BULLETIN BIBLIOGRAPHIQUE

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S.P. NOVIKOV. — **Solitons and geometry.** — Lezioni Fermiane. — Un vol. broché, 17×24, de 58 p. — Prix: £9.95. — Cambridge University Press, Cambridge, 1994.

Introduction. Plan of the lectures. Poisson structures. — Poisson structures on finite-dimensional manifolds. Hamiltonian systems. Completely integrable systems. — Classical analogue of the Dirac monopole. Complete integrability and algebraic geometry. — Poisson structures on loop spaces. Systems of hydrodynamic type and differential geometry. — Non-linear WKB (hydrodynamics of weakly deformed soliton lattices).

Pseudo-differential calculus and mathematical physics. — Edited by Michael Demuth, Elmar Schrohe, Bert-Wolfgang Schulze. — Mathematical topics, vol. 5: Advances in partial differential equations. — Un vol. relié, 17,5×24,5, de 391 p. — Prix: DM 130.00. — Akademie Verlag, Berlin, 1994.

The present volume contains contributions to the theory of boundary value problems without the transmission property under the aspect of variable branching asymptotics, on commutator characterizations and the submultiplicativity of Boutet de Monvel's algebra, the construction of a pseudo-differential calculus for boundary value problems on manifolds with conical singularities, and on heat kernel estimates for elliptic singular operators.

Carl-Heinz SCRIBA. — **Local analysis, part A: Foundations and differential calculus.** — Un vol. relié, 17,5×24,4, de XI, 240 p. — Prix: DM 84.00. — Akademie Verlag, Berlin, 1994.

The first part of "Local analysis" is selfconsistent and provides a detailed introduction to those parts of finite-dimensional real calculus which deal with multidimensional differentiation and only one-dimensional integration (over directed intervals). The exposition is coordinate-free and avoids both dependent variables and differentials by exclusively using the concepts of function and derivative.

Carl-Heinz SCRIBA. — **Local analysis, part B: First order differential equations and differential forms.** — Un vol. relié. 17,5×24,5, de IX, 330 p. — Prix: DM 118.00. — Akademie Verlag, Berlin, 1994.

The second part of "Local analysis" provides a detailed introduction to the initial value problems of certain systems of first order ordinary and partial differential equations as well as to the theory of differential forms. The book aims at Pfaff's problem for which the maximal dimension of integral surfaces of a linear functional field is determined.

Seppo HEIKKILÄ, V. LAKSHMIKANTHAM. — **Monotone iterative techniques for discontinuous nonlinear differential equations.** — Pure and applied mathematics, vol. 181. — Un vol. relié, 16×24, de IX, 514 p. — Prix: US$165.00. — Marcel Dekker, New York, 1994.

The book develops new existence and comparison results when the functions involved in the differential equations admit a threefold decomposition into continuous and discontinuous functions in the dependent variable...extends the method of upper and lower solutions and the monotone iterative technique to Carathéodory systems in finite as well as infinite dimensional spaces.

P.M. COHN. — **Elements of linear algebra.** — Chapman & Hall mathematics. — Un vol. broché, 15,5×23,5, de XIII, 224 p. — Prix: £13.99. — Chapman & Hall, London, 1994.

The book presents a thorough discussion of systems of linear equations and their solutions. The text treats the coordinate geometry of lines, planes and quadrics, provides a natural application for the linear algebra and at the same time furnishes a geometrical interpretation to illustrate the algebraic concepts. In addition there is a chapter dealing with normal forms. There are exercises at the end of each chapter.

Partial differential equations of elliptic type: Cortona 1992. — Edited by Angelo Alvino, Eugene Fabes, Giorgio Talenti. — Symposia matematica, vol. 35. — Un vol. relié, 15,5×23,5, de 223 p. — Prix: £35.00. — Cambridge University Press, Cambridge, 1994.

Under the auspices of the Istituto Nazionale di Alta Matematica, a conference was held in October 1992 in Cortona, Italy, to study partial differential equations of elliptic type. Here special emphasis is placed on the geometric aspects of the subject, giving this volume a unique flavor. This volume collects the best papers, covering the latest advances and shedding new light on old problems.

Roger A. HORN, Charles R. JOHNSON. — **Topics in matrix analysis.** — Un vol. broché, 15×20, de VIII, 607 p. — Prix: £19.95. — Cambridge University Press, Cambridge, 1994.

The book treats in detail several topics with important applications and of special mathematical interest in matrix theory. These topics include the field of values, stable matrices and inertia, singular values, matrix equations and Kronecker products, Hadamard products, and matrices and functions. The authors assume a background in elementary linear algebra and knowledge of rudimentary analytical concepts.

William DUNHAM. — **The mathematical universe: an alphabetical journey through the great proofs, problems, and personalities.** — Un vol. relié, 16×24, de VI, 314 p. — Prix: £16.95. — John Wiley & Sons, New York, 1994.

Spanning five thousand years, Dunham explores distinctive subjects, from the earliest known records of arithmetic to the intriguing puzzles of infinite series and the quirky characteristics of irrational numbers. Throughout he provides surprising and amusing anecdotes from the lives of the great masters, such as Bertrand Russel, Bernoulli brothers and Sofia Kovalevskaia. This book is accessible to all readers with a basic knowledge of algebra and geometry.

Gary L. WISE, Eric B. HALL. — **Counterexamples in probability and real analysis.** — Un vol. relié, 16×24,5, de XII, 211 p. — Prix: £32.50. — Oxford University Press, New York, 1993.

Ideas in mathematical science that might seem intuitively obvious may be proved incorrect with the use of their counterexamples. This monograph concentrates on counterexamples for use at the intersection of probability and real analysis, making it unique among treatments of counterexamples. The authors maintain that if taught correctly, probability theory cannot be separated from real analysis.

Robert J. LOPEZ. — **Maple via calculus: a tutorial approach.** — Un vol. broché, 21,5×28, de 166 p. — Prix: SFr. 49.50. — Birkhäuser, Boston, 1994.

"Modern software tools like Maple have the potential to alter radically the way mathematics is taught, learned, and done". This book brings a fresh look at the standard calculus curriculum, colored by the existence of technology like Maple. Drill exercises and rote manipulation are replaced here with conceptual learning activities and an exploratory interaction with mathematics not seen in traditional courses.

Maple V: mathematics and its application. — Proceedings of the Maple Summer Workshop and Symposium, Rensselaer Polytechnic Institute, Troy, New York, August 9-13, 1994. — Edited by Robert J. Lopez. — Un vol. broché, 22×28, de XI, 234 p. — Prix: SFr. 68.00. — Birkhäuser, Boston, 1994.

The workshop brought together a dynamic group of mathematicians and applied scientists who demonstrated a wide selection of applications of Maple to problem solving as well as teaching. Topics discussed were in mathematics, chemical, mechanical, and electrical engineering, physical chemistry and biochemistry, computer science, statistics, neural networks, and physics.

Probability in Banach spaces, 9. — Edited by Jorgen Hoffmann-Jorgensen, James Kuelbs, Michael B. Marcus. — Progress in probability, vol. 35. — Un vol. relié, 16×24, de VI, 431 p. — Prix: SFr. 158.00. — Birkhäuser, Boston, 1994.

This volume includes a selection of papers by the participants of the Probability in Banach Spaces Conference held at Sanjberg, Denmark, August 16-21, 1993. Several papers report on recent advances in classic and modern limit theorems in Banach spaces, in others, the techniques developed in this area are applied to empirical processes, spacing estimates, large deviation probabilities, measure inequalities and the study of stochastic processes.

Neil A. WATSON. — **Mathematical analysis explained.** — Un vol. relié, 16×22, de IX, 179 p. — Prix: £28.00. — World Scientific, Singapore, 1993.

This is a first course in mathematical analysis, for students who are already familiar with calculus but are not familiar with formal proofs. All but the most straightforward proofs are worked out in detail before being presented. Thus most of the ideas are expressed in two different ways, the first constitutes a proof.

Ding-Zhu DU, Frank K. HWANG. — **Combinatorial group testing and its applications.** — Series on applied mathematics, vol. 3. — Un vol. relié, 16×22, de X, 249 p. — Prix: £27.00. — World Scientific, Singapore, 1993.

Introduction. — General algorithms. — Algorithms for special cases. — Nonadaptive algorithms and binary superimposed codes. — Multiaccess channels and extensions. — Some other group testing models. — Competitive group testing. — Unreliable tests. — Optimal search in one variable. — Unbounded search. — Group testing on graphs. — Membership problems. — Complexity issues.

A.V. BITSADZE. — **Partial differential equations.** — Series on Soviet and East European mathematics, vol. 2. — Un vol. relié, 16×23, de XIII, 227 p. — Prix: £34.00 — World Scientific, Singapore, 1994.

From the preface: This book is based on the lectures on partial differential equations given by the author to students of the fourth year in the Department of Computational Mathematics

and Cybernetics of Moscow M.V. Lomonosov State University. The theoretical foundations of partial differential equations are explained rigorously and clearly in such way that their importance in applications is also taken into account.

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

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

Brian S. THOMSON. — **Symmetric properties of real functions.** — Pure and applied mathematics, vol. 183. — Un vol relié, 16×24, de XIII, 447 p. — Prix: US$ 150.00. — Marcel Dekker, New York, 1994.

This practical reference offers detailed coverage of every important aspect of symmetric structures in functions of a single real variable-furnishing valuable assistance for real analysis problems involving symmetric derivatives, symmetric continuity, and local symmetric structure of sets or functions and providing a historical perspective, proofs, and useful methods for addressing problems.

Comparison methods and stability theory. — Edited by Xinzhi Liu, David Siegel. — Lecture notes in pure and applied mathematics, vol. 162. — Un vol. broché, 18×25, de XI, 365 p. — Prix: US$ 145.00. — Marcel Dekker, New York, 1994.

Featuring numerous applications of comparison methods to real-world problems, the book discusses the direct method of Lyapunov...monotone iterative techniques...numerical methods...monotone flows...semiconductor equations...Schrödinger equations...the method of upper-lower solutions...Hamilton equations...etc.

Spectral and scattering theory. — Proceedings of the Taniguchi International Workshop. — Edited by Mitsuru Ikawa. — Lecture notes in pure and applied mathematics, vol. 161. — Un vol. broché, 18×25, de VIII, 329 p. — Prix: US$ 135.00. — Marcel Dekker, New York, 1994.

The book examines tunneling effects and the $W^{k,p}$-continuity of scattering matrices... the uniqueness theorem, eigenfunctions, Stark effects, and semiclassical asymptotics in Schrödinger equations of many-body systems...nonlinear periodic Schrödinger equations and Toda lattice equations...scattering poles of acoustic equations...etc.

Optimal control of differential equations. — A Festschrift in honor of Constantin Corduneanu. — Edited by Nicolae H. Pavel. — Lecture notes in pure and applied mathematics, vol. 160. — Un vol. broché, 18×25, de X, 335 p. — Prix: US$ 125.00. — Marcel Dekker, New York, 1994.

Containing contributions from more than 30 authors, the book introduces new results as well as novel methods and techniques and examines ergodic, periodic, and antiperiodic control with applications to physical systems with the reversal of sign of state vector...stochastic differential equations boundary control...shape optimization via nonsmooth analysis... etc.

Rings, extensions, and cohomology. — Proceedings of the conference on the occasion of the retirement of Daniel Zelinsky. — Edited by Andy R. Magid. — Lecture notes in pure and applied mathematics, vol. 159. — Un vol. broché, 18×25, de XII, 241 p. — Prix: US$ 110.00. — Marcel Dekker, New York, 1994.

This volume demonstrates that while the set of cocycles is, in general, not closed under multiplication, some cycles do fit neatly into an algebraic structure...discusses Lie color algebras...constructs essential extensions of simple highest weight modules for semisimple Lie algebras... details a unique situation in which conjugate splittings can be proved to arise... etc.

Boundary control and variation. — Edited by Jean-Paul Zolésio. — Lecture notes in pure and applied mathematics, vol. 163. — Un vol. broché, 18×25, de IX, 400 p. — Prix: US$ 160.00. — Marcel Dekker, New York, 1994.

Furnishing numerical approximations for partial differential equations of mathematical physics, this book offers a new approach to large and nonlinear variation of the boundary using global Eulerian coordinates and intrinsic geometry and supplies in depth studies of non-cylindrical evolution problems...shape optimization in boundary value problems... etc.

Calculus: an active approach with projects. — The Ithaca College Calculus Group: Stephen Hilbert, John Maceli, Eric Robinson, Diane Driscoll Schwartz, Stan Seltzer. — Un vol. broché, 21×25,5, de XI, 257 p. — Prix: £ 14.95. — John Wiley & Sons, New York, 1994.

This book is a collection of materials for first-year calculus. It is not a complete textbook, but a complementary volume that can be used successfully in conjunction with any textbook. The authors view calculus as a unified subject rather than a linearly ordered sequence of topics. The materials in this book were designed to bring these ideas to life in the classroom.

Large scale optimization: state of the art. — Edited by W.W. Hager, D.W. Hearn, P.M. Pardalos. — Un vol. relié, 17×25,5 de XIV, 456 p. — Prix: Dfl. 295.00. — Kluwer Academic Publishers, Dordrecht, 1994.

As a consequence of new algorithmic developments, large-scale optimization has seen a dramatic increase in activities in the past decade. Topics include large-scale linear, nonlinear and stochastic programming, network optimization, decomposition methods, methods for optimal control, nonsmooth equations, integer programming, and software development. In addition aplications are included in location theory, structural mechanics, molecular configuration, transportation, multitarget tracking, and database design.

