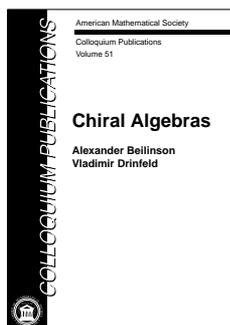


New Publications Offered by the AMS

Algebra and Algebraic Geometry



Chiral Algebras

Alexander Beilinson and Vladimir Drinfeld, *University of Chicago, IL*

This long-awaited publication contains the results of the research of two distinguished professors from the University of Chicago, Alexander Beilinson and Fields Medalist, Vladimir Drinfeld. Years in the making, this is a one-of-a-kind book featuring previ-

ously unpublished material.

Chiral algebras form the primary algebraic structure of modern conformal field theory. Each chiral algebra lives on an algebraic curve, and in the special case where this curve is the affine line, chiral algebras invariant under translations are the same as well-known and widely used vertex algebras.

The exposition of this book covers the following topics:

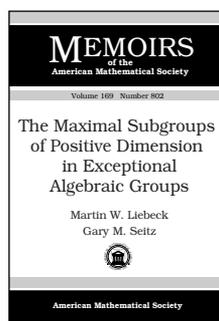
- the “classical” counterpart of the theory, which is an algebraic theory of non-linear differential equations and their symmetries;
- the local aspects of the theory of chiral algebras, including the study of some basic examples, such as the chiral algebras of differential operators;
- the formalism of chiral homology treating “the space of conformal blocks” of the conformal field theory, which is a “quantum” counterpart of the space of the global solutions of a differential equation.

The book is intended for researchers working in algebraic geometry and its applications to mathematical physics and representation theory.

Contents: Introduction; Axiomatic patterns; Geometry of D -schemes; Local theory: Chiral basics; Global theory: Chiral homology; Bibliography; Index and notation.

Colloquium Publications, Volume 51

May 2004, approximately 352 pages, Hardcover, ISBN 0-8218-3528-9, LC 2003063872, 2000 *Mathematics Subject Classification*: 17Bxx; 14Fxx, **All AMS members \$55**, List \$69, Order code COLL/51N



The Maximal Subgroups of Positive Dimension in Exceptional Algebraic Groups

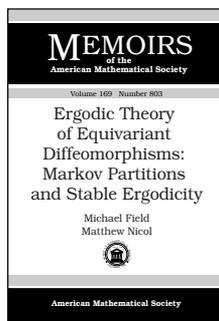
Martin W. Liebeck, *Imperial College, London*, and Gary M. Seitz, *University of Oregon, Eugene*

Contents: Introduction; Preliminaries; Maximal subgroups of type A_1 ; Maximal subgroups of type A_2 ; Maximal subgroups of type B_2 ; Maximal subgroups of type G_2 ; Maximal subgroups X with $\text{rank}(X) \geq 3$; Proofs of Corollaries 2 and 3; Restrictions of small G -modules to maximal subgroups; The tables for Theorem 1 and Corollary 2; Appendix: E_8 structure constants; References.

Memoirs of the American Mathematical Society, Volume 169, Number 802

May 2004, 227 pages, Softcover, ISBN 0-8218-3482-7, LC 2003070917, 2000 *Mathematics Subject Classification*: 20G15, 20G05, **Individual member \$41**, List \$68, Institutional member \$54, Order code MEMO/169/802N

Analysis



Ergodic Theory of Equivariant Diffeomorphisms: Markov Partitions and Stable Ergodicity

Michael Field, *University of Houston, TX*, and Matthew Nicol, *University of Surrey, Guildford, England*

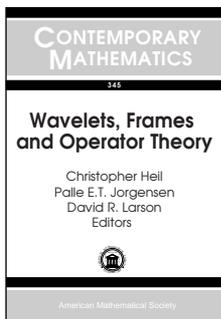
Contents: Introduction; Equivariant geometry and dynamics; Technical preliminaries; *Part 1. Markov Partitions*: Markov partitions for finite group actions; Transversally hyperbolic

sets; Markov partitions for basic sets; *Part 2. Stable Ergodicity: Preliminaries*; Livšic regularity and ergodic components; Stable ergodicity; Appendix A. On the absolute continuity of ν ; Appendix. Bibliography.

Memoirs of the American Mathematical Society, Volume 169, Number 803

May 2004, 100 pages, Softcover, ISBN 0-8218-3599-8, LC 2003070916, 2000 *Mathematics Subject Classification*: 37A25, 37B10, 37C80, 37D30; 37C70, **Individual member \$32**, List \$54, Institutional member \$43, Order code MEMO/169/803N

Applications



Wavelets, Frames and Operator Theory

Christopher Heil, *Georgia Institute of Technology, Atlanta*, **Palle E.T. Jorgensen**, *University of Iowa, Iowa City*, and **David R. Larson**, *Texas A&M University, College Station*, Editors

In the past two decades, wavelets and frames have emerged as significant tools in mathematics and technology. They interact with harmonic analysis, operator theory, and a host of other applications.

