

Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 42 (1996)
Heft: 3-4: L'ENSEIGNEMENT MATHÉMATIQUE

Rubrik: BULLETIN BIBLIOGRAPHIQUE

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 09.12.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

BULLETIN BIBLIOGRAPHIQUE

Y. M. BEREZANSKY, Z. G. SHEFTEL, G. F. US. — **Functional analysis: vol. 1.** — Operator theory: advances and applications, vol. 85. — Un vol. relié, 17×24 , de xix, 423 p. — Prix: SFr. 178.00. — Birkhäuser, Basel, 1996.

This book is a comprehensive treatment of a subject lying at the core of modern analysis and mathematical physics. This volume reviews basic concepts such as the measure, the integral, Banach spaces, bounded operators and generalized functions.

Y. M. BEREZANSKY, Z. G. SHEFTEL, G. F. US. — **Functional analysis: vol. 2.** — Operator theory: advances and applications, vol. 86. — Un vol. relié, 17×24 , de xvi, 293 p. — Prix: SFr. 148.00. — Birkhäuser, Basel, 1996.

This second volume moves on to advanced topics including unbounded operators, spectral decomposition, expansion in generalized eigenvectors, rigged spaces, and partial differential operators. This text together with the first volume, provides students of mathematics and physics with a clear introduction into functional analysis. The theory is well illustrated by a wealth of examples. Researchers will appreciate it as a useful reference manual.

Lars KADISON, Matthias T. KROMANN. — **Projective geometry and modern algebra.** — Un vol. relié, 16×24 , de xvi, 208 p. — Prix: SFr. 68.00. — Birkhäuser, Basel, 1996.

The authors of this book present the synthetic and analytic aspects of basic projective geometry. The techniques and concepts of modern algebra are introduced for their natural role in the study of projective geometry; groups appear as automorphism groups of configurations, division rings appear in the study of Desargues' theorem and the study of the independence of the seven axioms given for projective geometry. Projective planes over fields are characterized in terms of one of these axioms, commonly known as the fundamental theorem (equivalently, Pappus' theorem). Topics include affine geometry, elements of group theory, synthetic projective geometry, homogeneous coordinates, cross ratio and collineation.

Peter GABRIEL. — **Matrizen, Geometrie, lineare Algebra.** — Birkhäuser advanced texts. — Un vol. relié, $17,5 \times 24$, de xi, 634 p. — Prix: SFr. 60.00. — Birkhäuser, Basel, 1996.

Dieses Lehrbuch führt von zwei Spezialfällen zur Allgemeinheit und gründet nicht auf Abstraktion. Die Beweise der abstrakten Algebra werden zuerst am konkreten Beispiel der Matrizen vorgeführt. Zur Schärfung der Anschauung wird dann die Begriffswelt der Elementargeometrie durchleuchtet. Die Auseinandersetzung mit dem Lehrstoff der Schule dient der Vorbereitung auf die geometrisch gefärbte Sprache der linearen Algebra, die am Ende des Buches erläutert wird. Dem Text sind Anwendungsbeispiele und Übungsaufgaben sowie zahlreiche historische Kommentare beigelegt.

Mark FREIDLIN. — **Markov processes and differential equations: asymptotic problems.** — Lectures in mathematics ETH Zürich. — Un vol. broché, 17×24, de 152 p. — Prix: SFr. 38.00. — Birkhäuser, Basel, 1996.

In the present book four classes of problems are considered: the Dirichlet problem with a small parameter in higher derivatives for differential equations and systems; the averaging principle for stochastic processes and PDE's; homogenization in PDE's and in stochastic processes; wave front propagation for semilinear differential equations and systems. The first two topics concern random perturbations of dynamical systems. The third topic, homogenization, is a natural problem for stochastic processes as well as for PDE's. Wave fronts in semilinear PDE's are interesting examples of pattern formation in reaction-diffusion equations.

Leo CORRY. — **Modern algebra and the rise of mathematical structures.** — Science networks. Historical studies, vol. 17. — Un vol. relié, 17,5×24, de 460 p. — Prix: SFr. 148.00. — Birkhäuser, Basel, 1996.

This book describes two stages in the historical development of the notion of mathematical structure. Part one discusses the process whereby the aims and scope of the discipline of algebra were deeply transformed, turning into that branch of mathematics dealing with a new kind of mathematical entities: the "algebraic structures". Part two describes the historical roots, the early stages and the interconnections between three attempts to address these questions from a purely formal, mathematical perspective: Oystein Ore's lattice-theoretical theory of structures, Nicolas Bourbaki's theory of structures, and the theory of categories and functors.

Scientific computing and validated numerics. — Proceedings of the International Symposium on Scientific Computing, Computer Arithmetic and Validated Numerics SCAN-95, held in Wuppertal, Germany, September 26-29, 1995. — Edited by Götz Alefeld, Andreas Frommer, Bruno Lang. — Mathematical research, vol. 90. — Un vol. relié, 17,5×24,5, de 340 p. — Prix: DM 130.00. — Akademie-Verlag, Berlin, 1996.

This volume contains contributions from research specialists based on their presentations at SCAN-95. It covers all aspects of scientific computing with validation, starting with the latest developments in the design of floating point units together with algorithms for floating point operations and elementary function evaluations with maximum accuracy. The book continues by treating scientific computing methods for many areas of applied mathematics such as numerical linear algebra, nonlinear equations, global optimization, ordinary and partial differential equations and dynamical systems.

Henri Poincaré: science and philosophy. — International Congress, Nancy, France, 1994. — Edited by Jean-Louis Greffe, Gerhard Heinzmann, Kuno Lorenz. — Publikationen des Henri-Poincaré-Archivs. — Un vol. relié, 17,5×24,5, de xxx, 598 p. — Prix: DM 148.00. — Akademie-Verlag, Berlin, 1996.

Ce volume, regroupant 39 articles de spécialistes, fait pour la première fois le point sur les thèses épistémologiques contenues dans l'œuvre de Poincaré et sur les résultats scientifiques et historiques les plus récents de la recherche sur Poincaré, qui confirment à bien des égards l'actualité de son approche. Les thèmes traités n'attestent pas seulement la force créatrice universelle de Poincaré, ils témoignent également de sa volonté systématique de conjuguer science et philosophie.

ICIAM 95. — Proceedings of the third International Congress on Industrial and Applied Mathematics held in Hamburg, Germany, July 3-7, 1995. — Edited by Klaus Kirchgässner, Oskar Mahrenholtz, Reinhard Mennicken. — Mathematical research, vol. 87. — Un vol. relié, 17,5×25, de 487 p. — Prix: DM 150.00. — Akademie-Verlag, Berlin, 1996.

This volume contains key invited lectures presented at ICIAM 95, the GAMM based Prandtl Memorial Lecture, the Collatz Memorial Lecture, and contributions to the symposia on future development of applied mathematics in different areas of applications. These articles were the backbone of the conference, highlighting topics from mathematics to flow phenomena.

V.I. ARNAUTOV, S.T. GLAVATSKY, A.V. MIKHALEV. — **Introduction to the theory of topological rings and modules.** — Pure and applied mathematics, vol. 197. — Un vol. relié, 16×23,5, de iv, 502 p. — Prix: US\$165.00. — Marcel Dekker, New York, 1996.

Furnishing necessary concepts from set theory, algebra, and topology, this reference/text considers in detail bounded subsets, topological division of zero, topologically nilpotent elements, and minimal topologies... describes the problem of the existence of real-valued pseudonorms on rings and modules... addresses the properties of completion... discusses non-discrete topologizations of rings and modules... treats the problems of extensions of topologies on a ring onto certain of its overrings... supplies a host of open problems for future research, etc.

J.W.S. CASSELS, E.V. FLYNN. — **Prolegomena to a middlebrow arithmetic of curves of Genus 2.** — London Mathematical Society lecture notes series, vol. 230. — Un vol. broché, 15,5×23, de xiv, 218 p. — Prix: £24.95. — Cambridge University Press, Cambridge, 1996.

This book includes an explicit treatment of the jacobian, which throws new light onto the geometry of the Kummer surface. The Mordell-Weil group can then be determined for many curves, and in many nontrivial cases all rational points can be found. The results exemplify the power of computer algebra in diophantine contexts, but computer expertise is not assumed in the main text.

John F. HUMPHREYS. — **A course in group theory.** — Oxford science publications. — Un vol. broché, 16×23,5, de xii, 279 p. — Prix: £17.50 (relié: £35.00). — Oxford University Press, Oxford, 1996.

The themes of the book are the various classification problems in (finite) group theory. Introductory chapters explain the concepts of group, subgroup and normal subgroup, and quotient group. The homomorphism and isomorphism theorems are then discussed, and, after an introduction to G -sets, the Sylow theorems are proved. Subsequent chapters deal with finite abelian groups, the Jordan-Hölder theorem, soluble groups, p -groups, and group extensions. Finally there is a discussion of the finite simple groups and their classification, which was completed in the 1980s after a hundred years of effort.

Leon SIMON. — **Theorems on regularity and singularity of energy minimizing maps.** — Based on lecture notes by Norbert HUNGERBÜHLER. — Lectures in mathematics ETH Zürich. — Un vol. broché, 17×24, de vii, 152 p. — Prix: SFr. 38.00. — Birkhäuser, Basel, 1996.

The aim of these lecture notes is to give an essentially self-contained introduction to the basic regularity theory for energy minimizing maps, including recent developments concerning the structure of the singular set and asymptotics on approach to the singular set. Specialized knowledge in partial differential equations or the geometric calculus of variations is not required; a good general background in mathematical analysis would be adequate preparation.

Partial differential equations and mathematical physics: the Danish-Swedish analysis seminar 1995. — Edited by Lars Hörmander and Anders Melin. — Progress in nonlinear differential equations and their applications, vol. 21. — Un vol. relié, 16×24, de 372 p. — Prix: SFr. 88.00. — Birkhäuser, Basel, 1996.