Semen B. YAKUBOVICH, Yurii F. LUCHKO. — **The hypergeometric approach to integral transforms and convolutions.** — Mathematics and its applications, vol. 287. — Un vol. relié, 16.5×24,5, de XI, 324 p. — Prix: Dfl. 225.00. — Kluwer Academic Publishers, 1994.

This volume deals with the theory and applications of integral transforms and convolutions of certain classes of integral, integro-differential equations, and operational calculus. An extensive discussion is presented, based on the universal hypergeometric approach, i.e. many constructions of convolution and integral transforms are obtained using the theory of Mellin-Barnes integrals and the Mellin transforms of hypergeometric type functions.

Victor G. KRAVCHENKO and Georgii S. LITVINCHUK. — **Introduction to the theory of singular integral operators with shift.** — Mathematics and its applications, vol. 289. — Un vol. relié, 16,5×24,5, de XVI, 288 p. — Prix: Dfl. 210.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This book is devoted to the Fredholm theory of singular integral operators. Fredholm criteria are derived and the indices of the Fredholm operators are computed. A theory of continuous invertibility for functional operators is constructed, and its relation to the theory of

dynamical systems is discussed. A new systematic approach to the Fredholm theory of classical singular integral equations with Cauchy kernel is proposed.

Johann PFANZAGL. — **Parametric statistical theory.** — With the assistance of R. Hamböker. — De Gruyter textbook. — Un vol. broché, 15,5×23, de XIII, 374 p. — Prix: DM 98.00 (relié: DM 148.00). — Walter de Gruyter, Berlin, 1994.

This graduate-level textbook provides an introduction to the essential parts of the theory of estimation and hypothesis testing for parametric models. Starting from basic concepts like sufficiency, completeness, monotony of likelihood ratios, and invariance, the text covers exact as well as asymptotic theory. Emphasis is on theoretical results, including optimality concepts for estimators and confidence procedures.

Jordan algebras. — Edited by Wilhelm Kaup, Kevin McCrimmon, Holger P. Petersson. — Proceedings of the Conference held in Oberwolfach, Germany, August 9-15, 1992. — Un vol. relié, 17,5×24,5, de VIII, 339 p. — Prix: DM 198.00. — Walter de Gruyter, Berlin, 1994.

Jordan algebras were introduced some sixty years ago in order to describe the quantum mechanical formalism in algebraic terms. Since then a well-established algebraic theory of considerable generality has been developed about these systems, with important applications to real and complex analysis, Lie algebras and algebraic groups, geometry, and physics. This volume collects papers by experts in the field, giving an account of the developments of the last decade that are not available in book form.

Zero-dimensional schemes. — Proceedings of the International Conference held in Ravello, June 8-13, 1992. — Edited by Ferruccio Orecchia, Luca Chiantini. — Un vol. relié, 17,5×24,5, de VIII, 339 p. — Prix: DM 198.00. — Walter de Gruyter, Berlin, 1994.

The theory of zero-dimensional schemes was developed in classical algebraic geometry as a tool for studying projective and affine varieties. This is the first book entirely devoted to this subject. Topics covered include projective varieties and linear systems, codes, differentials and singularities, combinatorics and graphs. As a guide for further research a list of open problems is included at the end of the volume.

V.G. TURAEV. — **Quantum invariants of knots and 3-manifolds.** — De Gruyter studies in mathematics, vol. 15. — Un vol. relié, 18×25, de X, 588 p. — Prix: DM 228.00. — Walter de Gruyter, Berlin, 1994.

This monograph provides a systematic treatment of topological quantum field theories in three dimensions, inspired by the discovery of the Jones polynomial of knots, the Witten-Chern-Simons field theory, and the theory of quantum groups. Contents: Invariants of graphs in Euclidean 3-space. — Invariants of closed 3-manifolds. — Foundations of topological quantum field theory. — Three-dimensional topological quantum field theory. — Two dimensional modular functors. — $6j$-symbols, algebraic approach to $6j$-symbols. — Simplicial state sums on 3-manifolds. — Generalities on shadows. — Shadows of manifolds. — State sums on shadows. — An algebraic construction of modular categories. — A geometric construction of modular categories.

Marc HENNEAUX and Claudio TEITELBOIM. — **Quantization of gauge system.** — Un vol. relié, 15×24, de XXII, 520 p. — Prix: US$29.95. — Princeton University Press, Princeton, New Jersey, 1992.

This book is a systematic study of the classical and quantum theories of gauge systems. It starts from the classical analysis of Dirac, showing that gauge theories are constrained Hamiltonian systems, and works its way up to ghosts and the Becchi-Rouet-Stora-Tyutin symmetry and its cohomology, including the formulation in terms of antifields. The quantum mechanical analysis deals with both the operator and path integral methods.

Goro SHIMURA. — **Introduction to the arithmetic theory of automorphic functions.** — Publications of the Mathematical Society of Japan, vol. 11. — Un vol. broché, 15,5×23,5, de XIV, 271 p. — Prix: US$39.50. — Princeton University Press, Princeton, New Jersey, 1994.

Fuchsian groups of the first kind. Automorphic forms and functions. Hecke operators and the zeta-functions associated with modular forms. Elliptic curves. Abelian extensions of imaginary quadratic fields and complex multiplication of elliptic curves. Modular functions of higher level. Zeta-functions of algebraic curves and Abelian varieties. The cohomology group associated with cusp forms. Arithmetic Fuchsian groups.

Roland OMNES. — **The interpretation of quantum mechanics.** — Princeton series in physics. — Un vol. broché, 15,5×23,5, de XIV, 550 p. — Prix: US$39.50 (relié: US$95.00). — Princeton University Press, Princeton, New Jersey, 1994.

The author examines a number of recent advances, which, combined, lead to a consistent revision of the Copenhagen interpretation. His aim is to show how this interpretation can fit all present experiments, to weed out unnecessary or questionable assumptions, and to assess the domain of validity where the older statements apply.

Solomon W. GOLOMB. — **Polyominoes: puzzles, patterns, problems and packings.** — Second edition. — Un vol. relié, 16,5×24,5, de XII, 184 p. — Prix: US$24.95. — Princeton University Press, Princeton, New Jersey, 1994.

Inspiring popular video games like Tetris while contributing to the study of combinatorial geometry and tiling theory, polyominoes have continued to spark interest ever since their inventor, Solomon Golomb, introduced them to puzzle enthusiasts. 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 polyominoes, incorporating important recent developments.

Marvin ROSENBLUM, James ROVNYAK. — **Topics in Hardy classes and univalent functions.** — Birkhäuser advanced texts: Basler Lehrbücher. — Un vol. relié, 17,5×24, de IX, 250 p. — Prix SFr. 68.00. — Birkhäuser, Basel, 1994.

This book treats classical and contemporary topics in function theory and is accessible after a one-year course in real and complex analysis. — Contents: Harmonic functions. Subharmonic functions. Harmonic majorants. Nevanlinna and Hardy-Orlicz classes. Hardy spaces on the disk. Function theory on a half-plane. Phragmén-Lindelöf principle. Loewner families. Loewner's differential equation. Coefficient inequalities.

Gerald KAISER. — **A friendly guide to wavelets.** — Un vol. relié, 18,5×26, de XIV, 300 p. — Prix: SFr. 68.00. — Birkhäuser, Boston, 1994.

Basic wavelet analysis: Preliminaries, background and notation. Windowed Fourier transforms. Continuous wavelet transforms. Generalized frames: key to analysis and synthesis. Discrete time-frequency analysis and sampling. Discrete time-scale analysis. Multiresolution analysis. Daubechies' orthonormal wavelet bases. — Physical wavelets: Introduction to wavelet electromagnetics. Applications to radar and scattering. Wavelet acoustics.

Nonselfadjoint operators and related topics. — Workshop on operator theory and its applications, Beersheva, February 24-28, 1992. — Edited by A. Feintuch, I. Gohberg. — Operator theory, vol. 73. — Un vol. relié, 17,5×24, de X, 416 p. — Prix: SFr. 148.00. — Birkhäuser, Basel, 1994.

The volume contains a selection of papers covering a wide range of topics in modern operator theory and its applications, from abstract operator theory to system theory and computers in operator models. The papers treat linear and nonlinear problems, and study operators from different abstract and concrete classes.

Control and estimation of distributed parameter systems: nonlinear phenomena. — International Conference in Vorau (Austria), July 18-24, 1993. — Edited by W. Desch, F. Kappel, K. Kunisch. — International series of numerical mathematics, vol. 118. — Un vol. relié, 17,5×24, de XIII, 402 p. — Prix: SFr. 138.00. — Birkhäuser, Basel, 1994.

22 papers on control of nonlinear partial differential equations highlight the area and comprise theoretical considerations such as optimality conditions, relaxation, or stabilizability theorems, as well as the development and evaluation of new algorithms. Some papers are devoted to applications in engineering, continuum mechanics and population biology.

Stephan KAUFMANN. — ***Mathematica* as a tool: an introduction with practical examples.** — Un vol. broché, 17×24, de IX, 429 p. — Prix: SFr. 48.00. — Birkhäuser, Basel, 1994.

The software *Mathematica* combines symbolic and numerical calculations, plots, graphics programming, list calculations and structured documentation into a unified, interactive environment. This book gives an overview of the main commands of the program, then a study of the detailed syntax and the evaluation process. This knowledge is the basis for programming in *Mathematica*, to which the last part of the book is dedicated.

Geoffrey M. DIXON. — **Division algebras: octonions, quaternions, complex numbers and the algebraic design of physics.** — Mathematics and its applications, vol. 290. — Un vol. relié, 16,5×24,5, de X, 236 p. — Prix: £94.00. — Kluwer Academic Publishers, Dordrecht, 1994.

Using the new tool of adjoint division algebras, with respect to which the division algebras themselves appear in the role of spinor spaces, some of these structures are developed, including parallelizable spheres, exceptional Lie groups, and triality. Motivating this work, however, is a strong conviction that the design of our physical reality arises from this select mathematical realm.

Nonlinear numerical methods and rational approximation II. — Edited by Annie Cuyt. — Mathematics and its application, vol. 296. — Un vol. relié, 16,5×24,5, de XVIII, 446 p. — Prix: £195.00. — Kluwer Academic Publishers, Dordrecht, 1994.

These are the proceedings of the international conference organized at the University of Antwerp, Belgium, 5-11 September 1993. The conference focused on the use of rational functions in different fields of numerical analysis. The invited speakers discussed five main topics, which are represented by the five sections of this book: orthogonal polynomials, rational interpolation, rational approximation, Padé approximation and continued fractions.

Dynamics, bifurcation and symmetry: new trends and new tools. — Edited by Pascal Chossat. — NATO ASI series. Series C: Mathematical and physical sciences, vol. 437. — Un

vol. relié, 16,5×24,5, de XV, 354 p. — Prix: Dfl. 265.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This book collects 28 contributions to the conference, which was held at the Institut d'Etudes Scientifiques de Cargèse (France), September 3-9, 1993. The first aim of this conference was to gather and summarize the work of the European Bifurcation Theory Group after two years of existence. It includes a number of results which have not been previously made available in book form. Computational aspects of these theories are also considered.

Finite dimensional algebras and related topics. — Edited by V. Dlab and L.L. Scott. — NATO ASI series, Series C: Mathematical and physical sciences, vol. 424. — Un vol. relié, 16,5×24,5, de XIV, 390 p. — Prix: Dfl. 260.00. — Kluwer Academic Publishers, Dordrecht, 1994.

Based on invited lectures at the 1992 Canadian Algebra Seminar, this volume represents an up-to-date report on finite-dimensional algebras as a subject with many serious interactions with other mathematical disciplines, including algebraic groups and Lie theory, automorphic forms, sheaf theory, finite groups, and homological algebra.

EUCLIDE d'Alexandrie. — **Les Eléments, Volume 2: Livres V-VI: proportions et similitude, Livres VII-IX: arithmétique.** — Traduits du texte de Heiberg. — Traduction et commentaires par Bernard Vitrac. — Bibliothèque d'histoire des sciences. — Un vol. broché, 15×22, de 572 p. — Prix: FF 495.00. — Presses universitaires de France, Paris, 1994.

Le deuxième volume des «Eléments» contient les Livres V-IX qui exposent d'abord la théorie générale des proportions (V) et ses applications à la géométrie plane (VI), puis l'arithmétique (VIII-IX). La traduction nouvelle qui est ici proposée de l'original grec, dans la version qui fait autorité, le restitue dans son intégralité. Un commentaire rend compte des questions linguistiques, historiques, mathématiques.

Gérard HIRSCH, Gérard EGUETHER. — **Fonctions de plusieurs variables: 364 exercices corrigés.** — Collection «Comprendre et appliquer», mathématiques pratiques élémentaires. — Un vol. broché, 17,5×24, de X, 139 p. — Prix: FF 85.00. — Masson, Paris, 1994.

Cet ouvrage est consacré aux fonctions de plusieurs variables réelles. Les premiers chapitres présentent les définitions rigoureuses de ces fonctions et des problèmes qu'elles posent. Les chapitres suivants décrivent les techniques de calcul liées à l'intégration des fonctions de plusieurs variables et des formes différentielles. De nombreux exemples et exercices corrigés permettront l'assimilation des techniques de calcul.

V. KOMORNIK. — **Exact controllability and stabilization: the multiplier method.** — RAM, Research in applied mathematics, vol. 36. — Un vol. broché, 16×24, de VIII, 156 p. — Prix: FF 175.00. — Masson, Paris, 1994.