This book grew out of a special session on Wavelets, Frames and Operator Theory held at the Joint Mathematics Meetings in Baltimore and a National Science Foundation-sponsored workshop held at the University of Maryland. Both events were associated with the NSF Focused Research Group. The volume includes both theoretical and applied papers highlighting the many facets of these interconnected topics. It is suitable for graduate students and researchers interested in wavelets and their applications.

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

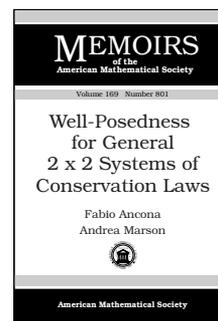
Contents: **A. Aldroubi**, **C. Cabrelli**, and **U. M. Molter**, How to construct wavelet frames on irregular grids and arbitrary dilations in \mathbb{R}^d ; **L. W. Baggett**, **P. E. T. Jorgensen**, **K. D. Merrill**, and **J. A. Packer**, An analogue of Bratteli-Jorgensen loop group actions for GMRA's; **R. L. Benedetto**, Examples of wavelets for local fields; **M. Bownik** and **Z. Rzeszotnik**, The spectral function of shift-invariant spaces on general lattices; **P. G. Casazza**, Custom building finite frames; **P. G. Casazza** and **G. Kutyniok**, Frames of subspaces; **D. E. Dutkay**, The local trace function for super-wavelets; **H. Feichtinger** and **I. Pesenson**, Recovery of band-limited functions on manifolds by an iterative algorithm; **J. E. Gilbert** and **J. D. Lakey**, On a characterization of the local Hardy space by Gabor frames; **A. L. González** and **R. A. Zalik**, Riesz bases, multiresolution analyses, and perturbation; **D. Han** and **Y. Wang**, The existence of Gabor bases and frames; **B. D. Johnson**, Co-affine systems in \mathbb{R}^d ; **K. A. Kornelson** and **D. R. Larson**, Rank-one decomposition of operators and construction of frames; **D. Labate**, **G. Weiss**, and **E. Wilson**, An approach to the study of wave packet systems; **M. C. Lammers**, Convolution for

Gabor systems and Newton's method; **G. Ólafsson** and **D. Speegle**, Wavelets, wavelet sets, and linear actions on \mathbb{R}^n ; **A. M. Powell**, Orthonormalized coherent states; **Q. Sun**, Localization of stability and p -frames in the Fourier domain; **J. Yang**, **L. Shen**, **M. Papadakis**, **I. Kakadiaris**, **D. J. Kouri**, and **D. K. Hoffman**, Orthonormal wavelets arising from HDAFs.

Contemporary Mathematics, Volume 345

April 2004, 342 pages, Softcover, ISBN 0-8218-3380-4, LC 2004041027, 2000 *Mathematics Subject Classification*: 20C20, 41A17, 42C15, 42C40, 43A85, 46C05, 46C99, 46E25, 47C05, 65T60, **All AMS members \$71**, List \$89, Order code CONM/345N

Differential Equations



Well-Posedness for General 2×2 Systems of Conservation Laws

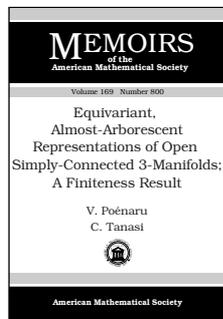
Fabio Ancona, *Bologna, Italy*, and **Andrea Marson**, *University of Padova, Italy*

Contents: Introduction; Preliminaries; Outline of the proof; The algorithm; Basic interaction estimates; Bounds on the total variation and on the interaction potential; Estimates on the number of discontinuities; Estimates on shift differentials; Completion of the proof; Conclusion; Bibliography.

Memoirs of the American Mathematical Society, Volume 169, Number 801

May 2004, 170 pages, Softcover, ISBN 0-8218-3435-5, LC 2003070915, 2000 *Mathematics Subject Classification*: 35L65, **Individual member \$37**, List \$61, Institutional member \$49, Order code MEMO/169/801N

Geometry and Topology



Equivariant, Almost-Arborescent Representations of Open Simply-Connected 3-Manifolds; A Finiteness Result

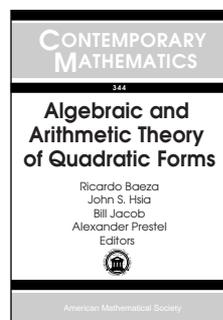
V. Poénaru, *Université Paris Sud, Orsay*, and C. Tanasi, *Palermo, Italy*

Contents: Introduction; The case $V^3 = \widetilde{M}^3$ of Theorem I and Theorem II; The accumulation pattern of the double point $M_2(f) \subset X^2$; Arbitrary open simply-connected 3-manifold; Bibliography.

Memoirs of the American Mathematical Society, Volume 169, Number 800

May 2004, 89 pages, Softcover, ISBN 0-8218-3460-6, LC 2003070918, 2000 *Mathematics Subject Classification*: 57M30, 37M10, 57M40, **Individual member \$32**, List \$54, Institutional member \$43, Order code MEMO/169/800N

Number Theory



Algebraic and Arithmetic Theory of Quadratic Forms

Ricardo Baeza, *Universidad de Talca, Chile*, John S. Hsia, *Ohio State University, Columbus*, Bill Jacob, *University of California, Santa Barbara*, and Alexander Prestel, *University of Konstanz, Germany*, Editors

This proceedings volume contains papers presented at the International Conference on the algebraic and arithmetic theory of quadratic forms held in Talca (Chile).

