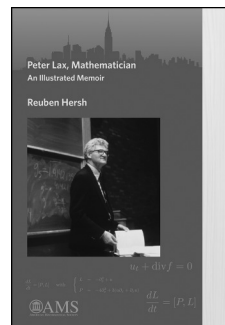
Peter Lax, Mathematician

An Illustrated Memoir

Reuben Hersh, *University of New Mexico, Albuquerque, NM*

This book is a biography of one of the most famous and influential living mathematicians, Peter Lax. He is virtually unique as a preeminent leader in both pure and applied mathematics, fields which are often seen as competing and incompatible. Although he has been an academic for all of his adult life, his biography is not without drama and tragedy. Lax and his family barely escaped to the U.S. from Budapest before the Holocaust descended. He was one of the youngest scientists to work on the Manhattan Project. He played a leading role in coping with the infamous "kidnapping" of the NYU mathematics department's computer, in 1970.

The list of topics in which Lax made fundamental and long-lasting contributions is remarkable: scattering theory, solitons, shock waves, and even classical analysis, to name a few. His work has been honored many times, including the Abel Prize in 2005. The book concludes with an account of his most important mathematical contributions, made accessible without heavy prerequisites.

Reuben Hersh has written extensively on mathematics. His book with Philip Davis, *The Mathematical Experience*, won the National Book Award in science. Hersh is emeritus professor of mathematics at the University of New Mexico.

Contents: A prodigy and his family have a narrow escape; Manhattan, NY, and Manhattan Project. An army private among the "Martians"; Photo section; Family life: Son, husband, father, grandfather; Early career; The famous CDC 6600 bomb-scare adventure; Later career; The queen of Norway; Books; Pure AND applied, not VERSUS applied; Difference schemes. Shocks. Solitons. Scattering. Lax-Milgram. Polya's curve. Etc.; Epilogue; Anneli Lax; John von Neumann: The early years, the years at Los Alamos, and the road to computing; The life of

Richard Courant; Curriculum vitae; The closed graph theorem; List of doctoral students (from the Mathematics Genealogy Project); *John Lax:* Introduction to John Lax; From *A Liberal Education*, by Abbott Gleason, pages 314–317, on John Lax; John Lax article on Chicago jazz musicians; Notes; References; Index.

February 2015, approximately 275 pages, Softcover, ISBN: 978-1-4704-1708-6, 2010 *Mathematics Subject Classification:* 01A60, 01A70, 01A72, 35A21, 35L05, 35L40, 76L05, 65M06, 35C08, 35Q53, **AMS members US$28**, List US$35, Order code MBK/88

Number Theory
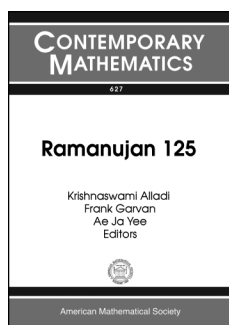
Ramanujan 125

Krishnaswami Alladi and **Frank Garvan**, *University of Florida, Gainesville, FL*, and **Ae Ja Yee**, *Pennsylvania State University, University Park, PA*, Editors

This volume contains the proceedings of an international conference to commemorate the 125th anniversary of Ramanujan's birth, held from November 5–7, 2012, at the University of Florida, Gainesville, Florida.

Srinivasa Ramanujan was India's most famous mathematician. This volume contains research and survey papers describing recent and current developments in the areas of mathematics influenced by Ramanujan. The topics covered include modular forms, mock theta functions and harmonic Maass forms, continued fractions, partition inequalities, q-series, representations of affine Lie algebras and partition identities, highly composite numbers, analytic number theory and quadratic forms.

Contents: **S. Ahlgren** and **N. Andersen**, Hecke grids and congruences for weakly holomorphic modular forms; **G. E. Andrews**, Knots and q-series; **A. Berkovich** and **K. Grizzell**, A partition inequality involving products of two q-Pochhammer symbols; **B. C. Berndt**, **S. Kim**, and **A. Zaharescu**, Analogues of Koshliakov's formula; **G. Bhatnagar**, How to prove Ramanujan's q-continued fractions; **H. M. Farkas**, **J. Y. Kaminski**, and **E. Yakubov**, A nonsingular Z_3 curve of genus 4; **A. Folsom**, **K. Ono**, and **R. C. Rhoades**, Ramanujan's radial limits; **M. D. Hirschhorn**, An identity that may have changed the course of history; **C. Krattenthaler** and **M. J. Schlosser**, The major index generating function of standard Young tableaux of shapes of the form "staircase minus rectangle"; **L. Lorentzen**, Convergence of random continued fractions; **K. C. Misra** and **E. A. Wilson**, Tensor product decomposition of $\widehat{sl}(n)$ modules and identities; **J.-L. Nicolas** and **J. Sondow**, Ramanujan, Robin, highly composite numbers, and the Riemann hypothesis; **C.-T. Perng**, A quaternionic proof of the representation formulas of two quaternary quadratic forms.