The first two chapters of this book are devoted to convexity in the classical sense, for functions of one and several real variables respectively. This gives a background for the study in the following chapters of related notions which occur in the theory of linear partial differential equations and complex analysis as (pluri-)subharmonic functions, pseudoconvex sets and sets which are convex for supports or singular supports with respect to a differential operator. In addition, the convexity conditions which are relevant for local or global existence of holomorphic differential equations are discussed, leading up to Trépreau's theorem on sufficiency of condition (y) for microlocal solvability in the analytic category.

Lev A. SAKHNOVICH. — **Integral equations with difference kernels on finite intervals.** — Operator theory: advances and applications, vol. 84. — Un vol. relié, 17×24 , de vi, 175 p. — Prix: SFr. 98.00. — Birkhäuser, Basel, 1996.

Optimal synthesis, light scattering, and diffraction on a ribbon are just some of the applied problems for which integral equations with difference kernels are employed. The same equations are also met in important mathematical problems such as inverse spectral problems, nonlinear integral equations, and factorization of operators. On the basis of the operator identity method, the theory of integral operators with difference kernels is developed here, and the connection with many applied and theoretical problems is studied. A number of important examples are analyzed.

Jagdish K. PATEL, Campbell B. READ. — **Handbook of the normal distribution.** — 2nd edition, revised and expanded. — Statistics: textbooks and monographs, vol. 150. — Un vol. relié, $16 \times 23,5$, de ix, 431 p. — Prix: US\$135.00. — Marcel Dekker, New York, 1996.

This second edition presents a comprehensive treatment of the normal and bivariate normal distributions and their sampling statistics-introducing state-of-the-art estimation procedures for normally distributed samples. It offers new sections on bivariate normal distribution... normal integrals... Mills' ratio... asymptotic normality... asymptotic properties of order statistics... point estimation and statistical intervals... and more.

Frank MORGAN. — **Calculus lite.** — Un vol. relié, $16 \times 23,5$, de xiv, 281 p. — Prix: US\$29.95. — A.K. Peters, Wellesley, Mass., 1995.

This book moves with ease through preparatory subjects like trigonometry and limits by actually incorporating them into the calculus and then focuses its attention on the important areas of maxima-minima problems, graphing, the fundamental theorem, integration, and more. Inside you will find a plethora of relevant examples and problems to illustrate the general concepts which are then followed up with careful explanations and solutions. This concise book would be an excellent foundation for any calculus course, allowing teachers to mold the material to their individual needs.

Marko PETKOVSEK, Herbert S. WILF, Doron ZEILBERGER. — **A=B.** — Un vol. relié, $19,5 \times 24$, de vii, 212 p. — Prix: US\$39.00. — A.K. Peters, Wellesley, Mass., 1996.

This book aims to show that computers are not only very fast but — at least in one field of mathematics — pretty smart too. In the area of combinatorial identities, computers are able to find very elegant proofs of difficult theorems unassisted by human intervention. This autonomy means that not only can you use your PC to find such a proof but you can also check this proof easily. This book shows how several recently developed computer algorithms can master the difficult job of simplifying complex summations and if there is no such simplification they will prove this to be the case.

Rupert LASSER. — **Introduction to Fourier series.** — Pure and applied mathematics, vol. 199. — Un vol. relié, 16×23,5, de vii, 285 p. — Prix: US\$ 135.00. — Marcel Dekker, New York, 1996.

This reference/text addresses all of the major topics in Fourier series emphasizing the concept of approximate identities; presenting applications, particularly in time series analysis; stressing throughout the idea of homogeneous Banach spaces, and providing new results. It furnishes representation theorems such as Herglotz's theorem and Wiener's theorem... compares the performance of approximate identities with elements of best approximation... develops results on spectral synthesis applying Banach algebra techniques, etc.

K.I. BEIDAR, W.S. MARTINDALE III, A.V. MIKHALEV. — **Rings with generalized identities.** — Pure and applied mathematics, vol. 196. — Un vol. relié, 16×23,5, de xi, 522 p. — Prix: US\$ 185.00. — Marcel Dekker, New York, 1996.

This reference discusses the latest results concerning the area of noncommutative ring theory known as the theory of generalized identities (GIs), detailing Kharchenko's results on GIs in prime rings, Chuang's extension to anti-automorphism, and the use of the Beidar-Mikhalev theory of orthogonal completion in the semiprime case. Providing novel proofs of existing results, the book puts the theory of generalized identities on a rigorous basis with the use of skew group rings, presents Beidar's determination of the generators of the T-ideal of generalized polynomial identities in (semi)prime rings, etc.

Partial differential equations and applications. — Collected papers in honor of Carlo Pucci. — Edited by Paolo Marcellini, Giorgio G. Talenti, Edoardo Vesentini. — Lecture notes in pure and applied mathematics, vol. 177. — Un vol. broché, 18×25,5, de xv, 364 p. — Prix: US\$ 160.00. — Marcel Dekker, New York, 1996.

This book presents contributions from over 35 internationally acclaimed experts in the field of partial differential equations. Offering new results together with self-contained proofs, this book covers inverse and ill-posed problems... geometry of complex sets... calculus of variations... real analysis... harmonic analysis... probability, etc. It furnishes over 400 helpful literature citations and more than 2000 useful equations.

Differential equations and control theory. — Proceedings of the International Conference on Differential Equations and Control Theory, Wuhan, People's Republic of China. — Edited by Zonqi Deng, Zhaojun Liang, Gang Lu, Shigui Ruan. — Lecture notes in pure and applied mathematics, vol. 176. — Un vol. broché, 18×25,5, de xvi, 520 p. — Prix: US\$ 165.00. — Marcel Dekker, New York, 1996.

This book analyzes the application of monotone dynamic systems in differential equations... discusses the qualitative theory of differential equations... details the bifurcation of Hamiltonian systems, delay equations, and neutral functional differential equations... investigates random fractals, MV-like fractals, and fractal drums... covers reaction-diffusion systems, Navier-Stokes equations, and Choquard equation, etc.

Combinatorics, vol. 2: Paul Erdős is eighty. — Edited by D. Miklós, V.T. Sós, T. Szönyi. — Bolyai Society mathematical studies, vol. 2. — Un vol. relié, 17×24,5, de 516 p. — Prix: US\$ 100.00. — János Bolyai Mathematical Society, Budapest, 1996.

From the preface: "Over half of the articles of this volume are surveys of various subfields of combinatorics. Both in the surveys and in the original research articles, the most frequent themes are the probabilistic method and random structures, two related areas created by Paul Erdős. Further subjects cover a wide spectrum of topics, including finite geometries, linear algebra methods, combinatorial optimization, and enumerative combinatorics..."

Brian JEFFERIES. — **Evolution processes and the Feynman-Kac formula.** — Mathematics and its applications, vol. 353. — Un vol. relié, 16,5×24,5, de VIII, 235 p. — Prix: Dfl. 180.00. — Kluwer Academic Publishers, Dordrecht, 1996.

In this book, random processes measured by operator valued set functions — evolution processes — are systematically examined for the first time. The Feynman-Kac formula, representing perturbations of the heat semigroup in terms of integrals with respect to Wiener measure, is extended in a number of directions: to other countably additive processes, not necessarily associated with probability measure; to unbounded processes such as those associated with Feynman integrals and to random evolutions.

Groups, difference sets, and the monster. — Edited by K.T. Arasu, J.F. Dillon, K. Harada, S. Sehgal, R. Solomon. — Ohio State University Mathematical Research Institute Publications, vol. 4. — Un vol. relié, 18×24,5, de XIII, 461 p. — Prix: DM 198.00. — Walter de Gruyter, Berlin, 1996.

The book is divided into three parts. The first part features articles on the structure, representations and cohomology of finite simple groups as well as articles on finite geometries with large automorphism groups. The second part contains articles on finite difference sets, notably on the newly emerging field of non-abelian difference sets. The third part presents articles on the monster sporadic simple groups, its moonshine properties and connections with conformal field theories. This volume is addressed to specialists in finite simple groups, finite geometries, combinatorial design, and coding theories.

Algebra: proceedings of the IIIrd International Conference on Algebra held in Krasnoyarsk, August 23-28, 1993. — Edited by Yuri L. Ershov, Evgenii I. Khukhro, Vladimir M. Levchuk, Nikolai D. Podufalov. — Un vol. relié, 18×24,5, de XIII, 306 p. — Prix: DM 268.00. — Walter de Gruyter, Berlin, 1996.

This volume contains the proceedings of the IIIrd International Conference on Algebra, which was held in Krasnoyarsk in August 1993 in memory of M.I. Kargapolov. Both western algebraists and Russian mathematicians, in particular from Moscow and the Siberian centers Krasnoyarsk, Novosibirsk, and Omsk report on current trends and recent results in the following areas: group theory, associative rings, field theory, recursion theory, universal algebra. This book is addressed to pure mathematicians, in particular researchers in algebra and logic.

Dirichlet forms and stochastic processes: proceedings of the International Conference held in Beijing, China, October 25-31, 1993. — Edited by Z.M. Ma, M. Röckner, J.A. Yan. — Un vol. relié, 18×24,5, de XI, 443 p. — Prix: DM 268.00. — Walter de Gruyter, Berlin, 1995.

The theory of Dirichlet forms establishes a link between various fields of analysis (as e.g. linear and non-linear functional analysis, analytic potential theory, differential- and pseudo-differential operators... etc.) and of probability theory (as e.g. Markov processes, probabilistic potential theory, martingale theory... etc.). It provides the analytic machinery to study a large class of stochastic processes, and on the other hand it gives clear recipes on how to use probability in order to obtain information about corresponding analytic quantities. The substantial progress of the theory has led to various new applications in related areas of mathematics, mathematical physics, and more recently also biology.

World Congress of Nonlinear Analysts '92. — Proceedings of the first World Congress of Nonlinear Analysts, Tampa, Florida, August 19-26, 1992. — Edited by V. Lakshmikantham. — 4 vol. reliés, 17×24, de XLVI, 3954 p. pour l'ensemble des volumes. — Prix: DM 1198.00. pour l'ensemble des 4 vol. (Pas de vente séparée). — Walter de Gruyter, Berlin, 1996.

