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## BULLETIN BIBLIOGRAPHIQUE

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Serge LANG. — **Introduction to linear algebra.** — 2nd edition. — Undergraduate texts in mathematics. — Un vol. relié,  $16 \times 24,5$ , de VIII, 291 p. — Prix: DM 98.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

This book is meant as a short text in linear algebra for a one-term course. The author expects it to be used mostly for students who have had two or three terms of calculus. — *Contents:* Vectors. — Matrices and linear equations. — Vector spaces. — Linear mappings. — Composition and inverse mappings. — Scalar products and orthogonality. — Determinants. — Eigenvectors and eigenvalues. — Answers to exercises.

Vladimir G. MAZ'JA. — **Sobolev spaces.** — Translated from the Russian by T. O. Saposnikova. — Springer series in Soviet mathematics. — Un vol. relié,  $16 \times 23,5$ , de XIX, 486 p. — Prix: DM 184.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

The various aspects of the theory of Sobolev spaces are considered in this monograph. Particular attention is paid to the so-called imbedding theorems which were originally established by S. L. Sobolev in the 1930s and proved to play a significant role in functional analysis and in the treatment of linear and nonlinear partial differential equations.

Klaus LAMOTKE. — **Regular solids and isolated singularities.** — Advanced lectures in mathematics. — Un vol. broché,  $16,5 \times 23$ , de X, 224 p. — Prix: DM 48.00. — Friedr. Vieweg & Sohn, Braunschweig/Wiesbaden, 1986.

This book is an introduction into the beautiful relations between the regular Platonic solids and certain isolated singularities of complex surfaces which have been detected between 1870 and 1970. These relations include topics from Euclidean geometry, group and invariant theory, commutative algebra, algebraic geometry, several complex variables, differential, combinatoric, and algebraic topology.

Serge LANG. — **Math ! Encounters with high school students.** — Un vol. broché,  $15,5 \times 23,5$ , de XII, 138 p. — Prix: DM 68.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1985.

The dialogues in this book are the result of the visits of Serge Lang to several high school mathematics classes. The goal of these visits, and of this book, is to communicate the nature of mathematics to the students. In his characteristically lively style, S. Lang discusses mathematics with the students, giving them a glimpse of the true nature of mathematics.

Jürgen NEUKIRCH. — **Class field theory.** — Grundlehren der mathematischen Wissenschaften, vol. 280. — Un vol. relié,  $16 \times 23,5$ , de VIII, 140 p. — Prix: DM 84.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.



Class field theory is the culmination of the development of number theory beginning with Gauss's reciprocity law and covering the work of Kummer, Dirichlet, Kronecker, Hilbert, Artin-Hasse. It contains the main achievements and the most significant results of the theory of algebraic number fields.

Kunihiko KODAIRA. — **Complex manifolds and deformation of complex structures.** — Translated by Kazuo Akao. — Grundlehren der mathematischen Wissenschaften, vol. 283. — Un vol. relié, 16 × 24,5, de x, 465 p. — Prix: DM 174. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

This book is an introduction to the theory of complex manifolds and their deformations. It begins with a discussion of the basic theory of complex manifolds, including their cohomology theory, and continues with moduli theory, and stability theory. The appendix covers the theory of elliptic partial differential operators, which lies at the foundation of deformation theory.

Shing Tung YAU. — **Nonlinear analysis in geometry.** — Monographie de l'Enseignement Mathématique n° 33, Série des conférences de l'Union Mathématique Internationale n° 8. — Un vol. broché, 16 × 24, de 56 p. — Prix: FS 28.00. — L'Enseignement Mathématique, Université de Genève, 1986.

This is an expanded version of lectures held at the ETH-Zürich under the sponsorship of the International Mathematical Union. Contents: Eigenvalues and harmonic functions, Yamabe's equation and conformally flat manifolds, harmonic maps, minimal submanifolds, Kähler geometry, canonical metrics over complex manifolds.