This book grew out of a series of lectures on the exact controllability and stabilization of distributed systems, given over the past four years in France, Hungary and the U.S.A. Although many results are published here for the first time, this text is intended as an introduction to these topics. In the first part, exact boundary controllability problems are studied using the Hilbert uniqueness method. The second part is devoted to stabilization.

Jean-Claude BELLOC, Patrice SCHILLER. — **Mathématiques pour l'électronique.** — IUT-STS, Instituts d'ingénieurs, formation continue. — Un vol. broché, 16×24, de VII, 294 p. — Prix: FF 158.00. — Masson, Paris, 1994.

Cet ouvrage présente l'outil mathématique indispensable à l'électronicien. Les notions de base de mathématiques générales sont définies de manière claire et synthétique; les chapitres clefs utiles pour l'électronique sont ensuite développés: traitement des équations différentielles par la transformation de Laplace, l'analyse harmonique d'un signal, la transformée en Z d'une fonction échantillonnée...

Michael Sh. BRAVERMAN. — **Independent random variables and rearrangement invariant spaces.** — London Mathematical Society lecture note series, vol. 194. — Un vol. broché, 15,5×23, de VIII, 115 p. — Prix: £19.95. — Cambridge University Press, Cambridge, 1994.

The author investigates independent random variables in rearrangement invariant (r.i.) spaces. The significant feature of r.i. spaces is that the norm of an element depends on its distribution only, and this property allows the results and methods associated with r.i. spaces to be applied to problems in probability theory. On the other hand, probabilistic methods can also prove useful in the study of r.i. spaces.

Peter J. CAMERON. — **Combinatorics: topics, techniques, algorithms.** — Un vol. broché, 17,5×24,5, de VIII, 355 p. — Prix: £14.95 (relié: £35.00). — Cambridge University Press, Cambridge, 1994.

This is a textbook aimed at second-year undergraduates to beginning graduates. It stresses common techniques (such as generating functions and recursive construction) which underlie the great variety of subject matter and also stresses the fact that a constructive or algorithmic proof is more valuable than an existence proof.

Bruce SHAWYER, Bruce WATSON. — **Borel's methods of summability: theory and applications.** — Oxford mathematical monographs. — Un vol. relié, 16,5×24, de XII, 242 p. — Prix: £37.50. — Clarendon Press, Oxford, 1994.

Summability methods are concerned with transforming series of numbers to other series. It is an area which has seen steady progress over years, with applications in number theory as well in other parts of mathematics. This book covers both the theory and some of the applications of Borel summability.

Knots and quantum gravity. — Edited by John C. Baez. — Oxford lecture series in mathematics and its applications, vol. 1. — Un vol. relié, 16×24, de XIII, 229 p. — Prix: £27.50. — Clarendon Press, Oxford, 1994.

This volume presents the proceedings of a Workshop held in 1993 at the University of California at Riverside. Most of the talks were given by researchers whose work has significance for both subjects, knot theory and quantum gravity. This volume contains expository papers as well as new results, and should serve as a guide for mathematicians and physicists seeking to understand this rapidly developing area of research.

D.W. JORDAN, P. SMITH. — **Mathematical techniques: an introduction for the engineering, physical, and mathematical sciences.** — Un vol. broché, 19×24,5, de XVI, 659 p. — Prix: £14.95. — Oxford University Press, Oxford, 1994.

Many students beginning their undergraduate studies in engineering and science have difficulty coming to terms with the mathematical methods which underpin their course. This new text offers an accessible and comprehensive grounding in all the mathematical techniques required for the early stages of a science or engineering degree, and for the routine methods needed by first year mathematics undergraduates. Over 350 fully worked examples, more than 2000 exercises (with selected answers) and computational problems are given.

Keith DEVLIN. — **Mathematics: the science of patterns: the search for order in life, mind, and the universe.** — Un vol. relié, 22×24, de 215 p. — Prix: £19.95. — Scientific American Library, a division of HPHLP, New York, distributed by W.H. Freeman, Oxford, 1994.

"Mathematics, rightly viewed, possesses not only truth, but supreme beauty", the noted philosopher and mathematician Bertrand Russell once wrote. In *Mathematics: the science of patterns,* K. Devlin makes such a vision accessible, entertaining, and meaningful. It is insightful, richly illustrated celebration of the simplicity, the precision, the purity, and the elegance of mathematics.

Roland SCHMIDT. — **Subgroup lattices of groups.** — De Gruyter expositions in mathematics, vol. 14. — Un vol. relié, 17,5×24,5, de XV, 572 p. — Prix: DM 248.00. — Walter de Gruyter, Berlin, 1994.

The subject of this book is the relation between the structure of a group and the structure of its lattice of subgroups. Here two different areas come together: group theory and lattice theory. In this book it is studied how lattice-theoretic concepts can be applied to the study of groups. The book contains a large number of exercises and it is the only text on subgroup lattices since Suzuki's Ergebnisbericht of 1956.

Alexander D. BRUNO. — **The restricted 3-body problem: plane periodic orbits.** — With a preface by Victor G. Szebehely. — Translated from the Russian by Balint Erdi. — De Gruyter expositions in mathematics, vol. 17. — un vol. relié, 17,5 x 24,5, de XIV, 362 p. — Prix: DM 248.00. — Walter de Gruyter, Berlin, 1994.

Since 3-body problem is very difficult to handle, mathematical interest has been concentrated on a special case of the general problem, the so-called restricted 3-body problem. Here two of the three bodies have much larger masses than the third and the other two bodies move on circular orbits around their common center of masses. The aim of this monograph is to provide a careful analysis of this simplest form of the problem.

Nikolai A. BOBYLEV, Yuri M. BURMAN, Sergey K. KOROVIN. — **Approximation procedures in nonlinear oscillation theory.** — De Gruyter series in nonlinear analysis and applications, vol. 2. — Un vol. relié, 17×24,5, de XI, 272 p. — Prix: DM 158.00. — Walter de Gruyter, Berlin, 1994.

This book is devoted to the study of the periodic processes. After introducing the basic concepts of oscillation theory, the authors discuss the fundamental existence theorems for oscillatory regimes. Another chapter contains the main topic of this book: convergence of numerical procedures involving iteration-projection method, with particular emphasis on the Galerkin method, the harmonic balance method, and the difference method.

Francesco ALTOMARE, Michele CAMPITI. — **Korovkin-type approximation theory and its applications.** — De Gruyter studies in mathematics, vol. 17. — Un vol. relié, 17×24,5, de XI, 627 p. — Prix: DM 248.00. — Walter de Gruyter, Berlin, 1994.

Preliminaries. — Korovkin-type theorems for bounded positive Radon measures. — Korovkin-type theorems for positive linear operators. — Korovkin-type theorems for the identity operators. — Applications to positive approximation processes on real intervals. — Applications to positive approximation processes on convex compact sets. — Appendices.

Masatoshi FUKUSHIMA, Yoichi OSHIMA, Masayoshi TAKEDA. — **Dirichlet forms and symmetric Markov processes.** — De Gruyter studies in mathematics, vol. 19. — Un vol. relié, 17×24,5, de VIII, 392 p. — Prix: DM 168.00. — Walter de Gruyter, Berlin, 1994.

Part I of this book contains an introductory and comprehensive account of the theory of symmetric Dirichlet forms which requires only a first course in functional analysis. In Part II, this analytic theory is unified with the probabilistic potential theory based on symmetric Markov processes and developed in conjunction with the stochastic analysis based on additive functionals.

J.L. BUESO, P. JARA, A. VERSCHOREN. — **Compatibility, stability, and sheaves.** — Pure and applied mathematics, vol. 185. — Un vol. relié, 16×23,5, de XIV, 265 p. — Prix: US$ 125.00. — Marcel Dekker, New York, 1995.

This book integrates fundamental techniques from algebraic geometry, localization theory, and ring theory and demonstrates how each of these topics is enhanced by interaction with the others, providing new results within a common framework. — Contents: Localization. — Extensions. — Stability. — Compatibility and sheaves.

W.K. HAYMAN. — **Multivalent functions.** — Second edition. — Cambridge tracts in mathematics, vol. 110. — Un vol. relié, 15,5×23,5, de XII, 263 p. — Prix: £35.00. — Cambridge University Press, Cambridge, 1994.

Multivalent and in particular univalent functions play an important role in complex analysis. Great interest was aroused when de Branges in 1985 settled the long-standing Bieberbach conjecture for the coefficients of univalent functions. The 2nd edition of Professor Hayman's celebrated book is the first to include a proof of this result, with a new chapter devoted to it. Another new chapter deals with coefficient differences of mean p-valent functions.

Francis BORCEUX. — **Handbook of categorical algebra 2: categories and structures.** — Encyclopedia of mathematics and its applications, vol. 51. — Un vol. relié, 16×24, de XVII, 443 p. — Prix: £50.00. — Cambridge University Press, Cambridge, 1994.

This handbook is designed to give, in three volumes, a detailed account of what should be known by everybody working in, or using, category theory. — Contents of the second volume: Abelian categories. — Regular categories. — Algebraic theories. — Monads. — Accessible categories. — Enriched category theory. — Topological categories. — Fibred categories.

Control of partial differential equations. — Edited by Giuseppe Da Prato, Luciano Tubaro. — Lecture notes in pure and applied mathematics, vol. 165. — Un vol. broché, 18×25,5, de VIII, 279 p. — Prix: US$ 125.00. — Marcel Dekker, New York, 1994.

This volume — based on the International Federation for Information Processing WG 7.2 Conference, held recently in Trento, Italy — provides recent results as well as entirely new material on control problems for partial differential equations. It provides detailed examinations of optimal quadratic boundary control theory... Riccati operator equations... Hamilton-Jacobi equations... Navier-Stokes equations... stochastic control... singular control problems..., etc.

Katsumi NOMIZU, Takeshi SASAKI. — **Affine differential geometry.** — Cambridge tracts in mathematics, vol. 111. — Un vol. relié, 16×23,5, de XIV, 263 p. — Prix: £35.00. — Cambridge University Press, Cambridge, 1994.

This is an account of affine differential geometry from a contemporary viewpoint, not only covering the classical theory, but also introducing the modern developments that have happened

over the last decade. The authors have concentrated on the significant features of the subject and their relationship and application to such areas as Riemannian, Euclidean, Lorentzian and projective differential geometry.

J.A. HILLMAN. — **The algebraic characterization of geometric 4-manifolds.** — London Mathematical Society lecture note series, vol. 198. — Un vol. broché, 15×23, de IX, 170 p. — Prix: £19.95. — Cambridge University Press, Cambridge, 1994.

This book describes work on the characterization of closed 4-manifolds in terms of familiar invariants such as Euler characteristic, fundamental group, and Stiefel-Whitney classes. Using techniques from homological group theory, the theory of three manifolds and topological surgery, infrasolvmanifolds are characterized up to homeomorphism, and surface bundles are characterized up to simple homotopy equivalence. The results obtained are applied to 2-knots and complex analytic surfaces.

The Dynkin Festschrift: Markov processes and their applications. — Edited by Mark I. Freidlin. — Progress in probability, vol. 34. — Un vol. relié, 16,5×24, de XXXII, 413 p. — Prix: SFr. 158.00. — Birkhäuser, Boston, 1994.

The contributors to this volume were asked to write original articles on topics related to Dynkin's work, ranging over stochastic analysis, and probability theory to mathematical physics. The volume will stand as a rich contribution to the diversity of modern probability theory and the strength of its historical and scientific roots.

Marcel BONVALET. — **Phénomènes linéaires.** — Principes mathématiques de la physique, vol. 3. — Un vol. broché, 16×24, de XIX, 425 p. — Prix: FF 190.00. — Masson, Paris, 1994.

Les premiers chapitres de l'ouvrage font apparaître la portée opératoire des concepts centraux, tels que celui de dérivée partielle, d'espace de Hilbert ou de transformée de Carson-Laplace. C'est sur ce préalable que reposent les chapitres consacrés à l'étude des principaux phénomènes linéaires, tant en physique fondamentale qu'en sciences de l'ingénieur.

A. EDEN, C. FOIAS, B. NICOLAENKO, R. TEMAM. — **Exponential attractors for dissipative evolution equations.** — Research in applied mathematics, vol. 37. — Un vol. broché, 16×24, de VIII, 182 p. — Prix: FF 190.00. — Masson, Paris, 1994.

Exponential attractors is a new area of dynamical systems, pioneered to a large extent by the authors of this book. Their aim was to develop and present the theory of exponential attractors for dissipative evolution equations, mostly of infinite dimension. Exponential attractors represent "realistic" objects intermediate between the two "ideal" ones which are the global attractors and the inertial manifolds. All three objects describe the long time behaviour of dynamical systems.

N.D. GILBERT, T. PORTER. — **Knots and surfaces.** — Oxford science publications. — Un vol. relié, 24×16, de XI, 268 p. — Prix: £29.50. — Oxford University Press, Oxford, 1994.

Knots, links, and diagrams. — Knot and link polynomials. — Topological spaces. — Surfaces. — The arithmetic of knots. — Presentations of groups. — Graphs and trees. — Alexander matrices and Alexander polynomials. — The fundamental group. — Van Kampen's theorem. — Applications of the Van Kampen theorem. — Covering spaces.

Pierre MEUNIER. — **Algèbre et analyse: problèmes avec corrigés et commentaires sur le cours.** — Mathématiques. — Un vol. broché, 15×22, de XII, 406 p. — Prix: FF 224.00. — Presses universitaires de France, Paris, 1994.