The modern theory of quadratic forms has connections with a broad spectrum of mathematical areas including number theory, geometry, and K-theory. This volume contains survey and research articles covering the range of connections among these topics.

The survey articles bring readers up-to-date on research and open problems in representation theory of integral quadratic forms, the algebraic theory of finite square class fields, and developments in the theory of Witt groups of triangulated categories. The specialized articles present important developments in both the algebraic and arithmetic theory of quadratic forms, as well as connections to geometry and K-theory.

The volume is suitable for graduate students and research mathematicians interested in various aspects of the theory of quadratic forms.

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

Contents: R. Aravire and B. Jacob, The Milnor sequence for $W_q \mathcal{F}(x)$ in characteristic 2 when \mathcal{F} is perfect; L. Arenas-Carmona, Spinor norm for local skew-Hermitian forms; P. Balmer, An introduction to triangular Witt groups and a survey of applications; W. K. Chan, A. G. Earnest, and B.-K. Oh, Regularity properties of positive definite integral quadratic forms; W. K. Chan and M. I. Icaza, Effective results on representations of quadratic forms; W. K. Chan and M. Peters, Quaternary quadratic forms and Hilbert modular surfaces; M. Dickmann and A. Petrovich, Real semigroups and abstract real spectra. I; M. Gaulter, The role of characteristic vectors in the neighbour lattice process; L. J. Gerstein, On representation by quadratic $\mathbb{F}_q[x]$ -lattices; D. W. Hoffmann, Diagonal forms of degree p in characteristic p ; D. G. James, Local densities and the representations of an integer by a definite quadratic form; M. Karoubi, Periodicity of Hermitian K-theory and Milnor's K-groups; N. A. Karpenko, Third proof of second gap in dimensions of quadratic forms from I^n ; M.-H. Kim, Recent developments on universal forms; W. Kohnen, Special Siegel modular forms and singular series polynomials of quadratic forms; A. Laghribi, Quasi-hyperbolicity of totally singular quadratic forms; D. B. Leep and T. L. Smith, Witt kernels of triquadratic extensions; D. W. Lewis, Anti-automorphisms of the second kind; J. Martinet, Reduction modulo 2 and 3 of Euclidean lattices, II; M. Marshall, The elementary type conjecture in quadratic form theory; A. Pfister, On Hilbert's theorem about ternary quartics; R. Schulze-Pillot, Representation by integral quadratic forms—A survey; R. Schulze-Pillot and F. Xu, Representations by spinor genera of ternary quadratic forms; T. Watanabe, A survey and a complement of fundamental Hermite constants.

Contemporary Mathematics, Volume 344

April 2004, 350 pages, Softcover, ISBN 0-8218-3441-X, 2000 *Mathematics Subject Classification*: 11Exx, 11Fxx, 11Hxx, **All AMS members \$71**, List \$89, Order code CONM/344N

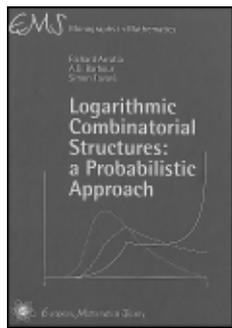
More Publications Available from the AMS

New Series!

The AMS is now distributing books from the European Mathematical Society Publishing House. Selections will include a broad range of publications within the following series:

EMS Monographs in Mathematics

This book series publishes research monographs and graduate level textbooks from all fields of mathematics. These books give comprehensive, self-contained accounts of the particular subjects covered. Volumes present new or previously unpublished mathematical results.



Logarithmic Combinatorial Structures: A Probabilistic Approach

Richard Arratia, *University of Southern California, University Park, Los Angeles*,
A. D. Barbour, *University of Zürich, Switzerland*, and
Simon Tavaré, *University of Southern California, University Park, Los Angeles*

The elements of many classical combinatorial structures can be naturally decomposed into components. Permutations can be decomposed into cycles, polynomials over a finite field into irreducible factors, mappings into connected components. In all of these examples, and in many more, there are strong similarities between the numbers of components of different sizes that are found in the decompositions of "typical" elements of large size. For instance, the total number of components grows logarithmically with the size of the element, and the size of the largest component is an appreciable fraction of the whole.

This book explains the similarities in asymptotic behavior as the result of two basic properties shared by the structures: the conditioning relation and the logarithmic condition. The discussion is conducted in the language of probability, enabling the theory to be developed under rather general and explicit conditions; for the finer conclusions, Stein's method emerges as the key ingredient. The book is thus of particular interest to graduate students and researchers in both combinatorics and probability theory.

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

Distributed within the Americas by the American Mathematical Society.

Contents: Permutations and primes; Decomposable combinatorial structures; Probabilistic preliminaries; The Ewens sampling formula: methods; The Ewens sampling formula: asymptotics; Logarithmic combinatorial structures; General setting; Consequences; A Stein equation; Point probabilities;

Distributional comparisons with P_θ ; Comparisons with P_θ : point probabilities; Proofs; Technical complements; References; Notation index; Author index; Subject index.