Mark A. KON. — **Probability distributions in quantum statistical mechanics.** — Lecture notes in mathematics, vol. 1148. — Un vol. broché, 16 × 24,5, de v, 120 p. — Prix: DM 21.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This monograph has a twofold purpose: to provide a rigorous mathematical foundations for the study of probability distributions in quantum statistics, and to apply the theory to physically interesting examples.

Jan-Cees VAN DER MEER. — **The Hamiltonian Hopf bifurcation.** — Lecture notes in mathematics, vol. 1160. — Un vol. broché, 16 × 24,5, de vi, 115 p. — Prix: DM 21.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This research monograph deals with the bifurcation of periodic solutions in a family of Hamiltonian systems of two degrees of freedom passing through resonance at an equilibrium. The main topics include a new method, for bringing the locus of periodic solutions (locally) into a relatively simple standard form, and the precise description of the bifurcation which can thus be obtained.

**Harmonic mappings and minimal immersions.** — Lectures given at the 1st 1984 Session of the Centro Internazionale Matematico Estivo (CIME) held at Montecatini, Italy, June 24-July 3, 1984. — Edited by E. Giusti. — Lecture notes in mathematics, vol. 1161. — Un vol. broché, 16 × 24,5, de vii, 285 p. — Prix: DM 38.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

*S. Hildebrandt*: Harmonic mappings of Riemannian manifolds. — *J. Jost*: Lectures on harmonic maps. — *J. H. Sampson*: Harmonic maps in Kähler geometry. — *L. Simon*: Isolated singularities of extrema of geometric variational problems.

S. J. L. VAN EIJNDHOVEN, J. de GRAAF. — **Trajectory spaces, generalized functions and unbounded operators.** — Lecture notes in mathematics, vol. 1162. — Un vol. broché, 16 × 24,5, de iv, 272 p. — Prix: DM 38.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

Analyticity spaces, trajectory spaces and linear mappings between them. — Illustrative examples of analyticity spaces. — Compound spaces, tensor products and kernel theorems. — Algebras of continuous linear mappings on analyticity spaces and trajectory spaces. — A mathematical interpretation of Dirac's formalism for quantum mechanics.

**Iteration theory and its functional equations.** — Proceedings of the International Symposium held at Schloss Hofen (Lochau), Austria, Sept. 28-Oct. 1, 1984. — Edited by R. Liedl, L. Reich, and Gy. Targonski. — Lecture notes in mathematics, vol. 1163. — Un vol. broché, 16 × 24,5, de viii, 231 p. — Prix: DM 31.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This volume of proceedings provides a survey of the most significant trends and results in the area of iteration theory (discrete dynamical systems), and the relevant functional equations. It contains both research papers and survey articles covering problems of continuous iteration (embedding in continuous-time dynamical systems) and chaotic behaviour, strange attractors, and applications to physics and biology.

Mauro MESCHIARI, John H. RAWNSLEY, Simon SALAMON. — **Geometry Seminar "Luigi Bianchi" II-1984.** — Lectures given at the Scuola Normale Superiore. — Edited by E. Vesentini. — Lecture notes in mathematics, vol. 1164. — Un vol. broché, 16 × 24,5, de vi, 224 p. — Prix: DM 31.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

*M. Meschiari*: A classification of real and complex finite dimensional  $J^*$ -algebras. — *J. H. Rawnsley*:  $f$ -structures,  $f$ -twistor spaces and harmonic maps. — *S. Salamon*: Harmonic and holomorphic maps.

**Seminar on deformations.** — Proceedings, Łódź-Warsaw, 1982/84. — Edited by J. Ławrynowicz. — Lecture notes in mathematics, vol. 1165. — Un vol. broché, 16 × 24,5, de ix, 331 p. — Prix: DM 45.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

The central focus in this collection of research and expository papers lies on deformations of mathematical structures in the context of complex analysis with physical applications. The collection is dedicated to the memory of Prof. Aldo Andreotti (1924-1980).