Cet ouvrage, constitué de 16 problèmes suivis de commentaires et de rappels de cours, complété par un appendice thématique réservé aux inegalités usuellement rencontrées en mathématiques, représente un outil de travail respectant une progression chronologique cohérente. De nombreux commentaires et exercices accompagnent le texte.

Pierre MEUNIER. — **Analyse: exercices avec corrigés et commentaires sur le cours.** — Mathématiques. — Un vol. broché, 15×22, de X, 265 p. — Prix: FF 198.00. — Presses universitaires de France, Paris, 1994.

Les suites et les séries illustrent à souhait le passage du fini à l'infini source de création de nouveaux objets mathématiques. Les objets sont classés en 4 grandes rubriques: — Suites et séries numériques. — Suites et séries de fonctions. — Séries entières et séries de Fourier. — Transformée de Fourier.

K.W. MORTON and D.F. MAYERS. — **Numerical solution of partial differential equations: an introduction.** — Un vol. broché, 15,5×22,5, de 227 p. — Prix: £13.95. — Cambridge University Press, Cambridge, 1994.

This book provides a concise introduction to standard numerical techniques, ones chosen on the basis of their general utility for practical problems. The authors emphasize finite difference methods for simple examples of parabolic, hyperbolic and elliptic equations; finite element, finite volume and spectral methods are discussed briefly to see how they relate to the main theme.

Curves and surfaces in geometric design. — Edited by Pierre-Jean Laurent, Alain Le Méhauté, Larry L. Schumaker. — Un vol. relié, 16×24, de XVI, 490 p. — Prix: US$69.95. — A.K. Peters, Wellesley, Mass., 1994.

This volume contains the proceedings of the Second International Conference on Curves and Surfaces which took place in Chamonix, France in June of 1993. It contains 58 refereed survey and research papers on the various aspects of curves and surfaces. The numerous topics covered include spline conversion, software infrastructure for computer-aided geometric design, rational and constrained approximation, subdivision, etc...

Peter DEUFLHARD, Folkmar BORNEMANN. — **Numerische Mathematik II: Integration gewöhnlicher Differentialgleichungen.** — De Gruyter Lehrbuch. — Un vol. broché, 15,5×23, de XV, 383 p. — Prix: DM 48.00. — Walter de Gruyter, Berlin, 1994.

Die Autoren kommen mit dem nun vorliegenden zweiten Teil dieses zweibändiges Werkes einer vielfach geäusserten Aufforderung nach, den einführenden ersten Band durch einen zweiten Band zur numerischen Behandlung von Differentialgleichungen zu ergänzen. Während in Band I im Rahmen einer Einführungsvorlesung über Numerische Mathematik lineare und nichtlineare Gleichungssysteme behandelt werden und die Numerik von Differentialgleichungen bewusst ausgespart blieb, wird diese Lücke nun in Band II geschlossen.

Twistor theory. — Edited by Stephen Huggett. — Lecture notes in pure and applied mathematics, vol. 169. — Un vol. broché, 17,5×25, de VIII, 268 p. — Prix: US$115.00. — Marcel Dekker, New York, 1995.

Detailing the geometrical correspondence between compactified complexified Minkowski space and complex projective three-space (twistor space), this book covers a wide range of subjects, including conformal invariants, integral transforms, Einstein equations, ant-self-dual Riemannian 4-manifolds, deformation theory, 4-dimensional conformal structures, etc...

J.F. POMMARET. — **Partial differential equations and group theory: new perspectives for applications.** — Mathematics and its applications, vol. 293. — Un vol. relié, 16,5×24,5, de IX, 473 p. — Prix: Dfl. 340.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This book presents for the first time, the group theoretical unification of the finite element methods for elasticity, heat and electromagnetism. — Contents: — Introduction. — Homological algebra. — Jet theory. — Nonlinear systems. — Linear systems. — Group theory. — Differential Galois theory. — Control theory. — Continuum physics.

Michael Sean MAHONEY. — **The mathematical career of Pierre de Fermat: 1601-1665.** — Second edition. — Un vol. broché, 15,5×23,5, de XX, 432 p. — Prix: US$18.95. — Princeton University Press, Princeton, 1994.

Fermat, an inventor of analytic geometry, also laid the foundations of differential and integral calculus; established, together with Pascal, the conceptual guidelines of the theory of probability; and created modern number theory. In one of the first full-length investigations of Fermat's life and work, the author provides rare insight into the mathematical genius of a hobbyist who never sought to publish his work...

William E. BAYLIS. — **Theoretical methods in the physical sciences: an introduction to problem solving using Maple V.** — Un vol. broché, 18×24, de XVII, 286 p. — Prix: SFr. 68.00. — Birkhäuser, Boston, 1994.

The book is designed for a one term course, to be taken in the first or second year after the student has completed introductory courses in physics and calculus. It uses the MAPLE package as an integral part of learning how to solve a range of problems taken from elementary physics, astronomy, chemistry, and geology.

Mladen Victor WICKERHAUSER. — **Adapted wavelet analysis from theory to software.** — Un vol. relié, 16×23,5, de XII, 486 p. — Prix: US$59.95. — A.K. Peters, Wellesley, M.A., 1994.

This detail-oriented text is intended for engineers and applied mathematicians who must write computer programs to perform wavelet and related analyses on real data. It should also be useful to the pure mathematician with questions about wavelet theory applications and to the instructor as a textbook in the mathematics and latest techniques of transient signal analysis and processing.

Wavelets, images, and surface fitting. — Edited by Pierre-Jean Laurent, Alain Le Méhauté, Larry L. Schumaker. — Un vol. relié, 16×23,5, de XV, 528 p. — Prix: US$69.95. — A.K. Peters, Wellesley, M.A., 1994.

This volume contains a selection of 48 papers on the connections between the theory and applications of wavelet analysis and curve and surface methods. It focuses on such areas as computer vision, data fitting, image processing, and computer-aided geometric design. These papers were delivered at the 2nd International Conference on Curves and Surfaces in Chamonix, France in June of 1993.

R.J. PLYMEN, P.L. ROBINSON. — **Spinors in Hilbert space.** — Cambridge tracts in mathematics, vol. 114. — Un vol. relié, 15,5×23,5, de XIV, 165 p. — Prix: £25.00. — Cambridge University Press, Cambridge, 1994.

This tract begins with an account of various Clifford algebras over a real Hilbert space. A chapter contains a detailed account of creators, annihilators, Fock representations and parity.

Transformation properties of Fock representation under Bogoliubov automorphisms are then discussed. This leads to the restricted orthogonal group. In the final chapter, the authors discuss inner Bogoliubov automorphisms and construct infinite-dimensional spin groups.

R.W.R. DARLING. — **Differential forms and connections.** — Un vol. broché, 18×25,5, de x, 256 p. — Prix: £12.95 (relié: £30.00). — Cambridge UNiversity Press, Cambridge, 1994.

This book introduces the tools of modern differential geometry - exterior calculus, manifolds, vector bundles, connections - to advanced undergraduates and beginning graduate students in mathematics, physics, and engineering. It covers both classical surface theory and the modern theory of connections and curvature, and includes a chapter on applications to theoretical physics. The only prerequisites are multivariate calculus and linear algebra. No knowledge of topology is assumed.

Maurice AUSLANDER, Idun REITEN and Sverre O. SMALO. — **Representation theory of Artin algebras.** — Cambridge studies in advanced mathematics, vol. 36. — Un vol. relié, 15,5×23,5, de XIV, 423 p. — Prix: £50.00. — Cambridge University Press, Cambridge, 1995.

This book is an introduction to the contemporary representation theory of Artin algebras. The aim of this volume is to illustrate how the theory of almost split sequences is used in the representation theory of Artin algebras. However, other foundational aspects of the subject are developed: for example, the representation of quivers with relations and their interpretation as modules over the factors of path algebras are discussed.

Ross G. PINSKY. — **Positive harmonic functions and diffusion.** — Cambridge studies in advanced mathematics, vol. 45. — Un vol. relié, 15,5×23,5, de XVI, 474 p. — Prix: £50.00. — Cambridge University Press, Cambridge, 1995.

The author gives an account of the theory of positive harmonic functions for second order elliptic operators, using an integrated probabilistic and analytic approach. Starting with a rigorous treatment of the spectral theory of elliptic operators with nice coefficients on smooth, bounded domains, the author develops the theory of the generalized principal eigenvalue and the related criticality theory for elliptic operators on arbitrary domains.

John DAUNS. — **Modules and rings.** — Un vol. relié, 16×24, de XVIII, 442 p. — Prix: £45.00. — Cambridge University Press, Cambridge, 1994.

This book on modern module and non-commutative ring theory starts at the foundations and progresses rapidly through the basic concepts. The first half of the book is concerned with free, projective, and injective modules, tensor algebras, simple modules and primitive rings, the Jacobson radical, and subdirect products. Later in the book, more advanded topics such as hereditary rings, categories and functors, flat modules, and purity are introduced.

Sally POPKORN. — **First steps in modal logic.** — Un vol. relié, 16×23,5, de XIII, 314 p. — Prix: £25.00. — Cambridge Unversity Press, Cambridge, 1994.

This book covers all the basic material — propositional languages, semantics and correspondence results, proof systems and completeness results — as well as some topics not usually covered in a modal logic course. It is written from a mathematical standpoint. Short chapters are arranged into five parts, each with a common theme. Emphasis is placed on semantics aspects, in the form of labelled transition structures, rather than on proof theory.

Paul GLENDINNING. — **Stability, instability and chaos: an introduction to the theory of nonlinear differential equations.** — Cambridge texts in applied mathematics. — Un vol.

broché, 15,5×23, de XIII, 388 p. — Prix: £17.95 (relié: £45.00). — Cambridge University Press, 1994.

This book examines qualitative methods for nonlinear differential equations, bifurcation theory and chaos in terms suitable for advanced undergraduate and first-year postgraduate students. Starting from the idea of phase space, the structure of solutions near hyperbolic stationary points and periodic orbits is investigated. Then the theory of nonhyperbolic stationary points, bifurcations and chaos is described.

Alexei I. KOSTRIKIN, Pham Huu TIEP. — **Orthogonal decompositions and integral lattices.** — De Gruyter expositions in mathematics, vol. 15. — Un vol. relié, 17,5×24,5, de X, 535 p. — Prix: DM 218.00. — Walter de Gruyter, Berlin, 1994.

This text is divided into two parts. In part I, the main result is the complete classification of complex simple Lie algebras admitting orthogonal decompositions with irreducible automorphism groups. Part II is devoted to integral Euclidean lattices and their automorphism groups. New series of even unimodular lattices are discovered which lead to integral realizations of several sporadic simple groups and simple groups of Lie type.

Paulo RIBENBOIM. — **Nombres premiers: mystères et records.** — Mathématiques. — Un vol. broché, 15×22, de XX, 277 p. — Prix: FF 320.00. — Presses Universitaires de France, Paris, 1994.

Ce livre est dédié aux mystères et records dans la théorie des nombres premiers. — Contient: Combien y a-t-il de nombres premiers? — Comment reconnaître les nombres premiers? — Y a-t-il des fonctions qui définissent les nombres premiers? — Comment se répartissent les nombres premiers ? — Quels nombres premiers particuliers ont été étudiés? — Heuristique et résultats probabilistes sur les nombres premiers.

Horst LEPTIN, Jean LUDWIG. — **Unitary representation theory of exponential Lie groups.** — De Gruyter expositions in mathematics, vol. 18. — Un vol. relié, 17,5×24,5, de X, 200 p. — Prix: DM 198.00. — Walter de Gruyter, Berlin, 1994.

One of the main objects of representation theory of Lie groups is the study of the dual D of the Lie group G or, equivalently, of the characters of the group G (i.e. the set of equivalence classes of unitary irreducible representations of G). Contents: Solvable Lie Groups, representations. — Variable structures. — The Duals of exponential variable Lie Groups.

Tran Van HIEP. — **Morceaux choisis de l'oral de mathématiques.** — Collection major. — Un vol. broché, 12×17,5, de 403 p. — Prix: FF 98.00. — Presses Universitaires de France, Paris, 1994.

Ce livre recueille les exercices les plus représentatifs, posés ou susceptibles d'être posés à l'épreuve orale des concours HEC et ESCP. Les exercices, corrigés et commentés, offrent un panorama complet du programme de mathématiques des classes préparatoires HEC. Les exercices sont répartis en trois matières: algèbre, analyse et probabilités.

Patrice HERNERT. — **Les algorithmes.** — Que sais-je, vol. 2928. — Un vol. broché, 11,5×17,5, de 127 p. — Presses Universitaires de France, Paris, 1995.

Cet ouvrage a pour objectif de présenter les connaissances élémentaires indispensables à toute personne désireuse de programmer efficacement. — Contient: Concepts de base. — Structures de données. — Arbres et graphes. — Algorithmes fondamentaux.

Fritz SCHWEIGER. — **Ergodic theory of fibred systems and metric number theory.** — Oxford science publications. — Un vol. relié, 16×24, de XIII, 295 p. — Prix: £45.00. — Clarendon Press, Oxford, 1995.

Questions raised by metric number theory can be answered by the application of ergodic theory. This application is facilitated by the construction of an appropriate dynamical system; that is the fibred system. This book considers the basic notion of such a system.

Daniel J. VELLEMAN. — **How to prove it: a structured approach.** — Un vol. broché, 15,5×23, de IX, 309 p. — Prix: £49.95. — Cambridge University Press, Cambridge, 1994.

This book begins with logic and set theory, to familiarize students with the language of mathematics and how it is interpreted. This serves as the basis for a detailed discussion of the most important techniques used in proofs, when and how to use them, and how they are combined to produce complex proofs. Material on the natural numbers, relations, functions, and infinite sets provides practice in writing and reading proofs.