EMS Monographs in Mathematics

December 2003, 352 pages, Hardcover, ISBN 3-03719-000-0, 2000 *Mathematics Subject Classification*: 60C05, **All AMS members \$63**, List \$79, Order code EMSMONO/1N

EMS Series of Lectures in Mathematics

This book series publishes polished notes arising from seminars or lecture series in all fields of pure and applied mathematics. Individual volumes give rapid and accessible introductions and guide readers to topics of current research and to more advanced and specialized literature.



Uhlenbeck Compactness

Katrin Wehrheim, *Princeton University, NJ*

This book gives a detailed account of the analytic foundations of gauge theory-Uhlenbeck's compactness theorems for general connections and for Yang-Mills connections. It guides graduate students into the analysis of Yang-Mills theory as well as serves as a

reference for researchers in the field.

The volume is largely self contained. It contains a number of appendices (e.g., on Sobolev spaces of maps between manifolds) and an introductory part covering the L^p -regularity theory for the inhomogenous Neumann problem. The two main parts contain the full proofs of Uhlenbeck's weak and strong compactness theorems on closed manifolds as well as their generalizations to manifolds with boundary and noncompact manifolds. These parts include a number of useful analytic tools such as general patching constructions and local slice theorems.

The book is suitable for graduate students and research mathematicians interested in differential geometry, global analysis, and analysis on manifolds.

Distributed within the Americas by the American Mathematical Society.

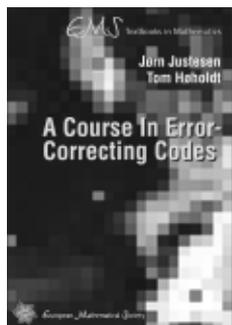
Contents: The Neumann problem; Weak compactness; Strong compactness; Appendix; List of symbols; Index; Bibliography.

EMS Series of Lectures in Mathematics

January 2004, 250 pages, Softcover, ISBN 3-03719-004-3, 2000 *Mathematics Subject Classification*: 53C07; 58E15, **All AMS members \$36**, List \$45, Order code EMSSERLEC/1N

EMS Textbooks in Mathematics

This book series is aimed at students or professional mathematicians seeking an introduction into a particular field. Individual volumes provide relevant techniques, results and applications and afford insight into the motivations and ideas behind the theories.



Course in Error-Correcting Codes

Jørn Justesen and Tom Høholdt, *Technical University of Denmark, Lyngby, Denmark*

This book is written as a text for a course aimed at advanced undergraduates. Only some familiarity with elementary linear algebra and proba-

bility is directly assumed, but some maturity is required. The students may specialize in discrete mathematics, computer science, or communication engineering. The book is also a suitable introduction to coding theory for researchers from related fields or for professionals who want to supplement their theoretical basis. It gives the coding basics for working on projects in any of the above areas, but material specific to one of these fields has not been included.

Chapters cover the codes and decoding methods that are currently of most interest in research, development, and application. They give a relatively brief presentation of the essential results, emphasizing the interrelations between different methods and proofs of all important results. A sequence of problems at the end of each chapter serves to review the results and give the student an appreciation of the concepts. In addition, some problems and suggestions for projects indicate direction for further work. The presentation encourages the use of programming tools for studying codes, implementing decoding methods, and simulating performance. Specific examples of programming exercise are provided on the book's home page.

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

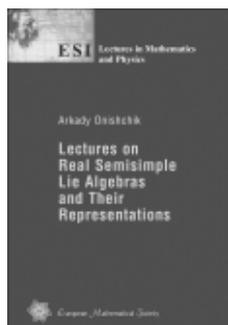
Distributed within the Americas by the American Mathematical Society.

EMS Textbooks in Mathematics

January 2004, 192 pages, Hardcover, ISBN 3-03719-001-9, 2000 *Mathematics Subject Classification*: 94Bxx, **All AMS members \$36**, List \$45, Order code EMSTEXT/1N

ESI Lectures in Mathematics and Physics

The International Erwin Schrödinger Institute (ESI) is a meeting place that nurtures the development and exchange of ideas among leading experts in mathematics and mathematical physics. In particular, the ESI encourages intellectual exchange between scientists from Eastern Europe and the rest of the world. Books in this series arise from the Institute's research programs.



Lectures on Real Semisimple Lie Algebras and Their Representations

Arkady Onishchik, *Yaroslavl State University, Russia*

In 1914, E. Cartan posed the problem to find all irreducible real linear Lie algebras. An updated exposition of his work was given by Iwahori (1959). This

theory reduces the classification of irreducible real representations of a real Lie algebra to a description of the so-called self-conjugate irreducible complex representations of this algebra and to the calculation of an invariant of such a representation (with values $+1$ or -1) which is called the index. Moreover, these two problems were reduced to the case when the Lie algebra is simple and the highest weight of its irreducible complex representation is fundamental. A complete case-by-case classification for all simple real Lie algebras was given (without proof) in the tables of Tits (1967). But actually a general solution of these problems is contained in a paper of Karpelevich (1955) that was written in Russian and not widely known, where inclusions between real forms induced by a complex representation were studied.