These four volumes comprise about 350 selected contributions presented to this congress which was held under the auspices of the International Federation of Nonlinear Analysts (IFNA). Topics covered include: nonlinear operators, fixed point theory, bifurcation, critical point theory, variational methods, inertial manifolds, dynamical systems, evolution equations, various quantitative aspects of PDE and ODE, nonconvex analysis, set-valued analysis, stochastic analysis, numerical and computational aspects, control theory and optimization, nonlinear waves, fluid mechanics, combustion theory, computer vision, structural mechanics, manufacturing systems, environmental problems, neural networks, chaos, artificial intelligence, superconductivity, microelectronic devices, population dynamics, immune systems, biosystems, compartmental systems, bursting rhythms in biosciences, biochemical systems, ecology, enzyme systems, epidemiology and biomedecine. These four volumes are rounded off by the papers presented at “Lyapunov’s and Poincaré’s Centenary Sessions” as well as “Round Table Meetings” in which experts from industry and academic institutions participated.

Boundary value problems, Schrödinger operators, deformation quantization. — Edited by Michael Demuth, Elmar Schrohe, Bert-Wolfgang Schulze (Editor-in-chief). — Mathematical topics, vol. 8: Advances in partial differential equations. — Un vol. relié, 17×24, de 352 p. — Prix: DM 130.00. — Akademie-Verlag, Berlin, 1995.

In the first contribution to this volume, boundary value problems without the transmission condition are interpreted as particular problems on manifolds with edges. In the second paper, a pseudo-differential calculus is constructed for boundary value problems on manifolds with conical singularities. Two further contributions deal with deformation quantization. The first one gives a complete proof of the index theorem in deformation quantization, while the other one treats trace densities. The final article in this volume presents new results on the spectrum of perturbed periodic Schrödinger operators.

Victor R. BOND, Mark C. ALLMAN. — **Modern astrodynamics: fundamentals and perturbation methods.** — Un vol. relié, 16×24, de XI, 250 p. — Prix: US\$35.00. — Princeton University Press, Princeton, N.J., 1996.

This book discusses some techniques used to obtain numerical solutions of the equations of motion for planets and satellites, which are of fundamental importance to solar-system dynamicists and to those involved in planning the orbits of artificial satellites. The first part introduces the classical two-body problem and solves it by rigorously developing the six integrals of the motion. In the second part, several modern perturbation techniques are developed and applied to cases of practical importance. Finally, a brief sketch of numerical methods is given, as the perturbation equations must be solved by numerical rather than by analytical methods.

Bernd STURMFELS. — **Gröbner bases and convex polytopes.** — University lecture series, vol. 8. — Un vol. broché, 17,5×25,5, de XI, 161 p. — Prix: US\$23.00. — American Mathematical Society, Providence RI, 1996, distributed by Oxford University Press, Oxford.

This book is about the interplay of computational commutative algebra and the theory of convex polytopes. It centers around a special class of ideals in a polynomial ring: the class of toric ideals. They are characterized as those prime ideals that are generated by monomial differences or as the defining ideals of toric varieties (not necessarily normal).

Solomon W. GOLOMB. — **Polyominoes: puzzles, patterns, problems, and packings.** — Princeton science library. — Second edition. — Un vol. broché, 15,5×23,5, de XII, 181 p. — Prix: US\$12.95. — Princeton University Press, Princeton, N.J., 1996.

In this fully revised and expanded edition of his landmark book, the author takes a new generation of readers on a mathematical journey into the world of the deceptively simple polyomino. Golomb incorporates important, recent developments, and poses problems, inviting the reader to play with and develop an understanding of the extraordinary properties of polyominoes.

Abdul J. JERRI. — **Linear difference equations with discrete transform methods.** — Mathematics and its applications, vol. 363. — Un vol. relié, $16 \times 24,5$, de XXI, 439 p. — Prix: Dfl. 285.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This book covers the basic elements of difference equations and the tools of difference and sum calculus necessary for studying and solving, primarily, ordinary linear difference equations. A particular feature is the use of the discrete Fourier transforms for solving difference equations associated with, generally nonhomogeneous, boundary conditions. Emphasis is placed on illustrating this new method by means of applications.

Michel GOZE and Yusupdjan KHAKIMDJANOV. — **Nilpotent Lie algebras.** — Mathematics and its applications, vol. 361. — Un vol. relié, $16,5 \times 24,5$, de xv, 336 p. — Prix: Dfl. 245.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This volume is devoted to the theory of nilpotent Lie algebras and their applications. Among the topics discussed here are the following: cohomology theory of Lie algebras, deformations and contractions, the algebraic variety of the laws of Lie algebras, the variety of nilpotent laws, and characteristically nilpotent Lie algebras in nilmanifolds.

S.S. KUTATELADZE. — **Fundamentals of functional analysis.** — Kluwer texts in mathematical sciences, vol. 12. — Un vol. relié, $16,5 \times 24,5$, de xiv, 276. — Prix: Dfl. 245.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This is a concise guide to basic sections of modern functional analysis. Included are such topics as the principles of Banach and Hilbert spaces, the theory of multinormed and uniform spaces, the Riesz-Dunford holomorphic functional calculus, the Fredholm index theory, convex analysis and duality theory for locally convex spaces. This completely revised edition incorporates new sections on the Schwartz spaces of distributions, Radon measures, and a supplementary list of theoretical exercises and problems.

Vector lattices and integral operators. — Edited by S.S. Kutateladze. — Mathematics and its applications, vol. 358. — Un vol. relié, $16,5 \times 24,5$, de ix, 462 p. — Prix: Dfl. 335.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This volume is devoted to modern accomplishments in the field of vector lattices and integral operators which were achieved in Russia during the last two decades. Nonstandard methods are elaborated for the analysis of vector lattices under multiplication by an arbitrary bounded operator for various classes of operators which are defined in terms of order. Also, several approaches to the solution of the J. von Neumann problem on the conditions for integrality of a linear operator are treated, and full information is given on the solution of some problems posed by P. Halmos and V. Sunder.

Partial differential equations and functional analysis: in memory of Pierre Grisvard. — Edited by Jean Cea, Denise Chenais, Giuseppe Geymonat, Jacques Louis Lions. — Progress in nonlinear differential equations and their applications, vol. 22. — Un vol. relié, $16 \times 24,5$, de xxii, 263 p. — Prix: SFr. 128.00. — Birkhäuser, Basel, 1996.

Pierre Grisvard, one of the most distinguished contemporary French mathematicians, died on April 22, 1994. A conference was held in November 1994 out of which grew the invited articles contained in this volume. All of the papers are related to functional analysis applied to partial differential equations, which was Grisvard's specialty. Grisvard also became a specialist in the study of optimal regularity for partial differential equations with boundary conditions. He examined singularities coming from coefficients, boundary conditions, and mainly non-smooth domains.

J. Donald MONK. — **Cardinal invariants on Boolean algebras.** — Progress in mathematics, vol. 142. — Un vol. relié, 16,5×24, de ix, 298 p. — Prix: SFr. 68.00. — Birkhäuser, Basel, 1996.

This book is concerned with cardinal number valued functions defined for any Boolean algebra. Examples of such functions are *independence*, which assigns to each Boolean algebra the supremum of the cardinalities of its free subalgebras, and *cellularity*, which gives the supremum of cardinalities of sets of pairwise disjoint elements. Among the new topics considered are ultraproducts and Fedorchuk's theorem, and there is a more complete treatment of the cellularity of free products. Diagrams at the end of the book summarize the relationships between the functions for many important classes of Boolean algebras, including tree algebras and superatomic algebras.

Handbook of numerical analysis IV: Finite element methods (part 2); Numerical methods for solids (part 2). — Edited by P.G. Ciarlet, J.L. Lions. — Un vol. relié, 16,5×24,5, de x, 974 p. — Prix: Dfl. 300.00. — Elsevier Science, Amsterdam, 1996.

Finite element methods (part 2): Origins, milestones and directions of the finite element method - a personal view (O.C. Zienkiewicz). — Automatic mesh generation and finite element computation (P.L. George). — *Numerical methods for solids (part 2):* Limit analysis of collapse states (E. Christiansen). — Numerical methods for unilateral problems in solid mechanics (J. Haslinger, I. Hlaváček, J. Necas). — Mathematical modelling of rods (L. Trabuco, J.M. Viaño).

Algebraic and geometric methods in mathematical physics. — Proceedings of the Kaciveli Summer School, Crimea, Ukraine, 1993. — Edited by Anne Boutet de Monvel and Vladimir Marchenko. — Mathematical physics studies, vol. 19. — Un vol. relié, 17×24,5, de xiv, 476 p. — Prix: Dfl. 320.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This volume contains the expository lectures and a selection of short communications presented at the Summer School "Algebraic and Geometric Methods in Mathematical Physics", held in Kaciveli, Crimea, Ukraine, in September 1993. Special emphasis is given to certain aspects of quantum groups and conformal field theory, spectral theory of differential and pseudodifferential operators, nonlinear integrable PDEs and related problems of algebra, geometry and analysis. A number of topics of current interest is also discussed, such as nonlinear problems of mathematical economics, direct and inverse problems of spectral theory, mathematical statistical mechanics, etc.

G.A. LEONOV, I.M. BURKIN and A.I. SHEPELJAVYI. — **Frequency methods in oscillation theory.** — Mathematics and its applications, vol. 357. — Un vol. relié, 16,5×24,5, de xii, 403 p. — Prix: Dfl. 280.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This book is devoted to nonlocal theory of nonlinear oscillations. The frequency methods of investigating problems of cycle existence in multidimensional analogues of Van der Pol equation, in dynamical systems with cylindrical phase space and dynamical systems satisfying

Routh-Hurwitz generalized conditions are systematically presented here for the first time. An approach to investigate the stability of cycles based on the ideas of Zhukovsky, Borg, Hartmann, and Olech is presented, and the effects appearing when bounded trajectories are unstable are discussed. For chaotic oscillations, theorems on localizations of attractors are given.

Functional analysis in China. — Edited by Bingren Li, Shengwang Wang, Shaozong Yan and Chung-Chun Yang. — Mathematics and its applications, vol. 356. — Un vol. relié, 16×25 , de xv, 373 p. — Prix: Dfl. 260.00. — Kluwer Academic Publishers, Dordrecht, 1996.