Miklos MIKOLAS. — **Real functions, abstract spaces and orthogonal series.** — Un vol. relié, 17×24, de 493 p. — Prix: US$ 69.00. — Akademiai Kiado, Budapest, 1994.

As this book was written primarily for graduate students, didactical points of view are taken into consideration throughout. The first half focuses on surveying the theory of real functions, while the second half deals with general and special orthogonal series, both extensively relying on pertinent results obtained from the Hungarian analytical school. Most recent among these topics are e.g. new connections between integro-differential operators and summation methods found by the author.

Christian JACQUEMIN. — **Logique et mathématiques pour l'informatique et l'intelligence artificielle: 109 exercices corrigés.** — Collection Mémo-guides. — Un vol. broché, 13,5×21, de 248 p. — Prix: FF 135.00. — Masson, Paris, 1994.

Cinq chapitres indépendants les uns des autres, réunissent les principaux outils mathématiques: le calcul booléen et les structures d'ordre et de treillis, la logique propositionnelle, la logique des prédicats et le modèle mathématique du langage Prolog, les relations n-aires, les langages et analyseurs formels, les algorithmes sur les graphes.

Philippe ROBBA, Gilles CHRISTOL. — **Equations différentielles p-adiques: applications aux sommes exponentielles.** — Actualités mathématiques. — Un vol. broché, 17,5×24, de XII, 236 p. — Prix: FF 250.00. Hermann, Paris, 1994.

Ce livre expose la théorie de l'indice pour un opérateur différentiel d'ordre un sur la droite projective p-adique. On utilise dans ce cas simple, mais non élémentaire, la plupart des idées qui seront nécessaires dans le cas général. Les résultats s'appliquent directement à l'étude des sommes exponentielles tordues et, plus particulièrement, aux sommes de Gauss, aux sommes de Jacobi, et aux sommes de Kloosterman.

Vidal COHEN. — **La recherche opérationnelle.** — Que sais-je?, vol. 941. — Un vol. broché, 11,5×17,5 de 127 p. — Presses universitaires de France, Paris, 1995.

Qu'est-ce que la recherche opérationnelle ? — Les champs d'application dans l'entreprise. — Méthodologie. — Quelques modèles et leurs techniques. — La recherche opérationnelle entre passé et avenir. — Notions de probabilité et statistique pour la recherche opérationnelle.

First European Congress of Mathematics, Paris, July 6-10, 1992, vol. 1 and vol. 2: Invited lectures, vol. 3: Round tables. — Edited by A. Joseph, F. Mignot, F. Murat, B. Prum, R. Rentschler. — Progress in mathematics, vol. 119-121. — Trois vol. reliés, 16×24, de respectivement, 594, 545, et 608 p. — Prix: Pour l'ensemble: SFr. 298.00, pour chaque volume séparé: SFr. 118.00, le 3e vol. est disponible en édition broché. — Birkhäuser, Basel, 1994.

Volumes 1 and 2 form a collection of the manuscripts contributed by the invited lecturers. Volume 1 also includes the speeches delivered at the various ceremonies of the Congress. Volume 3 contains the Round Table reports, a new feature of the Congress devoted to furthering the contribution of mathematics to society and reporting on its interaction with the exact and social sciences. All three volumes are illustrated with photographs taken during the Congress. — Contributors: V.I. Arnold, L. Babai, C. De Concini, S.K. Donaldson, W. Mueller, D. Mumford, A.-S. Sznitman, M. Vergne, Z. Adamowicz, A. Bjoerner, B. Bojanov, J.-M. Bony, R.E. Borcherds, J. Bourgain, F. Catanese, C. Deninger, S. Dostoglou, D. Salamon.

Victor GUILLEMIN. — **Moment maps and combinatorial invariants of Hamiltonian *Tn*-spaces.** — Progress in mathematics, vol. 122. — Un vol. relié, 16×24, de 160 p. — Prix: SFr. 68.00. — Birkhäuser, Boston, 1994.

The action of a compact Lie group, G, on a compact symplectic manifold gives rise to some remarkable combinatorial invariants. The simplest of these is the *moment polytope*, a convex polyhedron which sits inside the dual of the Lie algebra of G. One of the main goals of this monograph is to describe what kinds of geometric information are encoded in this polytope. — Contents: Basic definitions and examples. The Duistermaat-Heckman theorem. Multiplicities as invariants of reduced spaces. Partition functions. Toric varieties. Kaehler structures on toric varieties.

Lie theory and geometry: in honor of Bertram Kostant. — Edited by Jean-Luc Brylinski, Ranee Brylinski, Victor Guillemin, Victor Kac. — Progress in mathematics, vol. 123. — Un vol. relié, 16×24, de 640 p. — Prix: SFr. 118.00. — Birkhäuser, Boston, 1994.

This volume is a collection of 22 invited papers by leading mathematicians working in Lie theory, geometry, algebra, and mathematical physics. Kostant's fundamental work in all these areas has provided deep new insights and connections, and has created new field of research. The papers in this volume present original research articles as well as expository papers.

Lars HOERMANDER. — **Notions of convexity.** — Progress in mathematics, vol. 127. — Un vol. relié, 16×24, de 424 p. — Prix: SFr. 88. — Birkhäuser, Boston, 1994.

From the preface: "The term convexity used to describe these lectures ... should be understood in a wide sense. Only chapters I and II are devoted to convex sets and functions in the traditional sense of convexity. The following chapters study other kinds of convexity which occur in analysis." — Contents: Convex functions of one variable. Convexity in a finite-dimensional vector space. Subharmonic functions. Plurisubharmonic functions. Convexity with respect to differential operators. Convexity and condition (y). Appendix.

R. HAGEN, S. ROCH, B. SILBERMANN. — **Spectral theory of approximation methods for convolution equations.** — Operator theory, vol. 74. — Un vol. relié, 17,5×24, de 392 p. — Prix: SFr. 158.00. — Birkhäuser, Basel, 1994.

The aim of the present book is to propose a new algebraic approach to the study of norm stability of operator sequences which arise, for example, via discretization of singular integral

equations on composed curves. A wide variety of discretization methods, including quadrature rules and spline or wavelet approximations, is covered and studied from a unique point of view.

Daniel W. STROOCK. — **A concise introduction to the theory of integration.** — 2nd edition. — Un vol. relié, 18,5×26, de 184 p. — Prix: SFr. 48.00. — Birkhäuser, Boston, 1994.

Designed for the full-time analyst, physicist, engineer or economist, this book attempts to provide its readers with most of the measure theory they will ever need. In his emphasis on the concrete aspects of the subjects, the author avoids generalities and abstraction. This second edition, while retaining the concise features of the earlier book, contains new sections along with a number of exercises and selected solutions.

Erwin ENGELER. — **The combinatory programme.** — In collaboration with K. Aberer, B. Amrhein, O. Gloor, M. von Mohrenschildt, D. Otth, G. Schwärzler, and T. Weibel. — Progress in theoretical computer science. — Un vol. relié, 16,5×24,5, de 142 p. — Prix: SFr. 88.00. — Birkhäuser, Boston, 1995.

The programme in combinatory logic, developed at the ETH in Zürich, takes its philosophical basis primarily from the work of two mathematicians Richard Dedekind and Haskell Curry. This book is the result of the efforts of the author and the group of students around him to put combinatory algebra at the center of the foundational structure of computer science and related mathematics. It shows that sufficiently rich combinatory algebras can indeed serve as a platform from which the algorithmic aspects of many areas of computer science, mathematics and their applications can be developed.

B. EL MABSOUT. — **Calcul différentiel: exercices.** — 2e édition. — Collection maîtrise de mathématiques pures. — Un vol. broché, 16×23,5, de 200 p. — Prix: FF 158.00. — Masson, Paris, 1995.

Cet ouvrage contient une collection d'exercices se basant sur le livre de M. A. Avez, «Calcul différentiel» paru dans la même collection et le complète. L'ouvrage se divise en trois parties: énoncés, indications et solutions. La deuxième partie contient des suggestions concernant les démarches à faire pour résoudre les exercices. Ce qui permet à l'étudiant de trouver tout seul la solution d'un exercice sans utiliser la troisième partie.

Antoine CHAMBERT-LOIR, Stéfane FERMIGIER, Vincent MAILLOT. — **Exercices de mathématiques pour l'agrégation: Analyse 1.** — Collection Agrégation de mathématiques. — Un vol. broché, 16×24, de X, 230 p. — Prix: FF 148.00. — Masson, Paris, 1995.

Cet ouvrage correspond à un cours de MM. Vauthier et Prat. C'est le premier tome d'une série de 3 livres d'exercices corrigés couvrant le programme d'analyse de l'agrégation: topologie, suites et séries, intégration. Il propose les théorèmes fondamentaux, les exemples importants, d'autres exemples et contre-exemples et 118 exercices.

A. ARNOLD, I. GUSSARIAN. — **Mathématiques pour l'informatique.** — 2e édition corrigée et augmentée. — Collection Logique mathématiques informatique. — Un vol. broché, 16×24, de XVII, 357 p. — Prix: FF 186.00. — Masson, Paris, 1994.

Les auteurs ont rassemblé les notions mathématiques dont la connaisssance est indispensable pour les études en informatique en 2e cycle universitaire. Sont ainsi exposés: les principes d'induction et les définitions par récurrence; les ensembles ordonnés et les algèbres de Boole; une introduction à la logique avec une initiation au calcul propositionnel et au calcul des

prédicats; les suites récurrentes et les séries génératrices; les comportements asymptotiques; des éléments de la théorie des graphes; les langages rationnels et les automates finis; les probabilités discrètes et les chaînes de Markov finies. De nombreux exercices corrigés sont proposés.

What is a logical system? — Edited by Dov M. Gabbay. — Studies in logic and computation, vol. 4. — Oxford science publications. — Un vol. relié, 16×24, de x, 454 p. — Prix: £45.00. — Clarendon Press, Oxford, 1994.

Logic has recently undergone rapid development and evolution. New systems have emerged, old concepts have changed, and its very foundations have been re-evaluted. The question, "what is a logical system?" is now of central importance. This question is addressed by the contributors to this volume: P. Aczel, H. Andreka, A. Avron, J. Barwise, G. Grocco, K. Dosen, L. Farinas del Cerro, S. Feferman, D.M. Gabbay, I. Hacking, E. Hammer, R.A. Kowalski, J. Lambek, N. Marti-Oliet, S. Matthews, J. Meseguer, I. Németi, N. Tennant, J. van Benthem.

Daniel PERRIN. — **Géométrie algébrique: une introduction.** — Collection Savoirs actuels, série Mathématiques. — Un vol. broché, 16×23, de 311 p. — Prix: FF 225.00. — InterEditions, Paris, 1995.

Dans cet ouvrage l'auteur nous propose une introduction à la géométrie algébrique projective. Il s'appuie sur des problèmes classiques, mais non triviaux (théorème de Bézout sur l'intersection des courbes planes, etc.), qui sont l'occasion d'introduire certains outils essentiels de la géométrie algébrique moderne: dimension, singularité, faisceaux, variétés, cohomologie. Ce livre comporte de nombreux exercices et problèmes et s'adresse aux étudiants de 3^{e} cycle ainsi qu'aux chercheurs débutants.

Contributions to complex analysis and analytic geometry: dedicated to Pierre Dolbeault. — Edited by Henri Skoda, Jean-Marie Trépreau. — Aspects of mathematics, vol. E26. — Un vol. relié, 16×23, de XIV, 250 p. — Prix: DM 98.00. — Verlag Vieweg, Wiesbaden, 1994.

This volume contains a description of the scientific life and achievments of Pierre Dolbeault by Pierre Lelong together with articles by V. Ancona and B. Gaveau, B. Berndtsson, E.M. Chirka and E.L. Stout, J.P. Demailly, K. Diederich and G. Herbort, P. Dolbeault and G. Henkin, A. Huckleberry, M. Passare with A. Tsikh and O. Zhdanov, B. Shiffman. Most of these articles combine a survey of the situation of a certain field with the exposition of new research results.

Paulo D. CORDARO and François TREVES. — **Hyperfunctions on hypo-analytic manifolds.** — Annals of mathematics studies, vol. 136. — Un vol. broché, 15×23,5, de XX, 377 p. — Prix: US$29.95. — Princeton University Press, Princeton NJ, 1994.

Contents: Hyperfunctions in maximal hypo-analytic structure. — Microlocal theory of hyperfunctions on a maximally real submanifolds of complex space. — Hyperfunction solutions in a hypo-analytic manifold. — Transversal smoothness of hyperfunction solutions.

Curtis T. MCMULLEN. — **Complex dynamics and renormalization.** — Annals of mathematics studies, vol. 135. — Un vol. broché, 15×23,5, de VII, 214 p. — Prix: US$22.50. — Princeton University Press, Princeton NJ, 1995.

This book presents a study of renormalization of quadratic polynomials and a rapid introduction to techniques in complex dynamics. Its central concern is the structure of an infinitely

renormalizable quadratic polynomial $f(z) = z^2 + c$. Drawing on universal estimates in hyperbolic geometry, this work gives an analysis of limiting forms that can occur and develops a rigidity criterion for the polynomial f.

Martin FUCHS. — **Topics in the calculus of variations.** — Advanced lectures in mathematics. — Un vol. broché, 16×23, de VII, 145 p. — Prix: DM 39.50. — Vieweg, Braunschweig/Wiesbaden, 1994.