Contemporary Mathematics, Volume 627

October 2014, 174 pages, Softcover, ISBN: 978-1-4704-1078-0, LC 2014010726, 2010 *Mathematics Subject Classification:* 05A19, 11A25, 11E25, 11F33, 11F37, 11P84, 14K25, 17B67, 30B70, 33D15, **AMS members US$62.40**, List US$78, Order code CONM/627
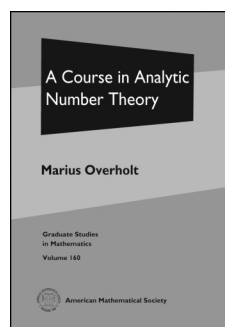
A Course in Analytic Number Theory

Marius Overholt, *University of Tromso, Norway*

This book is an introduction to analytic number theory suitable for beginning graduate students. It covers everything one expects in a first course in this field, such as growth of arithmetic functions, existence of primes in arithmetic progressions, and the Prime Number Theorem. But it also covers more challenging topics that might be used in a second course, such as the Siegel-Walfisz theorem, functional equations of L-functions, and the explicit formula of von Mangoldt. For students with an interest in Diophantine analysis, there is a chapter on the Circle Method and Waring's Problem. Those with an interest in algebraic number theory may find the chapter on the analytic theory of number fields of interest, with proofs of the Dirichlet unit theorem, the analytic class number formula, the functional equation of the Dedekind zeta function, and the Prime Ideal Theorem.

The exposition is both clear and precise, reflecting careful attention to the needs of the reader. The text includes extensive historical notes, which occur at the ends of the chapters. The exercises range from introductory problems and standard problems in analytic number theory to interesting original problems that will challenge the reader.

The author has made an effort to provide clear explanations for the techniques of analysis used. No background in analysis beyond rigorous calculus and a first course in complex function theory is assumed.

Contents: Arithmetic functions; Topics on arithmetic functions; Characters and Euler products; The circle method; The method of contour integrals; The prime number theorem; The Siegel-Walfisz theorem; Mainly analysis; Euler products and number fields; Explicit formulas; Supplementary exercises; Bibliography; List of notations; Index.

Graduate Studies in Mathematics, Volume 160

January 2015, 371 pages, Hardcover, ISBN: 978-1-4704-1706-2, LC 2014030882, 2010 *Mathematics Subject Classification:* 11-01, 11A25, 11Mxx, 11N05, 11N13, 11P55, 11R42, 11R44, **AMS members US$63.20**, List US$79, Order code GSM/160
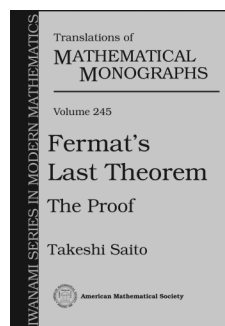
Fermat's Last Theorem

The Proof

Takeshi Saito, *University of Tokyo, Japan*

This is the second volume of the book on the proof of Fermat's Last Theorem by Wiles and Taylor (the first volume is published in the same series; see MMONO/243). Here the detail of the proof announced in the first volume is fully exposed. The book also includes basic materials and constructions in number theory and arithmetic geometry that are used in the proof.

In the first volume the modularity lifting theorem on Galois representations has been reduced to properties of the deformation rings and the Hecke modules. The Hecke modules and the Selmer

groups used to study deformation rings are constructed, and the required properties are established to complete the proof.

The reader can learn basics on the integral models of modular curves and their reductions modulo p that lay the foundation of the construction of the Galois representations associated with modular forms. More background materials, including Galois cohomology, curves over integer rings, the Néron models of their Jacobians, etc., are also explained in the text and in the appendices.

Contents: Modular curves over **Z**; Modular forms and Galois representations; Hecke modules; Selmer groups; Curves over discrete valuation rings; Finite commutative group scheme over $\mathbf{Z}_p$; Jacobian of a curve and its Néron model; Bibliography; Symbol index; Subject index.