Functional analysis has become one of the main branches in Chinese mathematics. This book seeks to summarise and introduce the historical progress on the development of functional analysis in China from the 1940s to the present. A broad range of topics is covered, such as nonlinear functional analysis, linear operator theory, theory of operator algebras, applications including the solvability of some partial differential equations, and special spaces that contain Banach spaces and topological vector spaces. Some of these papers have made a significant impact on the mathematical community worldwide.

Don REDMOND. — **Number theory: an introduction.** — Pure and applied mathematics, vol. 201. — Un vol. broché, 16×24 , de xii, 749 p. — Prix: US\$ 175.00. — Marcel Dekker, New York, 1996.

This reference/text provides a detailed introduction to number theory and demonstrates how other areas of mathematics enter into the study of the properties of natural numbers. It contains up-to-date information on divisibility properties, polynomial congruences, sums of squares, trigonometric sums, Diophantine approximation, the behavior of prime numbers, algebraic number fields, etc...

Christian PESKINE. — **An algebraic introduction to complex projective geometry.**
1. Commutative algebra. — Cambridge studies in mathematics, vol. 47. — Un vol. relié, $15,5 \times 23,5$, de x, 230 p. — Prix: £ 25.00. — Cambridge University Press, Cambridge, 1996.

This book is in three parts. In the first, the general theory of Noetherian rings and modules is developed. A certain amount of homological algebra is included, and rings and modules of fractions are emphasized, as preparation for working with sheaves. In the second part, the central objects are polynomial rings in several variables with coefficients in the field of complex numbers. After Noether's normalization lemma and Hilbert's Nullstellensatz, affine complex schemes and their morphisms are introduced: Zariski's main theorem and Chevalley's semi-continuity theorem are then proved. Finally, a detailed study of Weil and Cartier divisors provides a solid background for modern intersection theory.

Bengt FORNBERG. — **A practical guide to pseudospectral methods.** — Cambridge monographs on applied and computational mathematics, vol. 1. — Un vol. relié, $14,5 \times 23,5$, de x, 231 p. — Prix: £ 37.50. — Cambridge University Press, Cambridge, 1996.

A key theme of the book is to establish and exploit the close connection that exists between pseudospectral and finite difference methods. This approach not only leads to new insights into already established pseudospectral procedures, but also provides many novel and powerful pseudospectral variations. This book explains how, when, and why this pseudospectral approach works.

G. DA PRATO, J. ZABCZYK. — **Ergodicity for infinite dimensional systems.** — London Mathematical Society lecture note series, vol. 229. — Un vol. broché, 15×23 , de xi, 339 p. — Prix: £ 29.95. — Cambridge University Press, Cambridge, 1996.

This book is devoted to the asymptotic properties of solutions of stochastic evolution equations in infinite dimensional spaces. It is divided into three parts: Markovian dynamical systems; invariant measures for stochastic evolution equations; and invariant measures for specific models. The focus is on models of dynamical processes affected by white noise, which are described by partial differential equations such as the reaction-diffusion equations or Navier-Stokes equations.

Semigroup theory and its applications. — Proceedings of the 1994 conference commemorating the work of Alfred H. Clifford. — Edited by Karl H. Hofmann and Michael W. Mislove. — London Mathematical Society lecture note series, vol. 231. — Un vol. broché, 15×23, de ix, 165 p. — Prix: £ 19.95. — Cambridge University Press, Cambridge, 1996.

The authors of the survey papers represent the leading areas of research in semigroup theory and its applications. Included are papers by Gordon Preston surveying Clifford's work on Clifford semigroups and by John Rhodes tracing the influence of Clifford's work on current semigroup theory. Notable among the areas of applications are the paper by Jean-Eric Pin on applications of other areas of mathematics to semigroup theory and the paper by the editors on an application of semigroup theory to theoretical computer science and mathematical logic.

David W. FARMER and Theodore B. STANFORD. — **Knots and surfaces: a guide to discovering mathematics.** — Mathematical World, vol. 6. — Un vol. broché, 18×25,5, de vi, 101 p. — Prix: £ 14.50. — Oxford University Press, Oxford, 1996.

This book introduces the reader to the excitement of the original discovery. By means of a wide variety of tasks, readers are led to find interesting examples, notice patterns, devise rules to explain the patterns, and discover mathematics for themselves. The subject studied here is the mathematics behind the idea of connectedness, but the methods and ideas apply to all of mathematics.

The Gelfand Mathematical Seminars, 1993-1995. — Edited by I. M. Gelfand, J. Lepowsky, M. M. Smirnov. — Un vol. broché, 16×24, de 274 p. — Prix: SFr. 88.00. — Birkhäuser, Boston, 1996.

This is the second Gelfand Seminar volume, the first having covered the years 1990-1992. As before, the papers are devoted to a broad range of mathematical areas, including: nonlinear evolution equations, noncommutative algebra, Chern-Simon classes, Radon transform, statistical mechanics, plane curves, evolution of solids, an application of modern homological algebra to mathematical physics and hypergeometric functions.

Yuanlong XIN. — **Geometry of harmonic maps.** — Progress in nonlinear differential equations and their applications, vol. 23. — Un vol. relié, 16×24, de x, 241 p. — Prix: SFr. 118.00. — Birkhäuser, Boston, 1996.

The book begins with introductory material that sets the stage by providing several equivalent definitions and some interesting examples. This gives the reader both a brief approach to the theory and a base for understanding later chapters. The remaining chapters cover: conservation law, harmonic maps and Gauss maps, harmonic maps and holomorphic maps, existence, nonexistence and regularity, and equivariant harmonic maps. The strength of the book lies in its exposition of the geometric aspects of harmonic maps and their interrelationships with other mathematical and physical topics.

Janusz CZYZ. — **Paradoxes of measures and dimensions originating in Felix Hausdorff's ideas.** — Un vol. broché, 16×22,5, de xxii, 738 p. — Prix: £ 63.00. — World Scientific, Singapore, 1994.

Biographical sketches. — The paradox of the sphere. — Inaccessible numbers and the hierarchal structure of set theory. — The Hausdorff measures, Hausdorff dimensions and fractals. — The Baker-Campbell-Hausdorff formula. — Hausdorff matrices.

Manifolds and geometry: Pisa 1993. — Edited by Paolo de Bartolomeis, Franco Tricerri, Edoardo Vesentini. — *Symposia mathematica*, vol. 36. — Un vol. relié, 16×23,5, de VIII, 321 p. — Prix: £ 40.00. — Cambridge University Press, Cambridge, 1996.

Brought together in this book are papers from a Conference on Differential Geometry, held in Pisa, in honor of one of the world's most highly respected geometers, Eugenio Calabi. The contributions are from many of the leading authorities in this field and together they cover a wide spectrum of topics and give an overview of current research into differential geometry. 11 papers are presented by D.V. Alekseevsky, M.M. Graev, M. Berger, J.P. Bourguignon, R.L. Bryant, D. Burns, R. Mazzeo, F. Catanese, Y. Eliashberg, H. Hofer, N.J. Hitchin, J. Jorgenson, A. Todorov, S. Kobayashi, F. Labourie.

Recent developments in operator theory and its applications. — International conference in Winnipeg, October 2-6, 1994. — Edited by I. Gohberg, P. Lancaster, P.N. Shivakumar. — *Operator theory, advances and applications*, vol. 87. — Un vol. relié, 17×24, de IX, 435 p. — Prix: SFr. 148.00. — Birkhäuser Verlag, Basel, 1996.

The papers selected here bring readers up to date on recent achievements in modern operator theory and applications. Much space is devoted to the theory of operators on indefinite scalar product spaces and its applications. Infinite matrices and projection methods, differential operators, and mathematical systems theory and control are the other main topics covered.

Semigroups, automata and languages: University of Porto, 20-24 June 1994. — Edited by Jorge Almeida, Gracinda M.S. Gomes, Pedro V. Silva. — Un vol. relié, 16×22,5, de XVII, 299 p. — World Scientific, Singapore, 1996.

The conference "Semigroups, Automata and Languages" was held at the Faculty of Sciences of the University of Porto on June 20-24, 1994. Its aim was to bring together researchers interested in the theories of semigroups, automata and formal languages. The interactions between these subjects have always been quite fruitful. Nevertheless, the conference constituted one of the rare occasions gathering specialists of the different areas, even if not already working on the connections between them, thus promoting the development of new interactions.

Topics in geometry: in memory of Joseph D'Atri. — Edited by Simon Gindikin. — *Progress in nonlinear differential equations and their applications*, vol. 20. — Un vol. relié, 16,5×24,5, de XX, 368 p. — Prix: SFr. 118.00. — Birkhäuser, Boston, 1996.

A significant part of this volume is composed of papers in geometrical areas, where D'Atri made outstanding contributions: Lie groups and homogeneous manifolds, D'Atri spaces, non-symmetric homogeneous bounded domains, Siegel domains, homogeneous cones and different problems of symmetric spaces. The other part of this collection (which intersects with the first) is comprised of contributions by D'Atri's colleagues at Rutgers University.

Tiberiu CONSTANTINESCU. — **Schur parameters, factorization and dilation problems.** — *Operator theory advances and applications*, vol. 82. — Un vol. relié, 17,5×24, de IX, 253 p. — Prix: SFr. 128.00. — Birkhäuser, Boston, 1996.

This book is devoted to the ubiquity of the Schur parameters. A dilation theoretic view leads to a unified perspective on several topics where Schur parameters appear as basic cells.

Together with the transmission line, their physical counterpart, they appear in scattering theory, in modeling, prediction and filtering of nonstationary processes, in signal processing, geophysics and system theory. Modeling problems are considered for certain classes of operators, interpolation problems, determinantal formulae, as well as connections with certain classes of graphs where, again, the Schur parameters could play a role. Some general algorithms that explore the transmission line are also presented in this book.

Syed Jan ABAS, Amer Shaker SALMAN. — **Symmetries of Islamic geometrical patterns.** — Un vol. relié, 16×22,5, de xxii, 396 p. — Prix: £32.00. — World Scientific, Singapore, 1995.

The central purpose of the book is to bring to the attention of the world the potential of Islamic symmetric patterns for providing a unified experience of science and art in the context of geometrical and mathematical education. Such experience has enormous value, not only for mathematicians, but also for artists, designers, computer scientists, physicists, chemists, crystallographers, art historians, archaeologists and others.