**Banach spaces.** — Proceedings of the Missouri conference held in Columbia, USA, June 24-29, 1984. — Edited by N. Kalton, E. Saab. — Lecture notes in mathematics, vol. 1166. — Un vol. broché, 16 × 24,5, de vi, 199 p. — Prix: DM 31.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This volume contains 22 papers that represent contributions to current research in a range of related areas of Banach space theory, covering such topics as spaces of holomorphic functions,

properties of operators, local structure, the Radon-Nikodym property, martingale convergence, probability in Banach spaces, isometric structure and approximation theory.

**Geometry and topology.** — Proceedings of the Special Year held at the University of Maryland, College Park 1983-1984. — Edited by J. Alexander and J. Harer. — Lecture notes in mathematics, vol. 1167. — Un vol. broché,  $16 \times 24,5$ , de vi, 292 p. — Prix: DM 38.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

The contents of this volume reflect the major areas of the 1983/84 Special Year on Geometry and Topology with papers on 3-manifolds and hyperbolic geometry, homological methods, topology and geometry at 4-manifolds, geometric and analytic methods, growth of groups.

W. A. LIGHT, E. W. CHENEY. — **Approximation theory in tensor product spaces.** — Lecture notes in mathematics, vol. 1169. — Un vol. broché,  $16 \times 24,5$ , de vii, 157 p. — Prix: DM 26.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This monograph is an exposition of recent work on the approximation of functions of several variables. The principal material focuses on: the problem of proximality of subspaces, the convergence of the alternating algorithm, the estimation of projection constants, the identification of minimal projections, and the von Golitschek algorithm.

Brian S. THOMSON. — **Real functions.** — Lecture notes in mathematics, vol. 1170. — Un vol. broché,  $16 \times 24,5$ , de vii, 229 p. — Prix: DM 31.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This monograph surveys a large part of the material developed in this century concerning the continuity and differentiation properties of real functions in a variety of senses. The specialist will find this book useful as a reference work and perhaps as a source of new problems. Others, will find an introduction to material in real analysis, both recent and classical.

Hermann KÖNIG. — **Eigenvalue distribution of compact operators.** — Operator theory: advances and applications, vol. 16. — Un vol. relié,  $17 \times 24$ , de 262 p. — Prix: FS 68.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1986.

This book presents a survey on quantitative results for the eigenvalues of certain classes of Riesz operators on Banach spaces, e.g. for  $p$ -summing operators or for those with summable  $s$ -numbers. The book is self-contained and requires only basic knowledge of functional analysis.

Yuri KIFER. — **Ergodic theory of random transformations.** — Progress in probability and statistics, vol. 10. — Un vol. relié,  $15,5 \times 23$ , de 210 p. — Prix: FS 68.00. — Birkhäuser, Boston/Basel/Stuttgart, 1986.

This book is the first systematic exposition of ergodic theory of random transformations, an analysis of composed actions of independent random maps. This arrangement allows the unified approach to many problems of dynamical systems, product of random matrices and stochastic flows generated by stochastic differential equations.

**Seminar on stochastic processes, 1984.** — Edited by E. Cinlar, K. L. Chung, R. K. Gettoor. — Progress in probability and statistics, vol. 9. — Un vol. relié,  $15,5 \times 23$ , de 249 p. — Prix: FS 78.00. — Birkhäuser, Boston/Basel/Stuttgart, 1986.

This book consists of about half of the papers presented in a seminar that brought together some of the most eminent researchers on Markov processes, potential theory, and stochastic calculus. Some of the topics covered are as follows: local times for Levy processes, inhomogeneous Schrödinger equation, eigenmeasures and eigenfunctions of Markov processes, Hida-Cramer representation for stochastic processes, energy of Markov processes.

**A la recherche de la topologie perdue: I: du côté de chez Rohlin; II: le côté de Casson.** — Edited by Lucien Guillou, Alexis Marin. — Progress in mathematics, vol. 62. — Un vol. relié,  $15,5 \times 23$ , de XXIII, 244 p. — Prix: FS 78.00. — Birkhäuser, Boston/Basel/Stuttgart, 1986.