Translations of Mathematical Monographs (*Iwanami Series in Modern Mathematics*), Volume 245

January 2015, approximately 234 pages, Softcover, ISBN: 978-0-8218-9849-9, LC 2013023932, 2010 *Mathematics Subject Classification:* 11D41; 11F11, 11F80, 11G05, 11G18, **AMS members US$43.20**, List US$54, Order code MMONO/245

New AMS-Distributed Publications

Algebra and Algebraic Geometry
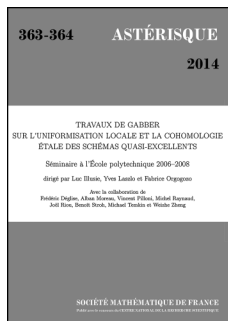
Travaux de Gabber sur L'uniformisation Locale et la Cohomologie Étale des Schémas Quasi-Excellents

Luc Illusie, *Université Paris-Sud, Orsay, France*, **Yves Laszlo**, *École Normale Supérieure, Paris, France*, and **Fabrice Orgogozo**, *École Polytechnique, Palaiseau, France*, Editors

with the collaboration of F. Déglise, A. Morau, V. Pilloni, M. Raynaud, J. Riou, B. Stroh, M. Temkin, and W. Zheng

A note to readers: This book is in French.

The work of Ofer Gabber presented in this book can be roughly divided into two closely related parts: a geometric one and a cohomological one. The first part contains local uniformization theorems which state that any pair consisting of a quasi-excellent noetherian scheme and a nowhere dense closed subscheme becomes isomorphic, after localization by suitable étale morphisms and alterations, to a pair consisting of a regular scheme and a normal crossings divisor. These

are local results, but their proofs have global theorems as corollaries, refining alteration theorems of de Jong for schemes of finite type over a field or a Dedekind ring. Techniques from logarithmic geometry and, concerning the finest results, canonical desingularization in characteristic zero, play a key role in the proofs.

In the second part, the book gives applications, with examples and counterexamples, to abelian finiteness theorems, as well as theorems on cohomological dimension and duality in étale cohomology over quasi-excellent schemes. In particular, Grothendieck's local duality conjecture is proved, and his absolute cohomological purity conjecture is proved by a new method. Non-abelian rigidity and finiteness results are also established in the final exposés.

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

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.

For the table of contents, go to `www.ams.org/bookstore`.

Astérisque, Number 363, Number 364

October 2014, 619 pages, Softcover, ISBN 978-2-85629-790-2, 2010 *Mathematics Subject Classification:* 12F15, 12G05, 12G10, 12L10, 13B02, 13B40, 13F40, 13H05, 13J10, 14B05, 14E15, 14F17, 14F20, 14L30, 18F10, 20M32, **AMS members US$168**, List US$210, Order code AST/363/364

Analysis
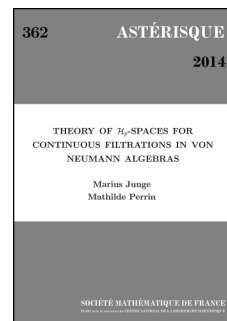
Theory of $\mathcal{H}_p$-Spaces for Continuous Filtrations in von Neumann Algebras

Marius Junge, *University of Illinois at Urbana-Champaign*, and **Mathilde Perrin**, *Consejo Superior de Investigaciones Científicas, Madrid, Spain*

The authors introduce Hardy spaces for martingales with respect to continuous filtration for von Neumann algebras. In particular they prove the analogues of the Burkholder-Gundy and Burkholder-Rosenthal inequalities in this setting. The usual arguments using stopping times in the commutative case are replaced by tools from noncommutative function theory and allow the authors to obtain the analogue of the Feffermann-Stein duality and prove a noncommutative Davis decomposition.

This item will also be of interest to those working in probability and statistics.

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.

Contents: Introduction; Preliminaries; The $\mathcal{H}_p^c$-spaces; Burkholder-Gundy inequalities; The h_p^c-spaces; Davis and Burkholder-Rosenthal inequalities; Appendix; Bibliography.

Astérisque, Number 362

October 2014, 134 pages, Softcover, ISBN: 978-2-85629-789-6, 2010 *Mathematics Subject Classification:* 46L53, 46L52; 46L51, 60G44, **AMS members US$28.80**, List US$36, Order code AST/362
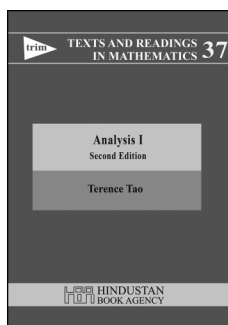
Analysis I
Third Edition

Terence Tao, *University of California, Los Angeles*

From a review of the first edition:

…it would be an error not to stick very close to the text—it's very well crafted indeed and deviating from the score would mean an unacceptable dissonance.