P.A. LAGERSTROM. — **Laminar flow theory.** — Princeton paperbacks. — Un vol. broché, 15×23, de 268 p. — Prix: US\$ 19.95. — Princeton University Press, Princeton, 1996.

In this book, which first appeared in a comprehensive collection of essays entitled *The theory of laminar flows* (Princeton, 1964), the author imparts the essential theoretical framework of laminar flows to the reader. Beginning with the conservation laws that result in the equation of continuity, the Navier-Stokes equation, and the energy transport equation, Lagerstrom moves on to consider viscous waves, low Reynolds-number approximations such as Stokes flow and the Oseen equation. Finally, he examines some compressibility effects, such as those that occur in the laminar boundary layer around a flat plate, both with and without a pressure gradient.

Jean-Pierre AUBIN. — **Neural networks and qualitative physics.** — Un vol. relié, 16×24, de xv, 283 p. — Prix: £29.95. — Cambridge University Press, Cambridge, 1996.

This book is devoted to some mathematical methods that arise in two domains of artificial intelligence: neural networks and qualitative physics. The author makes use of control and viability theory in neural networks and cognitive systems, regarded as dynamical systems controlled by synaptic matrices, and set-valued analysis. Mathematical models involve many features of a problem that may not be relevant to its solution. Qualitative physics, however, deals with an imperfect knowledge of the problem model. It is therefore more suited to the study of expert systems.

René LAVENDHOMME. — **Basic concepts of synthetic differential geometry.** — Kluwer texts in mathematical sciences, vol. 13. — Un vol. relié, 16×24,5, de xv, 320 p. — Prix: Dfl. 230.00. — Kluwer Academic Publishers, Dordrecht, 1996.

Starting at an introductory level, the book leads rapidly to important and often new results in synthetic differential geometry. From rudimentary analysis the book moves to such important results as: a new proof of De Rham's theorem; the synthetic view of global action, going as far as the Weil characteristic homomorphism; the systematic account of structured Lie objects, such as Riemannian, symplectic, or Poisson Lie objects, the view of global Lie algebras of a Lie group in the synthetic sense; and lastly the synthetic construction of symplectic structure on the cotangent bundle in general.

Vazgain AVANISSIAN. — **Initiation à l'analyse fonctionnelle.** — Mathématiques. — Un vol. relié, 15 × 22, de xiv, 546 p. — Prix: FF 248.00. — Presses universitaires de France, Paris, 1996.

Ce traité est composé de trois parties: topologie générale, compléments sur les fonctions numériques, éléments des espaces vectoriels topologiques. Son originalité ne réside pas dans les thèmes de ses composantes, mais dans la manière de les aborder, et aussi par les sujets de certains de ses chapitres peu exposés dans la littérature. Par exemple le chapitre concernant la topologie quotient, ou celui consacré aux fonctions convexes d'une variable, à leur représentation intégrale à partir du noyau de Green et au critère logarithmiquement convexe.

Rafal ABLAMOWICZ, Pertti LOUNESTO, Josep M. PARRA. — **Clifford algebras with numeric and symbolic computations.** — Un vol. relié, 18,5 × 26, de xvii, 322 p. — Prix: SFr. 98.00. — Birkhäuser, Basel, 1996.

This volume consists of 20 contributions showing applications of Clifford algebras in quantum mechanics, field theory, spinor calculus, projective geometry, hypercomplex algebra, function theory, crystallography, and in classroom teaching of mathematical physics. They include computations performed with a variety of computer programs such as CLICAL, MAPLE, MATHEMATICA, MATLAB, REDUCE, and computer languages such as FORTRAN and C++. A key feature of the book is that it shows how scientific knowledge can advance with the use of computational tools and software.

Gerard ALLWEIN, Jon BARWISE. — **Logical reasoning with diagrams.** — Studies in logic and computation. — Un vol. relié, 16,5 × 24, de xi, 270 p. — Prix: US\$45.00. — Oxford University Press, New York, 1996.

One effect of information technology is the increasing use of visual displays to present large amounts of information. The author of this book explore the properties of diagrams, charts, and maps, and their use in problem solving and teaching basic reasoning skills. As computers make visual representations more commonplace, it is important for professionals, researchers and students in computer science, philosophy, and logic to develop an understanding of these tools; this book clarifies the relationship between visuals and information.

Nonlinear mathematics and its applications. — Edited by Philip J. Aston. — Un vol. broché, 15,5 × 23, de vii, 256 p. — Prix: £ 15.95. — Cambridge University Press, Cambridge, 1996.

A Spring School in Applied Nonlinear Mathematics was held in 1995. The talks given demonstrated the way in which nonlinear mathematics can be used to understand problems arising in areas such as engineering, fluid mechanics, materials science and biology. This provides a coherent account of recent research in these areas thus making this volume an ideal introduction into a variety of research fields. Furthermore, each chapter contains an extensive list of references which provides an opening into the research literature on each topic.

Arnaud BEAUVILLE. — **Complex algebraic surfaces.** — Second edition. — London Mathematical Society Student Texts, vol. 34. — Un vol. broché, 15,5 × 23, de ix, 132 p. — Prix: £ 13.95. — Cambridge University Press, Cambridge, 1996.

In this book, Professor Beauville gives a lucid and concise account of the subject, following the strategy of F. Enriques, but expressed simply in the language of modern topology and sheaf theory, so as to be accessible to any budding geometer. This volume is self contained and the exercises succeed both in giving the flavour of the extraordinary wealth of examples in the classical subject, and in equipping the reader with most of the techniques needed for research.

Adelchi AZZALINI. — **Statistical inference: based on the likelihood.** — Monographs on statistics and applied probability, vol. 68. — Un vol. relié, 14,5×22,5, de x, 341 p. — Prix: £ 32.00. — Chapman & Hall, London, 1996.

This book introduces likelihood-based statistical theory and related methods from a classical viewpoint, and demonstrates how the main body of currently used statistical techniques can be generated from a few key concepts, in particular the likelihood. Focusing on those methods which have both a solid theoretical background and practical relevance, the author gives formal justification of the methods used and provides numerical answers with real data.

Claude WAGSCHAL. — **Analyse fonctionnelle: exercices et problèmes corrigés.** — Livrets d'exercices. — Un vol. broché, 13×19, de vi, 126 p. — Prix: FF 58.00. — Hermann, Paris, 1995.

Ce livre propose un corrigé de la plupart des exercices figurant dans le chapitre trois du livre du même auteur, *Topologie et analyse fonctionnelle*. Certains exercices ont été regroupés pour constituer des exercices plus substantiels, voire des problèmes. Une table de concordance, à la fin du livre, permettra au lecteur qui le désire de retrouver rapidement le corrigé de chaque exercice.

Claude WAGSCHAL. — **Topologie: exercices et problèmes corrigés.** — Livrets d'exercices. — Un vol. broché, 13×19, de vi, 128 p. — Prix: FF 58.00. — Hermann, Paris, 1995.

Ce livre propose un corrigé de la plupart des exercices figurant dans le chapitre deux du livre du même auteur, *Topologie et analyse fonctionnelle*. Certains exercices ont été regroupés pour constituer des exercices plus substantiels, voire des problèmes. Une table de concordance, à la fin du livre, permettra au lecteur qui le désire de retrouver rapidement le corrigé de chaque exercice du livre.

Gwynne EVANS. — **Practical numerical analysis.** — Un vol. relié, 16×23,5, de XIII, 455 p. — Prix: £ 45.00. — J. Wiley, Chichester, 1995.

This book provides a thorough and comprehensive introduction to the major topics of numerical analysis, i.e. the solution of linear and non-linear equations, eigenvalue problems, approximation theory, quadrature, the numerical solution of ordinary and partial differential equations and optimization. The object of each chapter is to give a sound graded introduction to the topic, followed by up-to-date coverage of the more advanced areas. The emphasis is on the practical application of the work but the main theoretical basis of each topic is included.

Alf VAN DER POORTEN. — **Notes on Fermat's last theorem.** — Canadian Mathematical Society series of monographs and advanced texts. — Un vol. relié, 16,5×24,5, de xv, 222 p. — Prix: £ 35.00 — J. Wiley, New York, 1996.

This book displays the unique talents of author Alf van der Poorten in mathematical exposition for mathematicians. Here, mathematics' most famous question and the ideas underlying its recent solution are presented in a way that appeals to the imagination and leads the reader through related areas of number theory. The first book to focus on the subject since Andrew Wiles presented his celebrated proof, this title surveys 350 years of mathematical history in an amusing and intriguing collection of tidbits, anecdotes, foot-notes, exercises, references, illustrations, and more.

Ergodic theory of Z^d -actions. — Proceedings of the Warwick Symposium, 1993-4. — Edited by Mark Pollicott and Klaus Schmidt. — London Mathematical Society lecture note series, vol. 228. — Un vol. broché, 15,5×23, de VIII, 484 p. — Prix: £ 29.95. — Cambridge University Press, Cambridge, 1996.

The classical theory of dynamical systems has tended to concentrate on \mathbf{Z} -actions or \mathbf{R} -actions. However in recent years there has been considerable progress in the study of higher dimensional actions (ie. \mathbf{Z}^d or \mathbf{R}^d with $d > 1$). This book represents the proceedings of the 1993-4 Warwick Symposium on \mathbf{Z}^d -actions. It comprises a mixture of surveys and original articles that span many of the diverse facets of the subject, including important connections with statistical mechanics, number theory and algebra.

Rings, groups, and algebras. — Edited by X.H. Cao, S.X. Liu, K.P. Shum, C.C. Yang. — Lecture notes in pure and applied mathematics, vol. 181. — Un vol. broché, $18 \times 25,5$, de VIII, 332 p. — Prix: US\$ 150.00. — Marcel Dekker, New York, 1996.

This reference integrates and summarizes the most significant developments made by Chinese mathematicians in rings, groups, and algebras since the 1950s. Presenting both survey articles and recent research results, this book examines important topics in Hopf algebras... representation theory... semigroups... infinite groups... homological algebra... module theory... valuation theory... and more.