The first part of this book contains a French translation of four 1952 papers by V. A. Rohlin announcing his famous result on the signature of 4-dimensional manifolds. A detailed commentary of these notes is included. Also included are two papers on more recent extensions of Rohlin's original result. The 2nd part proposes an elementary exposition of the most used corollary of the Atiyah-Singer theorem by C. Gordon, and an application of this result. The book ends with a summary of the 1973-74 fundamental conferences of A. Casson.

**Advances in invariant subspaces and other results of operator theory.** — 9th International conference on operator theory, Timisoara and Herculane (Romania), June 4-14, 1984. — Edited by R. G. Douglas, C. M. Pearcy, B. Sz.-Nagy, F.-H. Vasilescu, D. Voiculescu. — Managing editor: Gr. Arsene. — Operator theory: advances and applications, vol. 17. — Un vol. relié,  $17 \times 24$ , de 375 p. — Prix: FS 88.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1986.

Original results of new research are included. They reflect a great variety of topics, among which recent advances in the invariant subspace problem, subalgebras of operator algebras, Hilbert space contractions, hyponormal, Hankel and other classes of operators, spectral decompositions, aspects of dilation theory and so on.

Wilbur Richard KNORR. — **The ancient tradition of geometric problems.** — Un vol. relié,  $16,5 \times 24$ , de IX, 411 p. — Prix: FS 128.00. — Birkhäuser, Boston/Basel/Stuttgart, 1986.

This book undertakes a survey of the ancient Greek geometric tradition. It focuses on efforts toward the solution of the three "classical problems" of cube-duplication, angle-trisection and circle-quadrature, of which dozens of attempted solutions have survived. These include contributions by Hippocrates of Chios, Eudoxus, Archimedes, Appollonius and many others, spanning virtually the entire period of ancient geometry. Includes 400 geometric drawings and photographs.

R. LOWEN. — **On the existence of natural non-topological, fuzzy topological spaces.** — Research and exposition in mathematics, vol. 11. — Un vol. broché,  $17 \times 24$ , de xvi, 183 p. — Prix: DM 34.00. — Heldermann Verlag, Berlin, 1985.

This monograph presents a unified study of several important examples of natural fuzzy topological spaces: the space of probability measures on a separable metrizable topological space, the space of Radon probability measures on a linearly ordered topological space (which generalizes the so-called fuzzy real line) and the hyperspace of uppersemicontinuous fuzzy sets on a uniform space.

S. G. GINDIKIN. — **Algebraic logic.** — Translated by Robert H. Silverman. — Problem books in mathematics. — Un vol. relié, 16 × 24, de xviii, 356 p. — Prix: DM 146.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1985.

This book is a stimulating collection of problems from mathematical logic, ranging from elementary questions in propositional and predicate calculus to probabilistics and multivalued logic. There are basically three groups of problems in the book: problems of completeness and functionally closed classes, problems of synthesis and the evaluation of the complexity of networks and probability theory in finite boolean algebras.

**Infinite dimensional groups with applications.** — Edited by V. Kac. — Mathematical sciences research institute publications, vol. 4. — Un vol. relié, 16 × 24,5, de x, 380 p. — Prix: DM 98.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1985.

This volume contains most of the talks given at the Conference on infinite dimensional groups held at the Mathematical sciences research institute in Berkeley, California, May 10-May 15, 1984. The aim of this conference, part of the special program on Kac-Moody Lie algebras, was to review recent developments in the theory of infinite dimensional groups. This book concentrates on three very active, interrelated directions in the field: general Kac-Moody groups, gauge groups (especially loop groups), and diffeomorphism groups.

P. RABIER. — **Lectures on topics in one-parameter bifurcation problems.** — Notes by G. Veerappa Gowda. — Tata Institute of Fundamental Research lectures on mathematics, vol. 76. — Un vol. broché, 18 × 24, de vi, 290 p. — Prix: DM 20.00. — Published for the Tata Institute of Fundamental Research, by Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

These notes are based on a course of lectures, given in Summer 1984, presenting a survey of one-parameter bifurcation problems — more precisely, of the analysis of the structure of their set of solutions in various situations by means of similar general arguments.