The author begins with a simplified (and somewhat extended and corrected) exposition of the main part of this paper and relates it to the theory of Cartan-Iwahori. He concludes with some tables, where an involution of the Dynkin diagram that allows for finding self-conjugate representations is described and explicit formulas for the index are given. In a short addendum, written by J. V. Silhan, this involution is interpreted in terms of the Satake diagram.

The book is aimed at students in Lie groups, Lie algebras and their representations, as well as researchers in any field where these theories are used. Readers should know the classical theory of complex semisimple Lie algebras and their finite-dimensional representation; the main facts are presented without proofs in Section 1. In the remaining sections the exposition is made with detailed proofs, including the correspondence between real forms and involutive automorphisms, the Cartan decompositions and the conjugacy of maximal compact subgroups of the automorphism group.

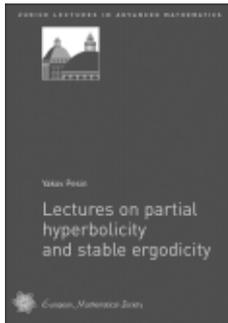
Distributed within the Americas by the American Mathematical Society.

ESI Lectures in Mathematics and Physics

December 2003, 100 pages, Softcover, ISBN 3-03719-002-7, 2000 *Mathematics Subject Classification*: 17B20, **All AMS members \$22**, List \$28, Order code EMSESILEC/1N

Zurich Lectures in Advanced Mathematics

Mathematics in Zurich has a long and distinguished tradition. The writing of lecture notes volumes and research monographs is a prominent part of this tradition. This series aims to make some of these publications better known to a wider audience. Moderately priced, concise and lively in style, the volumes will appeal to researchers and students alike, who seek an informed introduction to important areas of current research.



Lectures on Partial Hyperbolicity and Stable Ergodicity

Yakov Pesin, *Pennsylvania State University, University Park*

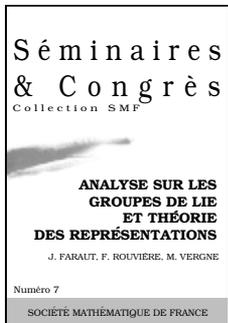
This book is an introduction to the modern theory of partial hyperbolicity with applications to stable ergodicity theory of smooth dynamical systems. It provides a systematic treatment of

the theory and describes all the basic concepts and major results obtained in the area since its creation in the early 1970s. It can be used as a textbook for a graduate student course and is also of interest to professional mathematicians working in the field of dynamical systems and their applications.

Distributed within the Americas by the American Mathematical Society.

Zurich Lectures in Advanced Mathematics

January 2004, 144 pages, Softcover, ISBN 3-03719-003-5, 2000 *Mathematics Subject Classification*: 37D30; 37Cxx, **All AMS members \$26**, List \$32.50, Order code EMSZLEC/1N



Analyse sur les groupes de Lie et théorie des représentations

Jacques Faraut, *Université Pierre et Marie Curie, Paris*, François Rouvière, *Université de Nice, France*, and Michèle Vergne, *Ecole Polytechnique, Palaiseau, France*

This book, *Analysis on Lie Groups and Representation Theory*, is based on the Summer School held at Kénitra University (Morocco). Michèle Vergne presented equivariant cohomology in the case of the circle acting on a manifold due to Paradan's localization formula. François Rouvière lectured on Damek-Ricci spaces, which provide examples of nonsymmetric harmonic Riemannian manifolds. Jacques Faraut discussed analysis, using Choquet's theory, of the invariant Hilbert spaces of holomorphic functions, with an application to the Bargmann-Segal transform on a compact symmetric space.

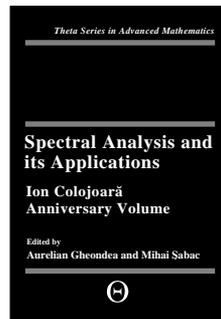
The volume is suitable for graduate students and researchers interested in Lie groups.

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: M. Vergne, Cohomologie équivariante et théorème de Stokes; F. Rouvière, Espaces de Damek-Ricci, géométrie et analyse; J. Faraut, Espaces hilbertiens invariants de fonctions holomorphes; Séminaire.

Séminaires et Congrès, Number 7

November 2003, 178 pages, Softcover, ISBN 2-85629-142-2, 2000 *Mathematics Subject Classification*: 19L10, 22E25, 32M05, 43A80, 43A90, 53B20, 53C22, 53C35, 53D50, 55N91, **Individual member \$36**, List \$40, Order code SECO/7N



Spectral Analysis and Its Applications: Ion Colojoară Anniversary Volume

Aurelian Gheondea, *Bilkent University, Turkey*, and Mihai Şabac, *University of Bucharest, Romania*, Editors

This book is dedicated to Ion Colojoara, one of the main contributors to the development of spectral theory in Banach spaces. It contains survey papers and a careful selection of research papers by Colojoara's colleagues, former students, and prominent researchers in the field.