Michèle AUDIN. — **Spinning tops: a course on integrable systems.** — Cambridge studies in advanced mathematics, vol. 51. — Un vol. relié, $16 \times 23,5$, de VI, 139 p. — Prix: £ 25.00. — Cambridge University Press, Cambridge, 1996.

A modern view of the role played by algebraic geometry has been established in recent years by many mathematicians. This book presents some of these modern techniques, which fall within the orbit of finite dimensional integrable systems. The main body of the text presents a rich assortment of methods and ideas from algebraic geometry prompted by classical mechanics, whilst in an appendix the general, abstract theory is described. The methods are given a topological application, for the first time in book form, to the study of Liouville tori and their bifurcations.

M. RAPOPORT and Th. ZINK. — **Period spaces for p -divisible groups.** — Annals of mathematics studies, vol. 141. — Un vol. broché, $15,5 \times 23,5$, de XXI, 324 p. — Prix: US\$ 24.95, US\$ 59.50 (relié). — Princeton University Press, Princeton, New Jersey, 1996.

In this monograph p -adic period domains are associated to arbitrary reductive groups. Using the concept of rigid-analytic period maps the relation of p -adic period domains to moduli space of p -divisible groups is investigated. In addition, non-archimedean uniformization theorems for general Shimura varieties are established. The exposition includes background material on Grothendieck's "mysterious functor" (Fontaine theory), on moduli problems of p -divisible groups, on rigid analytic spaces, and on the theory of Shimura varieties, as well as an exposition of some aspects of Drinfelds' original construction.

Gerald E. FARIN. — **NURB curves and surfaces: from projective geometry to practical use.** — Un vol. relié, 16×24 , de XII, 229 p. — Prix: US\$ 39.95. — A.K. Peters, Wellesley, Massachusetts, 1995.

This book, for the first time, covers NURBS (non-uniform rational B-splines) from their theoretical geometric beginnings to their industrial applications. After an introduction to projective geometry, the text moves easily to treat conics in terms of projective as well as rational quadratic NURBS. Farin goes on to use a similar approach to elucidate the general use of NURB curves and surfaces.

Acta numerica 1996, vol. 5. — Managing editor A. Iserles. — Un vol. relié, $18 \times 25,5$, de 395 p. — Prix: £ 36.00. — Cambridge University Press, Cambridge, 1996.

R.E. Bank: Hierarchical bases and the finite element method. — W. Gautschi: Orthogonal polynomials: applications and computation. — W. D. Henshaw: Automatic grid generation. — A.S. Lewis and M.L. Overton: Eigenvalue optimization. — M. Luskin: On the computation of crystalline microstructure. — U. Miekkala and O. Nevanlinna: Iterative solution of systems of linear differential equations. — J.A. Sethian: Theory, algorithms, and applications of level set methods for propagating interfaces.

Barry F. SMITH, Petter E. BJØRSTAD, William D. GROPP. — **Domain decomposition: parallel multilevel methods for elliptic partial differential equations.** — Un vol. relié, 18×26, de XII, 224 p. — Prix: £ 25.00. — Cambridge University Press, Cambridge, 1996.

This book presents an easy-to-read discussion of domain decomposition algorithms, their implementation and analysis. The relationship between domain decomposition and multigrid methods is carefully explained at an elementary level, and discussions of the implementation of domain decomposition methods on massively parallel super-computers are also included. All algorithms are fully described and explained, and a mathematical framework for the analysis and complete understanding of the methods is also carefully developed. In addition, many numerical examples are included to demonstrate the behaviour of this important class of numerical methods.

P. WOJTAŚCZYK. — **Banach spaces for analysts.** — Cambridge studies in advanced mathematics, vol. 25. — Un vol. broché, 15×23, de XIII, 382 p. — Prix: £ 22.95. — Cambridge University Press, Cambridge, 1996.

This is an introduction to modern Banach space theory, in which applications to other areas such as harmonic analysis, function theory, orthogonal series and approximation theory are also given prominence. The author begins with a discussion of weak topologies, weak compactness and isomorphisms of Banach spaces before proceeding to the more detailed study of particular spaces. The book is intended to be used with graduate courses in Banach space theory, so the prerequisites are a background in functional, complex and real analysis.

Jean BERTOIN. — **Lévy processes.** — Cambridge tracts in mathematics, vol. 121. — Un vol. relié, 16×23,5, de X, 265 p. — Prix: £ 35.00. — Cambridge University Press, Cambridge, 1996.

This is an up-to-date and comprehensive account of the theory of Lévy processes. This branch of modern probability theory has been developed over recent years and has many applications in such areas as queues, mathematical finance and risk estimation. Professor Bertoin has used the powerful interplay between the probabilistic structure (independence and stationarity of the increments) and analytic tools (especially Fourier and Laplace transforms) to give a quick and concise treatment of the core theory, with the minimum of technical requirements.

Martin ANTHONY, Norman BIGGS. — **Mathematics for economics and finance: methods and modeling.** — Un vol. broché, 15×23, de 394 p. — Prix: £ 15.95. — Cambridge University Press, Cambridge, 1996.

This book covers the following mathematical topics, with frequent reference to applications in economics and finance. Functions, graphs and equations, recurrences (difference equations), differentiation, exponentials and logarithms, optimisation, partial differentiation, optimisation in several variables, vectors and matrices, linear equations, Lagrange multipliers, integration, first-order and second-order differential equations. Throughout, the stress is firmly on how the mathematics relates to economics, and this is illustrated with copious examples and exercises that will foster depth of understanding.

Lekh R. VERMANI. — **Elements of algebraic coding theory.** — Chapman & Hall mathematics series. — Un vol. broché, 15,5×23,5, de viii, 254 p. — Prix: £27.50. — Chapman & Hall, London, 1996.

Group codes, Hamming codes, polynomial, BCH and cyclic as well as many other codes are introduced in this textbook. Incorporating numerous worked examples and complete logical proofs, it is an ideal introduction to the fundamentals of algebraic coding. The book is intended as a principal text for first courses in coding and algebraic coding theory, and is aimed at advanced undergraduates and recent graduates as both a course and self-study text.

Demir N. KUPELI. — **Singular semi-Riemannian geometry.** — Mathematics and its applications, vol. 366. — Un vol. relié, 16,5×25, de x, 177 p. — Prix: Dfl. 150.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This volume is an exposition of singular semi-Riemannian geometry, i.e. the study of a smooth manifold furnished with a degenerate (singular) metric tensor of arbitrary signature. The main topic of interest is those cases where metric tensors are assumed to be nondegenerate. In the literature manifolds with degenerate metric tensors have been studied extrinsically as degenerate submanifolds of semi-Riemannian manifolds. Here, the intrinsic structure of a manifold with a degenerate metric tensor is studied first, and then it is studied extrinsically by considering it as a degenerate submanifold of a semi-Riemannian manifold.

Kunio MURASUGI, translated by B. KURPITA. — **Knot theory and its applications.** — Un vol. relié, 16×24, de 341 p. — Prix: SFr. 98.00. — Birkhäuser, Basel, 1996.

Knot theory is a concept in algebraic topology that has found applications to a variety of mathematical problems as well as in computer science, biological and medical research, and mathematical physics. This book is directed to a broad audience of research workers and beginning graduate students in these fields. It contains most of the fundamental classical facts about the theory, such as knot diagrams, braid representations, Seifert surfaces, tangles, and Alexander polynomials, as well as more recent developments and special topics such as chord diagrams and covering spaces.

Richard L. EPSTEIN, with the assistance and collaboration of W.A.CARNIELLI, I.M.L. D'OTTAVIANO, Stanislaw KRAJEWSKI, R. MADDUX. — **The semantic foundations of logic: propositional logics.** — Second edition. — Un vol. relié, 17,5×24, de xxvi, 480 p. — Prix: £57.50. — Oxford University Press, Oxford, 1995.

If logic is objective, how can there be so many logics? Is there one right logic, or many right ones? The answers the author proposes revolve around the idea that what one pays attention to in reasoning determines which logic is appropriate. The act of abstracting from our reasoning in our usual language is the stepping-stone from reasoned argument to logic. To understand his answers, the author has retraced his steps: from the concrete to the abstract, from examples to general theory, to further confirming examples, to reflection on the significance of the work.

Vasile SIMA. — **Algorithms for linear-quadratic optimization.** — Pure and applied mathematics, vol 200. — Un vol. relié, 16×23,5, de vii, 366 p. — Prix: US\$ 150.00. — Marcel Dekker, New York, 1996.

This book presents algorithms in a concise, informal language that facilitates computer implementation... discusses the mathematical description, applicability, and limitations of particular solvers... summarizes numerical comparisons of various algorithms... highlights

topics of current interest, including H_∞ and H_2 optimization, defect correction, and Schur and generalized-Schur vector methods... emphasizes structure-preserving techniques... contains many worked examples based on industrial models... covers fundamental issues in control and systems theory such as regulator and estimator design, state estimation, and robust control... and more.

Moduli of vector bundles. — Edited by Masaki Maruyama. — Lecture notes in pure and applied mathematics, vol. 179. — Un vol. broché, 18×25,5, de VIII, 305 p. — Prix: US\$ 135.00. — Marcel Dekker, New York, 1996.

This book contains papers presented at the 35th Taniguchi International Symposium held in Sanda and Kyoto, Japan. Covering a broad array of topics in both differential and algebraic geometry, the book discusses magnetic monopoles... hyper-Kähler manifolds... torus bundles... theory of cycles... the topology of moduli spaces of vector bundles... Witten's S-duality conjecture... new tools to compute Donaldson's invariant... line bundles and their global sections on moduli spaces and more.

Logic: from foundations to applications, European Logic Colloquium. — Edited by Wilfrid Hodges, Martin Hyland, Charles Steinhorn and John Truss. — Oxford Science Publications. — Un vol. relié, 16,5×24, de XIII, 536 p. — Prix: £75.00. — Oxford University Press, Oxford, 1996.

Logic Colloquium '93 was a European Meeting of the Association for Symbolic Logic. It took place at the University of Keele, Staffordshire, England from 20 to 29 July 1993. There were forty-eight contributed papers, some of which appear in this volume by invitation of the editors. The programme also included two short courses, by Lou van den Dries and Harold Simmons. There was a demonstration of logic teaching software, by Richard Bornat, Stephen Read and Steve Reeves.