I hope to use Analysis I, II *in an honors course myself, when the opportunity arises.*

– *Michael Berg, for MAA Reviews*

This is part one of a two-volume introduction to real analysis and is intended for honours undergraduates who have already been exposed to calculus. The emphasis is on rigour and on foundations. The material starts at the very beginning—the construction of the number systems and set theory—then goes on to the basics of analysis (limits, series, continuity, differentiation, Riemann integration), through to power series, several variable calculus and Fourier analysis, and finally to the Lebesgue integral. These are almost entirely set in the concrete setting of the real line and Euclidean spaces, although there is some material on abstract metric and topological spaces. There are also appendices on mathematical logic and the decimal system. The entire text (omitting some less central topics) can be taught in two quarters of twenty-five to thirty lectures each.

The course material is deeply intertwined with the exercises, as it is intended that the student actively learn the material (and practice thinking and writing rigorously) by proving several of the key results in the theory.
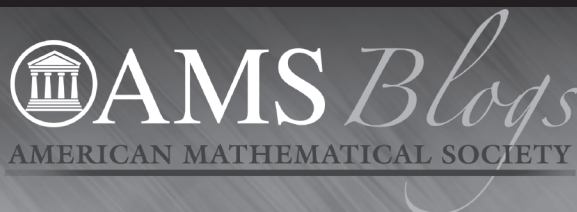
In the third edition, several typos and other errors have been corrected and a few new exercises have been added.

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

Contents: *Volume 1:* Introduction; Starting at the beginning: The natural numbers; Set theory; Integers and rationals; The real numbers; Limits of sequences; Series; Infinite sets; Continuous functions on **R**; Differentiation of functions; The Riemann integral; Appendix A: The basics of mathematical logic; Appendix B: The decimal system.

Hindustan Book Agency

October 2014, 368 pages, Hardcover, ISBN: 978-93-80250-64-9, 2010 *Mathematics Subject Classification:* 26A03, 26A42, 26B05, 26B10, **AMS members US$40**, List US$50, Order code HIN/66
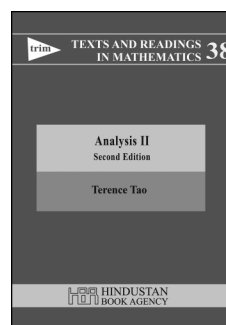
Analysis II
Third Edition

Terence Tao, *University of California, Los Angeles*

This is part two of a two-volume introduction to real analysis and is intended for honours undergraduates who have already been exposed to calculus. The emphasis is on rigour and on foundations. The material starts at the very beginning—the construction of the number systems and set theory—then goes on to the basics of analysis (limits, series, continuity, differentiation, Riemann integration), through to power series, several variable calculus and Fourier analysis, and finally to the Lebesgue integral. These are almost entirely set in the concrete setting of the real line and Euclidean spaces, although there is some material on abstract metric and topological spaces. There are also appendices on mathematical logic and the decimal system. The entire text (omitting some less central topics) can be taught in two quarters of twenty-five to thirty lectures each.

The course material is deeply intertwined with the exercises, as it is intended that the student actively learn the material (and practice thinking and writing rigorously) by proving several of the key results in the theory.

In the third edition, several typos and other errors have been corrected and a few new exercises have been added.

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

Contents: *Volume 2:* Metric spaces; Continuous functions on metric spaces; Uniform convergence; Power series; Fourier series; Several variable differential calculus; Lebesgue measure; Lebesgue integration.

Hindustan Book Agency

October 2014, 236 pages, Hardcover, ISBN: 978-93-80250-65-6, 2010 *Mathematics Subject Classification:* 26A03, 26A42, 26B05, 26B10, **AMS members US$32**, List US$40, Order code HIN/67

Geometry and Topology

Abstract Analogues of Flux as Symplectic Invariants

Paul Seidel, *Massachusetts Institute of Technology, Cambridge, MA*

The author studies families of objects in Fukaya categories, specifically ones whose deformation behaviour is prescribed by the choice of an odd degree cohomology class. This leads to invariants of symplectic manifolds, which we apply to blowups along symplectic mapping tori.

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

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.

Contents: Introduction; Families of objects; The two-torus; Symplectic automorphisms; Symplectic mapping tori; Blowing up; Bibliography.

Mémoires de la Société Mathématique de France, Number 137

October 2014, 135 pages, Softcover, ISBN: 978-2-85629-788-9, 2010 *Mathematics Subject Classification:* 53D40, 16E45, **AMS members US$36**, List US$45, Order code SMFMEM/137