This book illustrates two basic principles in the calculus of variations which are the question of existence of solutions and the closely related problem of regularity of minimizers. Chapter 1 studies variational problems for nonquadratic energy functionals defined on suitable classes of vector-valued functions where also nonlinear constraints are incorporated. Chapter 2 contains a short introduction into geometric measure theory which serves as a basis for developing an existence theory for (generalized) manifolds with prescribed mean curvature form and boundary in arbitrary dimension and codimension.

Emmanuele DIBENEDETTO. — **Partial differential equations.** — Un vol. relié, 16×24, de XIV, 416 p. — Prix: SFr. 78.00. — Birkhäuser, Boston, 1995.

This book is a self-contained elementary introduction. It assumes only advanced differential calculus and some L^p theory. — Contents: Preliminaries. — Quasilinear equations and the Cauchy-Kowalewski theorem. — The Laplace equation. — The double layer potential and boundary value problems. — Integral equations and eigenvalue problems. — The heat equations. — The wave equation. — Equations of first order and conservation law.

Alessandra LUNARDI. — **Analytic semigroups and optimal regularity in parabolic problems.** — Progress in nonlinear differential equations and their applications, vol. 16. — Un vol. relié, 16,5×24, de XVII, 424 p. — Prix: SFr. 48.00. — Birkhäuser, Basel, 1995.

The book shows how the abstract methods of analytic semigroups and evolution equations in Banach spaces can be fruitfully applied to the study of parabolic problems. Particular atention is paid to optimal regularity results in linear equations. These results are used to study other problems especially fully nonlinear ones.

Roberto DI COSMO. — **Isomorphisms of types: from lambda-calculus to information retrieval and language design.** — Progress in theoretical computer science. — Un vol. relié, 16 ×24, de VIII, 235 p. — Prix: SFr. 88.00. — Birkhäuser, Boston, 1995.

The author begins his investigations with the origin of the concept in mathematical logic and then focuses on its modern use in programming languages and type theory, showing how the typed lambda-calculus can be of great help in understanding many key features of the type systems available in modern programming language. He then demonstrates why types are good candidates to classify software components and how they can be used as retrieval tools.

WANG Zeke, XU Senlin, GAO Tangan. — **Algebraic systems of equations and computational complexity theory.** — Mathematics and its applications (Chinese series), vol. 269. — Un vol. relié, 17×25, de VI, 243 p. — Prix: Dfl. 185.00. — Kluwer Academic Publishers, Dordrecht, 1994.

The starting point of complexity theory in numerical methods is the paper entitled "The fundamental theorem of algebra and complexity theory" by S. Smale. Since then, among others there are two main developments: complexity theories of simplical (or piecewise linear)

homotopy methods and complexity theories of incremental algorithms or global Newton methods. This monograph provides a systematical and self-contained presentation of these developments.

Raoul BOTT. — **Collected papers: vol. 3, Foliations; vol. 4: Mathematics related to physics.** — Contemporary mathematicians. — Edited by Robert MacPherson. — Deux vol. reliés, 19×26, de respectivement XXXI, 610 p. et XVII, 484 p. — Prix: SFr. 178.00 pour le vol. 3, et SFr. 178.00 pour le vol. 4, et SFr. 598.00 pour l'ensemble des 4 vol. — Birkhäuser, Boston, 1994.

Each of the 4 volumes of Raoul Bott's Collected works covers a different subject and represents a decade of Bott's work: vol. 1: Topology and Lie groups (the 1950's), vol. 2: Differential operators (the 1960s), vol. 3 and vol. 4: the 1970's through the 1980's. The papers here collected are mostly related to the algebraic topology aspects of foliations, the Gelfand-Fuks cohomology of vector fields and the relationships between these two at first seemingly disparate subjects. Paul Baum, Lawrence Conlon, and André Haefliger provide the backdrop for these developments and the many crosscurrents in which they took place. As in vol. 1 and 2, Raoul Bott continues his personal commentaries on his papers.

Louis ROWEN. — **Algebra: groups, rings, and fields.** — Un vol. relié, 16×24, de XXII, 239 p. — Prix: US$ 49.95. — A.K. Peters, Wellesley, Mass., 1994.

This book introduces the basic concepts of groups, rings and fields to solve long-standing problems in mathematics. Among the subjects covered are results from number theory, the fundamental theory of algebra, the unconstructability of certain numbers, the characterization of all finite fields, and the unsolvability of the general equation of degree 5.

Non-associative algebra and its applications. — Edited by Santos Gonzalez. — Mathematics and its applications, vol. 303. — Un vol. relié, 16,5×24,5, de X, 416 p. — Prix: US$ 183.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This volume contains the proceedings of the Third International Conference on Non-Associative Algebra and its Applications, held in Oviedo, Spain, July 12-17, 1993. All aspects of non-associative algebra are covered. Topics range from purely mathematical subjects to a wide spectrum of applications, and from state-of-the-art articles to overview papers. This collection will point the way for further research for many years to come.

Constantin UDRISTE. — **Convex functions and optimization methods on Riemannian manifolds.** — Mathematics and its applications, vol. 297. — Un vol. relié, 16,5×24,5, de XV, 348 p. — Prix: US$ 154.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This monograph discusses the interaction between Riemannian geometry, convex programming, numerical analysis, dynamical systems and mathematical modelling. Topics covered include geodesics and completeness of Riemannian manifolds, variations of the p-energy of a curve and Jacobi fields, convex programs on Riemanian manifolds, geometrical constructions of convex functions, flows and energies, applications of convexity, etc...

A. BAKUSHINSKY and A. GONCHARSKY. — **Ill-posed problems: theory and applications.** — Mathematics and its applications, vol. 301. — Un vol. relié, 16,5×24,5, de X, 256 p. — Prix: US$ 125.00. — Kluwer Academic Publishers, Dordrecht. 1994.

This volume presents a unified approach to the solution of ill-posed problems, based on the concept of a regularizing algorithm. This idea is then explored in depth in the discussion of

topics such as common conditions for the existence of regularizing algorithms, necessary and sufficient conditions of the approximations for linear problems, and the principle of iterative regularization for nonlinear problems.

William J. STEWART. — **Introduction to the numerical solution of Markov chains.** — Un vol. relié, 20×26, de XIX, 539 p. — Prix: US$49.50. — Princeton University Press, Princeton NJ, 1994.

Here the author explores all aspects of numerically computing solutions of Markov chains, especially when the state is huge. He provides extensive background to both discrete-time and continuous-time Markov chains and examines many different numerical computing methods-direct, single- and multi-vector iterative, and projection methods. There are chapters on methods for computing transient solutions, on stochastic automata networks, and, finally, on currently available software.

Jean HLADIK. — **Le calcul tensoriel en physique: avec exercices corrigés.** — Préface de Claude Latrémolière. — 2e édition revue et complétée. — Enseignement de la physique. — Un vol. broché, 16×24, de XVI, 212 p. — Prix: FF 165.00. — Masson, Paris, 1995.

Cet ouvrage rappelle les notions essentielles sur les vecteurs avant d'exposer, de manière progressive et à l'aide d'exemples, la notion de tenseur. Il traite ensuite de l'algèbre et de l'analyse tensorielle, ainsi que de différents espaces associés: espace ponctuel, espace dual, espace de Riemann. Une dernière partie est consacrée aux applications des tenseurs dans de nombreux domaines de la physique: mécanique du solide et des milieux continus, électromagnétisme, relativité, mécanique quantique, gravitation et cosmologie.

Complex potential theory. — Edited by Paul M. Gauthier and Gert Sabidussi. — NATO ASI series, Series C: Mathematical and physical sciences, vol. 439. — Un vol. relié, 16×24,5, de XIX, 552 p. — Prix: US$237.00. — Kluwer Academic Publishers, Dordrecht, 1994.

In these proceedings, specialists in several complex variables meet with specialists in potential theory to demonstrate the interface and interconnections between their two fields. The following topics are discussed: Real and complex potential theory. Complex dynamics. Banach algebras and infinite dimensional holomorphy.

Giuseppe GAETA. — **Nonlinear symmetries and nonlinear equations.** — Mathematics and its applications, vol. 299. — Un vol. relié, 16,5×24,5, de XIX, 258 p. — Prix: Dfl. 195.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This book serves as an introduction to the use of nonlinear symmetries in studying, simplifying and solving nonlinear equations. The first part provides a self-contained introduction to the theory. In part two, the theory is applied to equivariant dynamics, to bifurcation theory and to gauge symmetries, reporting recent results by the author. The final part gives an overview of new developments, including a number of applications, mainly in the physical sciences.

Joseph Warren DAUBEN. — **Abraham Robinson: the creation of nonstandard analysis, a personal and mathematical odyssey.** — Un vol. relié, 16,5×24,5, de XIX, 559 p. — Prix: US$49.50. — Princeton University Press, Princeton, N.J., 1995.

One of the most prominent mathematicians of this century, Abraham Robinson discovered and developed nonstandard analysis, a rigorous theory of infinitesimals that he used to unite mathematical logic with the larger body of historic and modern mathematics. With the skill and

expertise familiar to readers of Dauben's earlier works, the book combines an explanation of Robinson's revolutionary achievements in pure and applied mathematics with a description of his odyssey from Hitler's Germany to the United States via conflict-ridden Palestine and wartime Europe.

Polytopes: abstract, convex and computational. — Edited by T. Bisztriczky, P. McMullen, R. Schneider and A. Ivic Weiss. — NATO ASI Series. Series C: Mathematical and physical sciences, vol. 440. — Un vol. relié, 16,5×24,5, de XIX, 507 p. — Prix: Dfl. 365.00. — Kluwer Academic Publishers, Dordrecht, 1994.

The aim of this volume is to reinforce the interaction between the three main branches (abstract, convex and computational) of the theory of polytopes. The subject matter of the book ranges from algorithms for assignment and transportation problems to the introduction of a geometric theory of polyhedra which need not be convex. With polytopes as the main topic of interest, there are articles on realizations, classifications, Eulerian posets, etc.

Joel W. ROBBIN. — **Matrix algebra using MINImal MATlab TM.** — Un vol. relié, 16×23,5, de XVI, 544 p., including MINImal MATlab diskette and tutorial. — Prix: US$ 59.95. — A.K. Peters, Wellesley, Mass., 1995.

This book gives a complete handling of the fundamental normal form theorems of matrix algebra. Use of the computer is fully integrated into Robbin's approach; not only does the book describe the basic algorithms in the computer language Matlab and provide unique computer exercices, it also includes as a part of the complete whole an accompanying diskette and tutorial.

Kichoon YANG. — **Complete minimal surfaces of finite total curvature.** — Mathematics and its applications, vol. 294. — Un vol. relié, 16,5×24,5, de VIII, 157 p. — Prix: Dfl. 135.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This monograph is based on the idea that the study of complete minimal surfaces in $\mathbf{R}^3$ of finite total curvature amounts to the study of linear series on algebraic curves. A detailed account of the puncture number problem, which seeks to determine all possible underlying conformal structures for immersed complete minimal surfaces of finite total curvature, is given here for the first time in book form.

V. LAKSHMIKANTHAM, Lizhi WEN, and Binggen ZHANG. — **Theory of differential equations with unbounded delay.** — Un vol. relié, 16,5×24,5, de XI, 385 p. — Prix: Dfl. 260.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This book presents a unified framework to investigate the basic existence theory for a variety of equations with delay, and treats the classification of equations with memory precisely so as to bring out the subtle differences between them. It develops a systematic study of stability theory in terms of two different measures which includes several known concepts and exhibits the advantages of employing Lyapunov functions on product spaces as well as the method of perturbing Lyapunov functions.

Yu G. RESHETNYAK. — **Stability theorems in geometry and analysis.** — Mathematics and its applications, vol. 304. — Un vol. relié, 16,5×24,5, de XI, 394 p. — Prix: Dfl. 295.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This monograph deals with the metric theory of spatial mappings and incorporates results in the theory of quasi-conformal, quasi-isometric and other mappings. The main subject is the

study of the stability problem in Liouville's theorem on conformal mappings in space, which is representative of a number of problems on stability for transformation classes.

Viorel BARBU. — **Mathematical methods in optimization of differential systems.** — Mathematics and its applications, vol. 310. — Un vol. relié, 16,5×24,5, de X, 259 p. — Prix: Dfl. 210.00. — Kluwer Academic Publishers, Dordrecht, 1994.

The emphasis is on first order necessary conditions of optimality and the construction of optimal controllers in feedback forms. These subjects are treated using some new concepts and techniques in modern optimization theory, such as Clarke's generalized gradient, Ekeland's variational principle, viscosity solution to Hamilton-Jacobi equation, and smoothing processes for optimal control problems governed by variational inequalities.

Robert P. KURSHAN. — **Computer-aided verification of coordinating processes: the automata-theoretic approach.** — Princeton series in computer science. — Un vol. relié, 24,5×16,5, de XII, 270 p. — Prix: US$49.50. — Princeton University Press, Princeton, N.J., 1995.

This book develops the theory of automata-theoretic verification from its foundations, with a focus on algorithms and heuristics to reduce the computational complexity of analysis. It is suitable as a text for a one- or two- semester graduate course, and is recommended reading for anyone planning to use a verification tool, such as COSPAN or SMV.

Jean François RUAUD, André WARUSFEL. — **Exercices de mathématiques pour l'agrégation: algèbre 3.** — Série «Agrégation de mathématiques». — Un vol. broché, 16×24, de 232 p. — Prix: FF 150.00. — Masson, Paris, 1995.