Topics include:

- growth properties of resolvents
- positive definite operator measures and operator-valued functions
- spectral spaces of bounded operators
- realization techniques for analytic functions of several variables
- perturbation theory and spectral resolutions in Krein spaces
- orthogonal polynomials in several non-commuting variables
- idempotent linear relations and generalized projection on Hilbert spaces

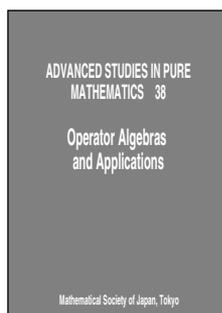
The book is suitable for graduate students and researchers interested in operator theory.

A publication of the Theta Foundation. Distributed worldwide, except in Romania, by the AMS.

Contents: E. Albrecht and W. Ricker, Local spectral theory for operators with thin spectrum; C.-G. Ambrozie, A remark on operator-valued positive-definite functions; T. Ya. Azizov and V. A. Straus, Spectral decompositions for special classes of self-adjoint and normal operators on Krein spaces; T. Constantinescu, Orthogonal polynomials in several non-commuting variables. I.; J. Eschmeier and M. Putinar, On bounded analytic extensions in \mathbb{C}^n ; P. Jonas, On locally definite operators in Krein spaces; J.-Ph. Labrousse, Idempotent linear relations; V. Lyance and G. Chuiko, Rings of projectors and operator-valued measures; M. Şabac, Commutators, intertwining operators and invariant subspaces; F.-H. Vasilescu, Spectral measures and moment problems.

International Book Series of Mathematical Texts

October 2003, 216 pages, Hardcover, ISBN 973-85432-3-1, 2000 *Mathematics Subject Classification*: 47-06; 47A11, 47B40, 47A56, 46C20, 47B50, 46G25, 32A70, 47A48, 47A60, 47A05, 47B15, 47B20, 47B25, **All AMS members \$27**, List \$34, Order code THETA/5N



Operator Algebras and Applications

Hideki Kosaki, *Kyushu University, Fukuoka, Japan*, Editor

This volume reflects the proceedings of the U.S.-Japan seminar on Operator Algebras and Applications held at Kyushu University (Japan). Contributors to the volume are leading researchers in the theory of operator algebras.

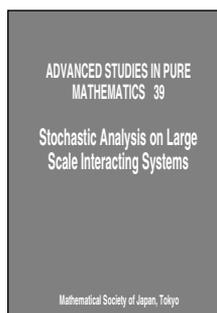
Readers will find a variety of current research topics reflecting the state of the art of the subject. Topics covered include the classification of C^* -algebras by K -theoretical data and related topics, a detailed study on various classes of C^* -algebras, subfactor analysis and related topics, free probability theory, and more. The material is suitable for graduate students and researchers interested in operator algebras and their applications.

Published for the Mathematical Society of Japan by Kinokuniya, Tokyo, and distributed worldwide, except in Japan, by the AMS.

Contents: C^* -Algebras: **B. Blackadar**, Semiprojectivity in simple C^* -algebras; **N. Brown**, On quasidiagonal C^* -algebras; **N. Brown** and **M. Dadarlat**, Extensions of quasidiagonal C^* -algebras and K -theory; **J. H. Hong**, The ideal structure of graph algebras; **J. A. Jeong**, Stable rank and real rank of graph C^* -algebras; **Q. Lin** and **N. C. Phillips**, Direct limit decomposition for C^* -algebras of minimal diffeomorphisms; **M. Nagisa**, Single generation and rank of C^* -algebras; **H. Nakamura**, Aperiodic automorphisms of certain simple C^* -algebras; **C.-G. Park**, C^* -algebras over sphere with fibres non-commutative tori; **M. Rørdam**, Stable C^* -algebras; *von Neumann Algebras:* **M. Izumi**, Non-commutative Markov operators arising from subfactors; **Y. Kawahigashi**, Braiding and nets of factors on the circle; **N. Sato**, A notion of Morita equivalence between subfactors; **Y. Ueda**, Amalgamated free product over Cartan subalgebra, II. Supplementary results and examples; *Miscellaneous Topics:* **T. Digernes**, Finite approximations and physics over unconventional fields; **F. Hiai** and **H. Kosaki**, Operator means and their norms; **T. Matsui**, Quantum spin chain and Popescu systems; **K. Matsumoto**, Topological conjugacy invariants of symbolic dynamics arising from C^* -algebra K -theory; **Y. Watatani**, Relative positions of four subspaces in a Hilbert space and subfactors.

Advanced Studies in Pure Mathematics, Volume 38

January 2004, 328 pages, Hardcover, ISBN 4-931469-23-X, 2000 *Mathematics Subject Classification:* 46Lxx; 11Rxx, All AMS members \$74, List \$92, Order code ASPM/38N



Stochastic Analysis on Large Scale Interacting Systems

Tadahisa Funaki, *University of Tokyo*, and Hirofumi Osada, *Nagoya University, Japan*, Editors

This volume is a collection of 15 research and survey papers written by the speakers from two international

conferences held in Japan, The 11th Mathematical Society of Japan International Research Institute's Stochastic Analysis on Large Scale Interacting Systems and Stochastic Analysis and Statistical Mechanics.