Geometric and algebraic structures in differential equations. — Edited by P.H.M. Kersten and I.S. Krasil'shchik. — Reprinted from Acta Applicandae Mathematicae, vol. 41, Nos. 1-3, December 1995. — Un vol. relié, 16,5×25,5, de VI, 348 p. — Prix: Dfl. 240.00. — Kluwer Academic Publishers, Dordrecht, 1995.

Nowadays the geometrical and algebraic approach to partial differential equations constitutes a special branch of modern mathematics. In 1993, a workshop on algebra and geometry of differential equations took place at the University of Twente (The Netherlands), where the main state-of-the-art problems were discussed. This book contains a collection of invited lectures presented at this workshop.

Algorithms in algebraic geometry and applications. — Edited by Laureano González-Vega, Tomás Recio. — Progress in mathematics, vol. 143. — Un vol. relié, 16,5×24, de IX, 399 p. — Prix: SFr. 108.00. — Birkhäuser, Basel, 1996.

The present volume contains a selection of refereed papers from the MEGA-94 Symposium held in Santander, Spain, in April 1994. They cover recent developments in the theory and practice of computation in algebraic geometry and present new applications in science and engineering, particularly computer vision and theory of robotics. The volume will be of interest to researchers working in the areas of computer algebra and symbolic computation as well as to mathematicians and computer scientists interested in gaining access to these topics.

John K. BEEM, Paul E. EHRLICH, Kevin L. EASLEY. — **Global Lorentzian geometry.** — Second edition. — Pure and applied mathematics, vol. 202. — Un vol. relié, 16,5×23,5, de XIV, 634 p. — Prix: US\$ 175.00. — Marcel Dekker, New York, 1996.

Carefully comparing and contrasting Lorentzian geometry with Riemannian geometry throughout, this second edition offers a comprehensive treatment of the space-time distance function not available in other books... recent results on the general instability in the space of Lorentzian metrics for a given manifold of both geodesic completeness and geodesic incompleteness... new material on geodesic connectivity... a more in-depth explanation of the behavior of the sectional curvature function in a neighborhood of a degenerate two-plane, etc.

Curtis T. McMULLEN. — **Renormalization and 3-manifolds which fiber over the circle.** — Annals of mathematics studies, vol. 142. — Un vol. broché, 15,5×23,5, de vii, 253 p. — Prix: US\$ 24.95. — Princeton University Press, Princeton, New Jersey, 1996.

Building on work of Sullivan and Thurston, this book gives a unified treatment of the construction of fixed-points for renormalization and the construction of hyperbolic 3-manifolds fibering over the circle. Both subjects are studied via geometric limits and rigidity. This approach shows that open hyperbolic manifolds are inflexible, and yields quantitative counterparts to Mostow rigidity. In complex dynamics, it motivates the construction of towers of quadratic-like maps, and leads to a quantitative proof of convergence of renormalization.

Prem K. KYTHE. — **Fundamental solutions for differential operators and applications.** — Un vol. relié, 16×24, de xix, 411 p. — Prix: SFr. 98.00. — Birkhäuser, Boston, 1996.

The main purpose of this book is to provide a self-contained and systematic development of an aspect of analysis which deals with the theory of fundamental solutions for differential operators and their applications to boundary value problems of mathematical physics, applied mathematics, and engineering, with the related computational aspects. A variety of classical application topics are presented in physics, quantum mechanics, elasticity and fluid dynamics. Additional applications include maximum principle, Cauchy problem, heat and wave potentials, wave propagation, anisotropy, porous media, piezocrystal waves, plate bending, and boundary element methods.

Anthony W. KNAPP. — **Lie groups beyond an introduction.** — Progress in mathematics, vol. 140. — Un vol. relié, 16×24, de xv, 604 p. — Prix: SFr. 78.00. — Birkhäuser, Boston, 1996.

Merging algebra and analysis throughout, the author uses Lie-theoretic methods to develop a beautiful theory having wide applications in mathematics and physics. Topics include a description of all simply connected Lie groups in terms of semisimple Lie algebras, the Cartan-Weyl theory of the structure of representations of compact Lie groups and representations of complex semisimple Lie algebras, the classification of real semisimple Lie algebras, the structure theory of noncompact reductive Lie groups as it is now used in research, and integration of reductive groups.

Marie-France VIGNERAS. — **Représentations l -modulaires d'un groupe réductif p -adique avec $l \neq p$.** — Progress in mathematics, vol. 137. — Un vol. relié, 16×24, de xviii, 233 p. — Prix: SFr. 98.00. — Birkhäuser, Boston, 1996.

The main feature of the book is to develop the theory of types over F_l , and to use this theory to prove fundamental results in the theory of modular representations. This book is divided into three parts: Part I gives elementary facts on representations of a locally profinite group over a commutative ring; Part II develops the algebraic theory of modular representations of a reductive p -adic group G . In the last part, we are given the classification of the modular irreducible cuspidal and supercuspidal representations of $GL(n, F)$, which is the generalization of the work of Bushnell and Kutzko for complex cuspidal representations.

Yuri EGOROV, Vladimir KONDRATIEV. — **On spectral theory of elliptic operators.** — Operator theory, vol. 89. — Un vol. relié, 17×24, de x, 328 p. — Prix: SFr. 158.00. — Birkhäuser, Basel. 1996.

This book contains results obtained by the authors in 1980-1992 and partially published in mathematical journals; some of them have not been translated into English before. The results relate to estimates of the first eigenvalue and the negative spectrum of the Schrödinger operator, as well as to estimates of eigenvalues and eigenfunctions. The first part of the book is of introductory character and contains the required tools from the theory of functional spaces, spectral theory, and the theory of elliptic boundary-value problems.

Jan van NEERVEN. — **The asymptotic behaviour of semigroups of linear operator.** — Operator theory, vol. 88. — Un vol. relié, 17×24, de xii, 236 p. — Prix: SFr. 128.00. — Birkhäuser Verlag, Basel, 1996.

This book presents a systematic account of the theory of asymptotic behaviour of semigroups of linear operators acting in a Banach space. The focus is on the relationship between asymptotic behaviour of the semigroup and spectral properties of its infinitesimal generator. The most recent developments in the field are included, such as the Arendt-Batty-Lyubich-V" theorem, the spectral mapping theorem of Latushkin and Montgomery-Smith, Weis's theorem on stability of positive semigroups in L^p -spaces, the stability theorem for semigroups whose resolvent is bounded in a half-plane, and a systematic theory of individual stability.

Steffen L. LAURITZEN. — **Graphical models.** — Oxford statistical science series, vol. 17. — Un vol. relié, 16,5×24, de x, 298 p. — Prix: £ 35.00. — Clarendon Press, Oxford, 1996.

This book contains the fundamental graph theory required and a thorough study of the Markov properties associated with various types of graphs. The statistical theory of log-linear and graphical models for contingency tables and for mixed discrete-continuous variables, is developed in detail. Special topics, such as the application of graphical models to probabilistic expert systems, are described briefly, and appendices give details of the multivariate normal distribution and of the theory of regular exponential families.

Current topics in complex algebraic geometry. — Edited by Herbert Clemens and János Kollár. — Mathematical Sciences Research Institute publications, vol. 28. — Un vol. relié, 16,5×24, de xi, 158 p. — Prix: £ 24.95. — Cambridge University Press, Cambridge, 1995.

The 1992/93 academic year at the Mathematical Sciences Research Institute was devoted to complex algebraic geometry. This volume collects survey articles that arose from this event, which took place at a time when algebraic geometry was undergoing a major change. This book gives a good idea of the intellectual content of the special year and of the workshops. Its articles represent very well the change of direction and branching out witnessed by algebraic geometry in the last few years.

Introduction to ergodic theory from the point of view of the spectral theory maps in symbolic dynamics. — Lecture notes of the tenth Kaist Mathematics Workshop, 1995. — Edited by Geon Ho Choe. — Un vol. broché, 19,5×26, de 153, 67 p. — Korea Advanced Institute of Science and Technology, Taejon, 1995.

In August 1995 Dr. Mariusz Lemańczyk from Poland and Dr. Masakazu Nasu from Japan were invited in the tenth KAIST Mathematics Workshop in the fields of ergodic theory and topological dynamics, respectively. Each of them gave ten talks on their specialties and recent research results.

Jean FRESNEL. — **Méthodes modernes en géométrie.** — Actualités scientifiques et industrielles, vol. 1437. — Un vol. broché, $17,5 \times 24$, de iv, 408 p. — Prix: FF 160.00. — Hermann, Paris, 1996.

Abordant la géométrie, cet ouvrage destiné aux candidats au concours du CAPES et de l'agrégation, comporte quatre chapitres: *La géométrie affine* qui introduit les espaces affines, les variétés linéaires, le calcul barycentrique et les applications affines; *La géométrie projective* qui conduit à un espace de compactification naturelle de l'espace affine; *La géométrie euclidienne*, plus connue, est ici davantage étoffée. Y sont traitées les géométries des formes classiques et la détermination des cinq polyèdres réguliers en dimension 3; *La géométrie non euclidienne*, qui s'écarterait du cinquième axiome des parallèles de la géométrie d'Euclide, est traitée dans le sillage des deux mille ans d'interrogation des mathématiciens.

David APPLEBAUM. — **Probability and information: an integrated approach.** — Un vol. broché, 17×25 , de xiii, 212 p. — Prix: £ 15.95. — Cambridge University Press, Cambridge, 1996.

This introduction to probability theory and information theory provides a clear and systematic foundation to the subject; the concept of probability is given a particular attention via a highly simplified discussion of measures on Boolean algebras. The theoretical ideas are then applied to practical areas such as statistical inference, random walks, statistical mechanics and communications modelling. Topics dealt with include discrete and continuous random variables, entropy and mutual information, maximum entropy methods, the central limit theorem and the coding and transmission of information.

Ronald MEESTER and Rahul ROY. — **Continuum percolation.** — Cambridge tracts in mathematics, vol. 119. — Un vol, relié, $16 \times 23,5$, de x, 238 p. — Prix: £ 35.00. — Cambridge University Press, Cambridge, 1995.