Trois types d'exercices sont présentés: des exercices généraux visant à une bonne assimilation des connaissances, des études d'exemples précis d'objets mathématiques présentant des propriétés remarquables, des exercices plus théoriques impliquant des démonstrations de théorèmes fondamentaux. Des rappels théoriques et historiques figurent au début de chaque chapitre.

Topological nonlinear analysis: degree, singularity, and variations. — Edited by Michèle Matzeu, Alfonso Vignoli. — Progress in nonlinear differential equations and their applications, vol. 15. — Un vol. relié, 16,5×24, de VI, 531 p. — Prix: SFr. 168.00. — Birkhäuser, Boston, 1995.

A. Ambrosetti: Variational methods and nonlinear problems: classical results and advances. — V. Benci: Introduction to Morse theory: a new approach. — J. Damon: Applications of singularity theory to the solutions of nonlinear equations. — E.N. Dancer: Fixed point index calculations and applications. — J. Ize: Topological bifurcation. — P.H. Rabinowitz: Critical point theory. — C. Viterbo: Symplectic topology: an introduction.

Andrei I. SUBBOTIN. — **Generalized solutions of first-order PDEs: the dynamical optimization perspective.** — Systems & control. — Un vol. relié, 16×24, de XI, 312 p. — Prix: SFr. 148.00. — Birkhäuser, Boston, 1994.

In this book, the authors present an approach that can be considered as a non-classical method of characteristics, according to which the generalized solution (called the minimax solution) is assumed to be weak invariant with respect to the so-called characteristic inclusions. The research on minimax solutions employs methods of the theory of differential games, dynamical optimization, and nonsmooth analysis.

Operator theory in function spaces and Banach lattices. — Essays dedicated to A.C. Zaanen on the occasion of his 80th birthday. — Edited by C.B. Huijsmans, M.A. Kaashoek, W.A.J. Luxemburg, B. de Pagter. — Operator theory, vol. 75. — Un vol. relié, 17×24, de v, 309 p. — Prix: SFr. 108.00. — Birkhäuser, Basel, 1994.

The book contains a selection of original research papers which cover a broad spectrum of topics about operators and semigroups of operators on Banach lattices, analysis in function spaces and integration theory. Special attention is paid to the spectral theory of operators on Banach lattices, in particular, to the one of positive operators.

Essays on Fourier analysis in honor of Elias M. Stein. — Edited by Charles Fefferman, Robert Fefferman and Stephen Wainger. — Princeton mathematical series, vol. 42. — Un vol. relié, 16×24, de VI, 384 p. — Prix: US$65.00. — Princeton University Press, Princeton NJ, 1995.

This book contains the lectures presented at a conference held at Princeton University in May 1991 in honor of Elias M. Stein's sixtieth birthday. The topics of the lectures are: conformally invariant inequalities, oscillatory integrals, analytic hypoellipticity, wavelets, the work of E.M. Stein, elliptic non-smooth PDE, nodal sets of eigenfunctions, removable sets for Sobolev spaces in the plane, nonlinear dispersive equations, bilinear operators and renormalization, etc.

Feasible mathematics II. — Edited by Peter Clote, Jeffrey Remmel. — Progress in computer science and applied logic, vol. 13. — Un vol. relié, 16×24, de VIII, 447 p. — Prix: SFr. 128.00. — Birkhäuser, Boston, 1995.

The purpose of the workshop on which this volume is based is to carry further the work described in the first "Feasible mathematics" workshop held in 1989. Both workshops were held at Cornell University and sponsored by the University and the Mathematics Science Institute. The current volume contains contributions to feasible mathematics in three areas: computational complexity theory, proof theory and algebra, with substantial overlap between different fields.

Thomas RANSFORD. — **Potential theory in the complex plane.** — London Mathematical Society student texts, vol. 28. — Un vol. relié, 16×23,5, de X, 232 p. — Prix: £13.95. — Cambridge University Press, Cambridge, 1995.

Potential theory is the broad area of mathematical analysis encompassing such topics as harmonic and subharmonic functions, the Dirichlet problem, harmonic measure, Green's functions, potentials and capacity. This is an introduction to the subject suitable for beginning graduate students, concentrating on the important case of two dimensions.

Allan M. SINCLAIR, Roger M. SMITH. — **Hochschild cohomology of von Neumann algebras.** — London Mathematical Society lecture notes, vol. 203. Un vol. broché, 15×23, de VII, 196 p. — Prix: £19.95. — Cambridge University Press, Cambridge, 1995.

The continuous Hochschild cohomology of dual normal modules over a von Neumann algebra is the subject of this book. The necessary technical results are developed assuming a familiarity with basic C^*-algebra and von Neumann algebra theory, including the decomposition into two types, but no prior knowledge of cohomology theory is required and the theory of completely bounded and multilinear operators is given fully.

Vector bundles in algebraic geometry: Durham 1993. — Edited by N.J. Hitchin, P.E. Newstead, W.M. Oxbury. — London Mathematical Society lecture note series, vol. 208. — Un vol. broché, 15×23, de IX, 345 p. — Prix: £24.95. — Cambridge University Press, Cambridge, 1995.

Topics covered in this book include those linking gauge theory and geometric invariant theory such as augmented bundles and coherent systems, Donaldson invariants of algebraic surfaces, Floer homology and quantum cohomology, conformal field theory and the moduli spaces of bundles on curves, the Horrocks-Mumford bundle and codimension 2 subvarieties in $\mathbf{P}^4$ and $\mathbf{P}^5$, exceptional bundles and stable sheaves on projective space.

Groups '93 Galway/St Andrews: Galway 1993, vol.1. — Edited by C.M. Campbell, T.C. Hurley, E.F. Robertson, S.J. Tobin, J.J. Ward. — London Mathematical Society lecture note series, vol. 211. — Un vol. broché, 15×23, de VIII, 303. — Prix: £24.95. — Cambridge University Press, Cambridge, 1995.

This two-volume book contains selected papers from the International Conference "Groups 1993 Galway/St Andrews" which was held at University College Galway in August 1993. The wealth and diversity of group theory is represented in these two volumes. This first volume contains the papers written by authors with the name of the first author lying in the range A-K. Contained in this volume are the papers of the main speakers: J.L. Alperin, M. Broué and P.H. Kropholler.

H.O. CORDES. — **The technique of pseudodifferential operators.** — London Mathematical Society lecture note series, vol. 202. — Un vol. broché, 15×23, de XII, 382 p. — Prix: £24.95. — Cambridge University Press, Cambridge, 1995.

This book presents the technique of pseudodifferential operators and its applications, especially to the Dirac theory of quantum mechanics. The treatment uses "Leibniz formulas" with integral remainders or as asymptotic series. The author discusses connections to the theory of C*-algebras, invariant algebras of pseudodifferential operators under hyperbolic evolution, and the relation of hyperbolic theory to the propagation of maximal ideals.

E. Christopher LANCE. — **Hilbert *C**-modules: a toolkit for operator algebraists.** — London Mathematical Society lecture notes series, vol. 210. — Un vol. broché, 15×23, de IX, 130 p. — Prix: £17.95. — Cambridge University Press, Cambridge, 1995.

The book provides a clear and unified exposition of the main techniques and results in the area. The theory of Hilbert C*-modules together with their bounded and unbounded operators is not only rich and attractive in its own right but forms an infrastructure for some of the most important research topics in operator algebras. This book is based on a series of lectures given by the author at a summer school at the University of Trondheim.

Pertti MATTILA. — **Geometry of sets and measures in Euclidean spaces: fractals and rectifiability.** — Cambridge studies in advanced mathematics, vol. 44. — Un vol. relié, 16×23,5, de XII, 343 p. — Prix: £35.00. — Cambridge University Press, Cambridge, 1995.

The main theme of this book is the study of geometric properties of general sets and measures in Euclidean spaces. Examples to which this theory applies include fractal-type objects such as strange attractors for dynamical systems, and those fractals used as models in the sciences. The author develops all the main tools used in its study, such as covering theorems, Hausdorff measures and their relations to Riesz capacities and Fourier transforms.

Real analytic and algebraic geometry. — Proceedings of the International Conference, Trento (Italy), September 21-25, 1992. — Edited by Fabrizio Broglia, Margherita Galbiati, Alberto Tognoli. — Un vol. relié, 17,5×24,5, de VII, 296 p. — Prix: DM 228.00. — Walter de Gruyter, Berlin, 1995.

This volume consists of original contributions. Topics covered include topological classification of real algebraic curves, semialgebraic and semianalytic sets, computational geometry related to the study of semialgebraic sets, Nash manifolds, real spectrum and algebraic geometry on an ordered field. Special attention is given to applications, with special emphasis on robotics and computer vision.

Mauro C. BELTRAMETTI, Andrew J. SOMMESE. — **The adjunction theory of complex projective varieties.** — de Gruyter expositions in mathematics, vol. 16. — Un vol. relié, 17,5×24,5, de XX, 398 p. — Prix: DM 178.00. — Walter de Gruyter, Berlin, 1995.

General background results. — Consequences of positivity. — The basic varieties of adjunction theory. — The Hilbert scheme and extremal rays. — Restrictions imposed by ample divisors. — Families of unbreakable rational curves. — General adjunction theory. — Background for classical adjunction theory. — The adjunction mapping. — Classical adjunction theory of surfaces. — Classical adjunction theory in dimension > 2. The second reduction in dimension three. — Varieties.

Walter R. BLOOM, Herbert HEYER. — **Harmonic analysis of probability measures on hypergroups.** — De Gruyter studies in mathematics, vol. 20. — Un vol. relié, 18×24,5, de VI, 601 p. — Prix: DM 248.00. — Walter de Gruyter, Berlin, 1995.

This is the first monograph presenting a systematic investigation of the hypergroup method in probability theory. — Contents: Hypergroups and their measure algebras. — The dual of a commutative hypergroup. — Some special classes of hypergroups. — Positive and negative definite functions and measures. — Convolution semigroups and divisibility of measures. — Transience of convolution semigroups. — Randomized sums of hypergroup-valued random variables. — Towards a structure theory of hypergroups and a theory of stationary random fields over hypergroups.

Abelian varieties. — Proceedings of the International Conference held in Egloffstein, Germany, October 3-8, 1993. — Edited by Wolf Barth, Klaus Hulek, Herbert Lange. — Un vol. relié, 18×24,5, de VIII, 344 p. — Prix: DM 238.00. — Walter de Gruyter, Berlin, 1995.

Abelian varieties play an important role in the theory of complex analytic functions and the development of modern algebraic geometry. They are one of the essential tools in what is nowadays called arithmetic geometry. The contributions to this volume provide an up-to-date survey of the different aspects of the field. Special emphasis is put on moduli spaces of Abelian varieties, as well as linear systems on Abelian varieties, modular forms, height functions, arithmetic questions, Prym varieties and the Virasoro algebra.

Mathématiques et art. — Sous la direction de Maurice Loi. — Un vol. broché, 17,5×24, de 249 p. — Prix: FF 240.00. — Hermann, Paris, 1995.

Dix-neuf chercheurs, mathématiciens, artistes ou théoriciens mènent ici des réflexions approfondies sur les lieux d'échanges des arts et des sciences. Leur champ d'étude s'étend de la musique sérielle jusqu'à la peinture abstraite en passant par de nombreuses disciplines pointues. Sont ainsi balisés les vastes domaines à la croisée de l'épistémologie et de l'esthétique qui sont aujourd'hui au coeur du débat, et dont l'analyse est susceptible d'éclairer maints problèmes.

Partial differential equations : models in physics and biology. — Edited by Günter Lumer, Serge Nicaise, Bert-Wolfgang Schulze. — Mathematical research, vol. 82. — Un vol. relié, 17,5×25, de 421 p. — Prix: DM 148.00. — Akademie Verlag, Berlin, 1994.

This volume contains the contributions to the conference "Partial differential equations" which was held in Han-sur-Lesse, Belgium, in December 1993. The authors discuss a variety of important questions in pure mathematics, applied sciences, engineering, and mathematical physics... The articles illuminate complex phenomena in non-linear analysis, free boundary value problems, effects from singularities, asymptotics, and stability of solutions in a way which should appeal to a broad readership.

The values of precision. — Edited by M. Norton Wise. — Un vol. relié, 16,5×24,5, de VIII, 372 p. — Princeton University Press, Princeton, N.J., 1995.

This book examines how exactitude has come to occupy such a prominent place in Western culture. Beginning with the late eighteenth century and continuing into the twentieth, the essays in this volume support the view that centralizing states have been the major promoters of numerical precision. At the heart of this book, is an inquiry into the capacity of numbers and instruments to travel across boundaries of culture and materials.

Theodore M. PORTER. — **Trust in numbers : the pursuit of objectivity in science and public life.** — Un vol. relié, 16×24, de XIV, 310 p. — Prix: US$24.95. Princeton University Press, Princeton, N.J., 1995.

Drawing on a wide range of examples from the laboratory and from the worlds of accounting, insurance, cost-benefit analysis, and civil engineering, the author shows that it is "exactly wrong" to interpret the drive for quantitative rigor as inherent somehow in the activity of science except where political and social pressures force compromise. Instead, quantification grows from attempts to develop a strategy of impersonality in response to pressures from outside. Objectivity derives its impetus from cultural contexts, quantification becoming most important where elites are weak, where private negotiation is suspect, and where trust is in short supply.

Wavelets and their applications. — Edited by J.S. Byrnes, Jennifer L. Byrnes, Kathryn A. Hargreaves, Karl Berry. — NATO ASI series, series C: Mathematical and physical sciences, vol. 442. — Un vol. relié, 24,5×17, de XII, 415 p. — Prix: Dfl. 295.00. — Kluwer Academic Publishers, Dordrecht, 1994.