Topics discussed in the volume cover the hydrodynamic limit, fluctuations, large deviations, spectral gap (Poincaré inequality), logarithmic Sobolev inequality, Ornstein-Zernike asymptotics, random environments, determinantal expressions for systems including exclusion processes (stochastic lattice gas, Kawasaki dynamics), zero range processes, interacting Brownian particles, random walks, self-avoiding walks, Ginzburg-Landau model, interface models, Ising model, Widom-Rowlinson model, directed polymers, random matrices, Dyson's model, and more.

The material is suitable for graduate students and researchers interested in probability theory, stochastic processes, and statistical mechanics.

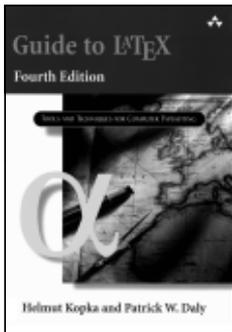
This item will also be of interest to those working in differential equations and mathematical physics.

Published for the Mathematical Society of Japan by Kinokuniya, Tokyo, and distributed worldwide, except in Japan, by the AMS.

Contents: **S. R. S. Varadhan**, Large deviations for the asymmetric simple exclusion process; **M. Campanino**, **D. Ioffe**, and **Y. Velenik**, Random path representation and sharp correlations asymptotics at high temperatures; **P. Caputo**, Spectral gap inequalities in product spaces with conservation laws; **M.-F. Chen**, Ten explicit criteria of one-dimensional processes; **F. Comets**, **T. Shiga**, and **N. Yoshida**, Probabilistic analysis of directed polymers in a random environment: a review; **J. Fritz**, Entropy pairs and compensated compactness for weakly asymmetric systems; **T. Funaki** and **H. Sakagawa**, Large deviations for $\nabla\phi$ interface model and derivation of free boundary problems; **M.-H. Giga** and **Y. Giga**, A PDE approach for motion of phase-boundaries by a singular interfacial energy; **Y. Higuchi**, **J. Murai**, and **J. Wang**, The Dobrushin-Hryniv theory for the two-dimensional lattice Widom-Rowlinson model; **M. Katori**, **T. Nagao**, and **H. Tanemura**, Infinite systems of non-colliding Brownian particles; **C. Landim**, **S. Olla**, and **S. R. S. Varadhan**, Diffusive behaviour of the equilibrium fluctuations in the asymmetric exclusion processes; **H. Osada**, Non-collision and collision properties of Dyson's model in infinite dimension and other stochastic dynamics whose equilibrium states are determinantal random point fields; **T. Shirai** and **Y. Takahashi**, Random point fields associated with Fermion, Boson and other statistics; **H. Tanaka**, Lévy processes conditioned to stay positive and diffusions in random environments; **K. Uchiyama**, Zero-range-exclusion particle systems.

Advanced Studies in Pure Mathematics, Volume 39

January 2004, 406 pages, Hardcover, ISBN 4-931469-24-8, 2000 *Mathematics Subject Classification:* 60-XX; 82-XX, All AMS members \$77, List \$96, Order code ASPM/39N



Guide to L^AT_EX: Fourth Edition

Helmut Kopka and
Patrick W. Daly, *Max Planck
Institut für Aeronomie,
Katlenburg-Lindau, Germany*

This book shows readers how to begin using L^AT_EX to create high-quality documents. It also serves as a reference for all L^AT_EX users. In this completely revised edition, the authors cover the L^AT_EX_{2 ϵ} standard and offer more details, examples, exercises, tips, and tricks. They go beyond the core installation to describe the key contributed packages that have become essential to L^AT_EX processing.

In the book, readers will find:

- Complete coverage of L^AT_EX fundamentals, including how to input text, symbols, and mathematics; how to produce lists and tables; how to include graphics and color; and how to organize and customize documents
- Discussion of more advanced concepts such as bibliographical databases and Bib_TE_X, math extensions with $\mathcal{A}_M\mathcal{S}$ -L^AT_EX, drawing, slides, and letters
- Helpful appendices on installation, error messages, creating packages, using L^AT_EX with HTML and XML, and fonts
- An extensive alphabetized listing of commands and their uses

New to this edition:

- More emphasis on L^AT_EX as a markup language that separates content and forms
- Detailed discussions of contributed packages alongside relevant standard topics
- In-depth information on PDF output, including extensive coverage of how to use the hyperref package to create links, bookmarks, and active buttons.

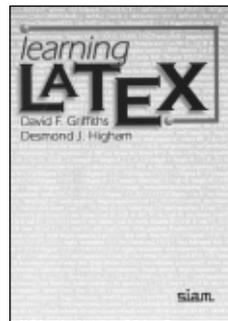
This *Guide to L^AT_EX, Fourth Edition* will prove indispensable to anyone wishing to gain the benefits of L^AT_EX.

The accompanying CD-ROM is part of the T_EX Live set. It contains a full L^AT_EX installation for Windows, Mac OSX, and Linux, as well as many extensions, including those discussed in the book.

Published by Addison-Wesley.