This book is the first systematic and rigorous account of continuum percolation. The authors treat two models, the Boolean model and the random-connection model, in detail, and discuss a number of related continuum models. All important techniques and methods are explained and applied to obtain results on the existence of phase transition, equality of certain critical densities, continuity of critical densities with respect to distributions, uniqueness of the unbounded component, covered volume fractions, compression, rarefaction, and so on.

Categorical topology. — Proceedings of the L'Aquila Conference (1994). — Edited by Eraldo Giuli — Partially reprinted from Applied Categorical Structures, vol. 4, No. 1, 1996. — Un vol. relié, 16×25 , de 278 p. — Prix: Dfl. 195.00. — Kluwer Academic Publishers, Dordrecht, 1996.

This volume contains carefully selected and refereed papers presented at the International Workshop on Categorical Topology, held at the University of L'Aquila, Italy from August 31-September 4, 1994. This collection represents a wide range of current developments in the field, and will be of interest to mathematicians whose work involves category theory.

Problems and exercises in discrete mathematics. — Edited by G.P. Gavrilov and A.A. Sapozhenko. — Kluwer texts in mathematical sciences, vol. 14. — Un vol. relié, 17×25 , de xi, 422 p. — Prix: Dfl. 295.00. — Kluwer Academic Publishers. Dordrecht, 1996.

Part I of this book contains problems on such topics as Boolean algebra, k-valued logics, graphs and networks, elements of coding theory, automata theory, algorithms theory,

combinatorics, Boolean minimization and logical design. The exercises are preceded by ample theoretical background material. Part II follows the same structure as Part I, and gives helpful hints and solutions.

Computational and constructive design theory. — Edited by W.D. Wallis. — Mathematics and its applications, vol. 368. — Un vol. relié, 16,5 × 25, de xi, 357 p. — Prix: Dfl. 245.00. — Kluwer Academic Publishers, Dordrecht, 1996.

Over the past several years, there has been a significant increase of the application of computational methods to combinatorics. The volume contains eleven papers on various computational techniques used in constructive design theory, written by experts in the field. Included are papers on the use of optimization and numerical analysis techniques, construction of classes of combinatorial design, and attempts to block designs with given small parameters. The volume contains two tutorial papers.

Tilla WEINSTEIN. — **An introduction to Lorentz surfaces.** — De Gruyter expositions in mathematics, vol. 22. — Un vol. relié, 17,5 × 24,5, de xiii, 213 p. — Prix: DM 168.00. — Walter de Gruyter, Berlin, 1996.

Null lines on Lorentz surfaces. — Box surfaces, yardsticks and global properties of Lorentzian metrics. — Conformal equivalence of the Poincaré index. — Kulkarni's conformal boundary. — Using the conformal boundary. — Conformal invariants on Lorentz surfaces. — Classical surface theory and harmonically immersed surfaces. — Conformal realization of Lorentz surfaces in Minkowski 3-space.

Potential theory-ICPT 94. — Proceedings of the International Conference on Potential Theory held in Kouty, Czech Republic, August 13-20, 1994. — Editors: Josef Král, Jaroslav Lukeš, Ivan Netuka, Jiří Veselý. — Un vol. relié, 18 × 24,5, de ix, 499 p. — Prix: DM 268.00. — Walter de Gruyter, Berlin, 1996.

The eleven invited survey lectures and twenty-three research articles in this book provide a broad overview about current activities and trends in potential theory and its relations to other parts of mathematics. Main focus is upon harmonic functions, their boundary behaviour as well as approximation properties, both in classical context and in abstract setting. Connections with analytic functions and the theory of linear and nonlinear differential operators and pseudo-differential operators are also studied. Other subjects covered include semigroups of operators, probabilistic aspects, potential on graphs, and fractals.

M.N. HUXLEY. — **Area, lattice points, and exponential sums.** — London Mathematical Society monographs, New series, vol. 13. — Un vol. relié, 16 × 24, de xii, 494 p. — Prix: £ 85.00. — Clarendon Press, Oxford, 1996.

Elementary methods: The rational line. Polygons and area. The integer points close to a curve. The rational points close to a curve. — *The Bombieri-Iwaniec method:* Analytic lemmas. Mean value results. The simple exponential sum. The exponential sum for the lattice point problem. Exponential sums with a difference. Exponential sums with modular form coefficients. — *The first spacing problem: "integer" vectors:* The ruled surface method. The Hardy-Littlewood method. The first spacing problem for the double sum. — *The second spacing problem: "rational" vectors:* The first and second conditions. Consecutive minor arcs. The third and fourth conditions. — *Results and applications:* Exponential sum theorems. Lattice points and area. Further results. Sums with modular form coefficients. Applications to the Riemann zeta function. An application to number theory: prime integer points. — *Related work and further ideas:* Related work. Further ideas. References. Index.

J.K. LINDSEY. — **Parametric statistical inference.** — Oxford science publications. — Un vol. relié, 16×24 , de XVIII, 490 p. — Prix: £ 35.00. — Clarendon Press, Oxford, 1996.

Inference involves drawing conclusions about some general phenomenon from limited empirical observations in the face of random variability. Two central unifying components of statistics are the likelihood function and the exponential family. These are here brought together for the first time as the central themes of a book on statistical inference. This book is appropriate as an advanced undergraduate or graduate text in mathematical statistics.

A. CHEREMENSKY and V. FOMIN. — **Operator approach to linear control systems.** — Mathematics and its applications, vol. 345. — Un vol. relié, $17 \times 24,5$, de XVI, 396 p. — Prix: Dfl. 295.00. — Kluwer Academic Publishers, Dordrecht, 1996.

Within the framework of the optimization problem for linear control systems with quadratic performance index (LQP), the operator approach allows the construction of a systems theory including a number of particular infinite-dimensional optimization problems with hardly visible concreteness. This book is unique in its emphasis on developing methods for solving a sufficiently general LQP.

Numerical methods and error bounds. — Proceedings of the IMACS-GAMM International Symposium on Numerical Methods and Error Bounds held in Oldenburg, Germany, July 9-12, 1995. — Edited by Götz Alefeld and Jürgen Herzberger. — Mathematical research, vol. 89. — Un vol. broché, $17,5 \times 24$, de 302 p. — Prix: DM 98.00. — Akademie-Verlag, Berlin, 1996.

This volume contains the manuscripts of invited talks and short communications presented at the IMACS-GAMM International Symposium on Numerical Methods and Error Bounds. The subjects of the presentations dealt with problems arising in the investigation of numerical algorithms solving problems in science and engineering with emphasis on systems of linear equations, approximation problems, ordinary and partial differential equations, computational geometry to selected problems in engineering and computer arithmetic.

Paolo BOGGIATTO, Ernesto BUZANO, Luigi RODINO. — **Global hypoellipticity and spectral theory.** — Mathematical research, vol. 92. — Un vol. broché, 17×24 , de 183 p. — Prix: DM 78.00. — Akademie-Verlag, Berlin, 1996.

This book concerns the spectral theory of global hypoelliptic pseudodifferential operators in \mathbf{R}^n and the asymptotic estimate of the eigenvalue distribution function $N(\lambda)$ of a hypoelliptic differential operator with polynomial coefficients in \mathbf{R}^n . In the first part of the book the pseudodifferential calculus with respect to a multi-quasi-elliptic weight is introduced. In particular, the self-adjoint property is related to the Weyl symbol, while positivity, continuity and compactness in $L^2(\mathbf{R}^n)$ are investigated by the Anti-Wick symbol. In the second part, after an introduction to the spectral theory for global hypoelliptic essentially selfadjoint operators, the asymptotic expansion of $N(\lambda)$ is computed for a non-degenerate multi-quasi-elliptic differential operator with polynomial coefficients.

Stability theory. — Hurwitz Centenary Conference, Centro Stefano Franscini, Ascona, 1995. — Edited by R. Jeltsch, M. Mansour. — International series of numerical mathematics, vol. 121. — Un vol. broché, 17×24 , de VI, 249 p. — Prix: SFr. 128.00. — Birkhäuser Verlag, Basel, 1996.

This book contains Hurwitz's seminal paper and describes its impact on the development of stability theory and other fields. The major emphasis, however, is on modern developments and

applications in the theory of control and numerics. Stability of linear and nonlinear problems, time-dependent systems, discretizations of ordinary and partial differential equations, systems with time delay and multidimensional systems are given special attention. In addition, robust stability, pole placement and problems related to the stability radius are considered.

A.C. THOMPSON. — **Minkowski geometry.** — Encyclopedia of mathematics and its applications, vol. 63. — Un vol. relié, $16 \times 24,5$, de xvi, 346 p. — Prix: £ 40.00. — Cambridge University Press, Cambridge, 1996.

This book begins by presenting the topological properties of Minkowski spaces, including the existence and essential uniqueness of Haar measure, followed by the fundamental metric properties — the group of isometries, the existence of certain bases and the existence of the Löwner ellipsoid. This is followed by characterizations of Euclidean space among normed spaces and a full treatment of two-dimensional spaces. The three central chapters present the theory of area and volume in normed spaces. The next chapter deals with trigonometry in Minkowski spaces and the last one takes a brief look at a number of numerical parameters associated with a normed space, including J.J. Schäffer's ideas on intrinsic geometry of the unit sphere.

Bruce HUGHES, Andrew RANICKI. — **Ends of complexes.** — Cambridge tracts in mathematics, vol. 123. — Un vol. relié, $15,5 \times 23,5$, de xxv, 353 p. — Prix: £ 45.00. — Cambridge University Press, Cambridge, 1996.

This book is devoted to the related theory and practice of ends, dealing with manifolds and CW complexes in topology and chain complexes in algebra. The first part develops a homotopy model of the behaviour at infinity of non-compact space. The second part studies tame ends in topology. Tame ends are shown to have a uniform structure, with a periodic shift map. Approximate fibrations are used to prove that tame manifold ends are the infinite cyclic covers of compact manifolds. The third part translates these topological considerations into an appropriate algebraic context, relating tameness to homological properties and algebraic K - and L -theory.