This volume contains papers presented at the August 1992 NATO Advanced Study Institute on Wavelets and their Applications. The conference was held at Ciocco near Lucca in Tuscany, Italy. Wavelet theory and technology is in an important growth stage at which theoretical and practical results are being compared with existing methods. Wavelets and wavelet packets provide a theory analogous to Fourier analysis and tools analogous to coherent state methods. Many of the world's experts in the field of wavelets were principal speakers at the ASI, and their papers appear in this volume.

G.N. MILSTEIN. — **Numerical integration of stochastic differential equation.** — Mathematics and its applications, vol. 313. — Un vol. relié, 16,5×24,5, de VII, 169 p. — Prix: Dfl. 135.00. — Kluwer Academic Publishers, Dordrecht, 1995.

This book is devoted to meansquare and weak approximations of solutions of stochastic differential equations (SDEs). These approximations represent two fundamental aspects in the

contemporary theory of SDE. Firstly, the construction of numerical methods for such systems is important as the solutions it provides serve as characteristics for a number of mathematical physics problems. Secondly, the use of probability representations together with a Monte Carlo method allows us to reduce the solving of complex multidimensional problems of mathematical physics to the integration of stochastic equations.

V.A. VASSILIEV. — **Ramified integrals, singularities and lacunas.** — Mathematics and its applications, vol. 315. — Un vol. relié, 16,5×24,5, de XVII, 289 p. — Prix: Dfl. 210.00 — Kluwer Academic Publishers, Dordrecht, 1994.

This volume contains an introduction to the Picard-Lefschetz theory, which controls the ramification and qualitative behaviour of many important functions of PDEs and integral geometry, and its foundations in singularity theory. Solutions to many problems of these theories are treated. Subjects include the proof of multidimensional analogues of Newton's theorem on the nonintegrability of ovals; extension of the proofs for the theorems of Newton, Ivory, Arnold and Givental on potentials of algebraic surfaces.

N. Ja VILENKIN, A.U. KLIMYK. — **Representation of Lie groups and special functions: recent advances.** — Mathematics and its applications, vol. 315. — Un vol. relié, 16,5×24,5, de XVI, 497 p. — Prix: Dfl. 360.00 — Kluwer Academic Publishers, Dordrecht, 1994.

The theory of orthogonal symmetric polynomials and multivariate hypergeometric functions associated to symmetric polynomials are treated. Multivariate hypergeometric functions, multivariate Jacobi polynomials and h-harmonic polynomials connected with root systems and Coxeter groups are introduced. Also, the theory of Gel'fand hypergeometric functions and the theory of multivariate hypergeometric series associated to Clebsch-Gordan coefficients of the unitary group U(n) is given. The volume concludes with an extensive bibliography.

M. HOLSCHNEIDER. — **Wavelets: an analysis tool.** — Oxford mathematical monographs. — Oxford science publications. — Un vol. relié, 16,5×24, de XIII, 423 p. — Prix: £45.00. — Clarendon Press, Oxford, 1995.

This book is designed to be an easy-to-read, more or less self-contained introductory text about the theory of wavelets. It is intended for graduate students of mathematics and physics, as well as interested researchers from other fields, and engineers. Its main focus is the continuous wavelet transform and some of its applications. The intention is to fill a gap between the book by Ingrid Daubechies, whose focus is on orthonormal wavelet bases, and the more advanced books by Yves Meyer and Ronald Coifman.

Jan BERAN. — **Statistics for long-memory processes.** — Monographs on statistics and applied probability, vol. 61. — Un vol. relié, 14,5×22, de X, 315 p. — Prix: £37.50. — Chapman & Hall, New York, 1994.

This book covers the diverse statistical methods and applications for data with long-range dependence. The author provides a concise and accessible overview of probabilistic foundations, statistical methods, and applications. He explores data sets from a wide range of disciplines such as hydrology, climatology, telecommunications engineering, and high-precision physical measurement, and supplies S-PLUS programs for the major methods discussed.

Approximation and computation: a Festschrift in honour of Walter Gautschi. — Proceedings of the Purdue Conference, December 2-5, 1993. — Edited by R.V.M. Zahar. — International series of numerical mathematics, vol. 119. — Un vol. relié, 17×24, de XLVI, 591 p. — Prix: SFr. 168.00. — Birkhäuser, Basel, 1994.

The book provides an extensive survey of the most current topics in the fields of approximation, orthogonal polynomials, quadrature, and special functions. It is a uniquely uniform representation of a broad spectrum of mathematical subjects. It will be of interest to researchers in the forefront of the topics covered, doctoral students requiring the most up-to-date results, and historians concerned with the exceptional contributions of current scientific researchers and writers.

Alain GUICHARDET. — **Groupes quantiques: introduction au point de vue formel.** — Savoirs actuels. — Série Mathématiques. — Un vol. broché, 16×23, de XI, 148 p. — Prix: FF. 149.00. — InterEditions, Paris, 1995.

L'ouvrage d'Alain Guichardet vient combler une lacune pédagogique car les groupes quantiques n'avaient encore jamais fait objet d'un exposé en français, accessible aux étudiants de troisième cycle ou aux chercheurs débutants en mathématiques ou en physique théorique. Cet ouvrage, à la frontière des mathématiques et de la physique théorique, est abordable par des étudiants en maîtrise.

François MARGOT. — **Composition de polytopes combinatoires: une approche par projection.** — Cahiers mathématiques de l'Ecole polytechnique fédérale de Lausanne, vol. 4. — Un vol. broché, 15×21, de 176 p. — Prix: SFr. 64.30. — Presses polytechniques et universitaires romandes, Lausanne, 1995.

Cet ouvrage se centre sur l'étude de problèmes combinatoires pouvant être décomposés en plusieurs sous-problèmes distincts dont les solutions permettent de reconstruire la solution du problème initial. Une formulation du problème sous forme de programmation linéaire PL est décrite et appliquée à plusieurs problèmes de la théorie des graphes. La programmation linéaire en nombres entiers PLE, autre modèle mathématique important, consiste à trouver la meilleure solution en nombres entiers d'un problème de programmation linéaire.

N. AOKI, K. HIRAIDE. — **Topological theory of dynamical systems: recent advances.** — North-Holland mathematical library, vol. 52. — Un vol. relié, 15,5×23, de VIII, 416 p. — Prix: Dfl. 225.00. — North-Holland, Amsterdam, 1994.

This monograph aims to provide an advanced account of some aspects of dynamical systems in the framework of general topology, and is intended for use by interested graduate students and working mathematicians. This book contains a new theory developed by the authors to deal with problems occurring in differentiable dynamics that are within the scope of general topology. To follow it, the book provides an adequate foundation for topological theory of dynamical systems, and contains tools which are sufficiently powerful throughout the book.

Handbook of global optimization. — Edited by Reiner Horst and Panos M. Pardalos. — Nonconvex optimization and its applications, vol. 2. — Un vol. relié, 16,5×24,5. de XVII, 880 p. — Prix: Dfl. 420.00. — Kluwer, Dordrecht, 1995.

This handbook is the first comprehensive book to cover recent developments in global optimization. Each contribution is essentialy expository in nature, but scholarly in its treatment. The chapters cover optimality conditions, complexity results, concave minimization, DC programming, general quadratic programming, nonlinear complementarity, minimax problems, multiplicative programming, Lipschitz optimization, fractional programming, network problems, trajectory methods, homotopy methods, interval methods, and stochastic approaches.

Guri I. MARCHUK. — **Adjoint equations and analysis of complex systems.** — Mathematics and its applications, vol. 295. — Un vol. relié, 16,5×25, de VII, 466 p. — Prix: Dfl. 350.00. — Kluwer, Dordrecht, 1995.

This volume presents the fundamentals of adjoint equations theory and perturbation algorithms and exemplifies their applications by solutions of complex problems of mathematical physics. The earlier Russian version (1992) was completely revised and supplemented with many new results for this edition, thus offering a unique compilation of the author's research in many areas of applied mathematics over the years.

Non-classical logics and their applications to fuzzy subsets: a handbook of the mathematical foundations of fuzzy set theory. — Edited by Ulrich Höhle and Erich Peter Klement. — Theory and decision library. Series B: Mathematical and statistical methods, vol. 32. — Un vol. relié, 26,5×25, de VIII, 390 p. — Prix: Dfl. 200.00. — Kluwer, Dordrecht, 1995.

This work is devoted to a careful study of various relations between non-classical logics and fuzzy sets. The book is arranged in three parts. Part A presents the most recent developments in the theory of Heyting algebras, MV-algebras, quantales and GL-monoids. Part B gives an account of topos-like categories for fuzzy set theory based on Heyting algebra valued sets, quantal sets or M-valued sets. Part C addresses general aspects of non-classical logics.

Approximation theory, wavelets and applications. — Edited by S.P. Singh, Antonio Carbone and B. Watson. — NATO ASI Series. Series C: Mathematical and physical sciences, vol. 454. — Un vol. broché, 16,5×25, de XXIII, 572 p. — Prix: Dfl. 385.00. — Kluwer, Dordrecht, 1994.

The papers of the Proceedings, held at Maratea, Italy, during May 16-26, 1994, cover such topics as: constructive multivariate approximation, theory of splines, spline wavelets, cardinal spline wavelets, polynomial and trigonometric wavelets, interpolation theory, polynomial and rational approximation. Many scientific applications were presented.

Logic, methodology and philosophy of science IX. — Proceedings of the ninth International Congress of Logic, Methodology and Philosophy of Science, Uppsala, August 7-14, 1991. — Edited by Dag Prawitz, Brian Skyrms, Dag Westerstahl. — Studies in logic and the foundations of mathematics, vol. 134. — Un vol. relié, 15×23, de XIV, 989 p. — Prix: Dfl. 425.00. — North-Holland, Amsterdam, 1994.

The scientific program of the Congress consisted of 54 invited lectures and about 650 contributed papers scheduled within 10 ordinary working sessions, one opening and one closing session. The lectures cover a wide range of different issues in the field of logic, methodology, and philosophy of science.

Anatoly G KUSRAEV and Semen S. KUTATELADZE. — **Nonstandard methods of analysis.** — Mathematics and its applications, vol. 291. — Un vol. relié, 16,5×25, de VIII, 435 p. — Prix: Dfl. 295.00. — Kluwer, Dordrecht, cop. 1994.

This volume is devoted to nonstandard methods of analysis based on applying nonstandard models of set theory. Special attention is paid to general principles and fundamentals of formalisms for infinitesimals as well as to the technique of descents and ascents in a Boolean-valued universe. The methods that have been developed in the last twenty-five years are explained in detail, and are collected in book form for the first time.

Bernard CANDELPERGHER. — **Fonctions d'une variable complexe.** — U Mathématiques. — Un vol. broché, 17×23, de VIII, 279 p. — Prix: FF 150.00. — Armand Colin, Paris, 1995.

La première partie de cet ouvrage expose les notions importantes de la théorie des fonctions analytiques: dérivabilité, développement en série entière, prolongement analytique, intégrale curviligne, homotopie, singularités isolées, inversion... La seconde partie rassemble trente problèmes qui permettent à l'étudiant de s'aventurer par lui-même dans le très vaste domaine des fonctions analytiques.

Marc AUBRY. — **Homotopy theory and models.** — Based on lectures held at a DMV Seminar in Blaubeuren by H.J. Baues, S. Halperin and J.-M. Lemaire. — DMV Seminar, Bd. 24. — Un vol. broché, 17×24, de IX, 117 p. — Prix: DM 48.00. — Birkhäuser, Basel, 1995.

The book is based upon notes taken by the author. The aim of the work is to provide an overview of homotopy theory from the point of view of algebraic models of homotopy types, leading the reader from the basic definitions in algebraic topology to specific fields of reserch. Recent results are included together with the essential bibliographic references.

Klaus SCHMIDT. — **Dynamical systems of algebraic origin.** — Progress in mathematics, vol. 128. — Un vol. relié, 16×24, de XVIII, 310 p. — Prix: DM 138.00. — Birkhäuser, Basel, 1995.

The wealth of concrete and natural examples which has contributed so much to the appeal and development of classical dynamics, are noticeably absent in this subject. The purpose of this book is to help remedy this scarcity of explicit examples. — Contents: — Group actions by automorphisms of compact groups. — Expansive automorphisms of compact groups. — Periodic points. — Entropy. — Positive entropy. — Zero entropy. — Mixing. — Rigidity.

André AVEZ. — **La leçon d'analyse à l'oral de l'agrégation.** — Un vol. broché, 16×24, de VIII, 308 p. — Prix: FF 195.00. — Masson, Paris, 1995.

Cet ouvrage constitue la deuxième leçon pour l'oral et clôt une série particulièrement brillante et appréciée. Il couvre la topologie, l'analyse fonctionnelle, les suites, le calcul différentiel. On y trouve le contenu minimal de chaque leçon, suivi de thèmes d'exposés originaux à proposer au jury.

Stefan E. SCHMIDT. — **Grundlegungen zu einer allgemeinen affinen Geometrie.** — Un vol. broché, 17×24, de 118 p. — Prix: DM 44.00. — Birkhäuser, Basel, 1995.

Im ersten Teil dieses Buches wird der Begriff des affinen Liniensystems eingeführt und in anderen Kategorien (z.B. als System von Aequivalenzrelationen, als Hüllensystem oder als Verband) interpretiert. Im zweiten Teil wird das allgemeine axiomatische Konzept affiner Liniensysteme um einer affinen Unabhängigkeits- und einen Dimensionsbegriff erweitert.