Contents: *Basics:* Introduction; Text, symbols, and commands; Document layout and organization; Displaying text; Text in boxes; Tables; Mathematical formulas; Graphics inclusion and color; Floating tables and figures; User customizations; *Beyond the Basics:* Document management; Bibliographic databases and Bib_TE_X; PostScript and PDF; Multilingual L^AT_EX; Math extensions with $\mathcal{A}_M\mathcal{S}$ -L^AT_EX; Drawing with L^AT_EX; Presentation material; Letters; *Appendices:* The new font selection scheme; Installing and maintaining L^AT_EX; Error messages; L^AT_EX programming; L^AT_EX and the world wide web; Obsolete L^AT_EX; Command summary; Bibliography; Index.

November 2003, 597 pages, Softcover, ISBN 0-321-17385-6, 2000 *Mathematics Subject Classification:* 00-XX, 68N15, **Individual member \$45**, List \$49.99, Order code GLTEXN



Learning L^AT_EX

David F. Griffiths, *University
of Dundee, Scotland*, and
Desmond J. Higham,
*University of Strathclyde,
Glasgow, Scotland*

A clear, simple, up-to-date, sometimes amusing introduction to L^AT_EX—brief, yet surprisingly comprehensive. Covers basics, graphics, bibliographies, indexes, slides, electronic resources, differences between “old” and “new” L^AT_EX, etc. Rich with brief but pertinent examples.

—*The American Mathematical Monthly*

Most beginners in L^AT_EX do not wish to read through a large comprehensive manual. They want a brief account which covers the essential elements of the subject. This book by Griffiths and Higham is the answer.

—*George Phillips, Mathematical Institute,
University of St. Andrews, Scotland*

This book is playful, witty, intelligent, and extremely easy to read ... tells you what you need to know, with examples, in sensible, clear, entertaining language.

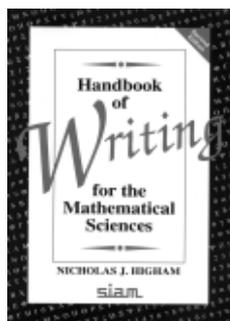
—*Robert M. Corless, University of Western Ontario*

This book offers a brief introduction to the L^AT_EX system for typesetting documents. It covers the essential material while avoiding unnecessary detail. The contents are aimed squarely at L^AT_EX beginners who wish to learn the basics with a minimum of fuss. It is suitable for students needing to produce a first-time report or thesis and for more experienced users who are using older typesetting systems. A large part of the book consists of “before and after” illustrations showing the effect of L^AT_EX commands.

Published by the Society for Industrial and Applied Mathematics.

Contents: Preamble; Basic L^AT_EX; Typesetting mathematics; Further essential L^AT_EX; More about L^AT_EX; Old L^AT_EX versus L^AT_EX_{2 ϵ} ; A sample article; A sample report; Slides; Internet resources; Bibliography; Index.

December 1996, 84 pages, Softcover, ISBN 0-89871-383-8, 2000 *Mathematics Subject Classification:* 00-XX, 68N15, **Individual member \$16**, List \$23, Order code LLTEXN



Handbook of Writing for the Mathematical Sciences

Nicholas J. Higham, *University of Manchester, England*

Any professional mathematician (whether in the corporate world or in academe) who writes, and therefore puts math into print, should have this handbook on the reference shelf ... The

information needed by writers, editors, and their assistants to prepare clear, accurate, and understandable mathematical material is contained in this book.

—*Barbara A. Simmons, Technical Communication*

Higham's handbook is to the technical writer what The Elements of Style by Strunk and White is to the liberal arts writer. I've reached for The Elements of Style many times and expect to reach for Handbook of Writing for the Mathematical Sciences even more frequently.

—*Keith Parris, Alcatel Network Systems*

The subject of mathematical writing is infused with life once again by Nick Higham. He follows up his successful *Handbook of Mathematical Writing* with this much-anticipated second edition. As is Higham's style, the material is enlivened by anecdotes, unusual paper titles, and humorous quotations. This volume provides even more information on the issues you will face when writing a technical paper or talk, from choosing the right journal in which to publish to handling your references. Its overview of the entire publication process is invaluable for anyone hoping to publish in a technical journal.

This second edition is completely revised, making use of feedback from readers as well as Higham's own large file of ideas based on his experiences in reading, writing, editing, examining, and supervising theses.

Published by the Society for Industrial and Applied Mathematics.

Contents: General principles; Writer's tools and recommended reading; Mathematical writing; English usage; When English is a foreign language; Writing a paper; Revising a draft; Publishing a paper; Writing and defending a thesis; Writing a talk; Giving a talk; Preparing a poster; $\text{T}_\text{E}_\text{X}$ and $\text{L}_\text{A}_\text{T}_\text{E}_\text{X}$; Aids and resources for writing and research; The Greek alphabet; Summary of $\text{T}_\text{E}_\text{X}$ and $\text{L}_\text{A}_\text{T}_\text{E}_\text{X}$ symbols; GNU emacs commands; Mathematical and other organizations; Prizes for expository writing; Glossary; Bibliography; Name index; Subject index.

October 1998, 302 pages, Softcover, ISBN 0-89871-420-6, 2000 *Mathematics Subject Classification*: 00-XX, 68N15, **Individual member \$31**, List \$44.50, Order code HBWMSN