A. V. JATEGAONKAR. — **Localization in Noetherian rings.** — London Mathematical Society lecture note series, vol. 98. — Un vol. broché, 15,5 × 22,5, de xii, 324 p. — Prix: £17.50. — Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

Ore's method of localization. — Orders in semi-simple rings. — Localization at semi-prime ideals. — Localization, primary decomposition, and the second layer. — Links, bonds, and Noetherian bimodules. — The second layer. — Classical localization. — The second layer condition. — Indecomposable injectives and the second layer condition. — Important classes of Noetherian rings.

Gary D. CROWN, Maureen H. FENRICK, Robert J. VALENZA. — **Abstract algebra.** — Pure and applied mathematics, vol. 99. — Un vol. relié, 16 × 23,5, de 416 p. — Prix: \$32.50 (USA and Canada), et \$39.00 (tous les autres pays). — Marcel Dekker, Inc., New York/Basel, 1986.

This book introduces the essential elements of sets and functions, operations, and quotient sets. The book then proceeds to build on this foundation, developing the theory of groups, rings, algebras, modules and fields, culminating in Galois theory. Appendices include Zorn's lemma and the rudiments of categories and functors.



Malcolm ADAMS, Victor GUILLEMIN. — **Measure theory and probability.** — The Wadsworth & Brooks/Cole mathematics series. — Un vol. relié,  $17 \times 24$ , de XII, 203 p. — Prix: \$32.40. — Wadsworth & Brooks/Cole Advanced Books and Software, Monterey, Cal., 1986.

From the preface written by the authors: "Indeed, we believe (and this is the reason we wrote this book) that the only way to teach measure theory to undergraduates is from the perspective of probability theory. To teach measure theory and integration theory without at the same time dwelling on its applications is indefensible".

A. AVEZ. — **Differential calculus.** — Translated by D. Edmunds. — Un vol. relié,  $15,5 \times 23,5$ , de XII, 179 p. — Prix: £17.95. — John Wiley and Sons, Chichester/New York/Brisbane/Toronto/Singapore, 1986.

The subject is presented in a Banach space setting, and among the topics covered are vector fields, one-parameter groups of diffeomorphisms, the Morse-Palais lemma, and differentiable submanifolds. There is also an investigation of applications to differential equations and the calculus of variation.

Lynn Margaret BATTEN. — **Combinatorics of finite geometries.** — Un vol. broché,  $15 \times 23,5$ , de X, 173 p. — Prix: £8.95 (relié: £25.00). — Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

This textbook is intended as an introduction to the combinatorial theory of finite geometry for undergraduate students of mathematics. Although only a basic knowledge of set theory and analysis is assumed, the student is soon led to results at the frontiers of research.

Thomas B. A. SENIOR. — **Mathematical methods in electrical engineering.** — Un vol. relié,  $16 \times 23,5$ , de VIII, 272 p. — Prix: £25.00. — Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

The author covers the mathematical methods appropriate to both linear-systems theory and signal processing. Although the discussion is mathematically self-contained, it assumes that the reader has a firm background in calculus and differential equations. Each chapter contains a number of worked examples plus exercises.

J. H. CARRUTH, J. A. HILDEBRANT, R. J. KOCH. — **The theory of topological semigroups, vol. 2.** — Pure and applied mathematics, vol. 100. — Un vol. relié,  $16 \times 23,5$ , de X, 195 p. — Prix: \$49.50 (USA et Canada) et \$59.25 (tous les autres pays). — Marcel Dekker, Inc., New York/Basel, 1986.

Discussing the application of cohomology theory to the theory of compact monoids, the book includes coverage of the concepts of middle and edge points, and a review of the conditions one can impose on a compact monoid to make it a group. With regard to topologic semilattices, it proves theories on Lawson semilattices and continuous semilattices, etc... This is an important up-to-date source of information.

**Probability theory and harmonic analysis.** — Edited by J.-A. Chao, Wojbor A. Woyczynski. — Pure and applied mathematics, vol. 98. — Un vol. relié,  $16 \times 23,5$ , de VIII, 291 p. — Prix: \$59.75 (USA et Canada), \$71.50 (tous les autres pays). — Marcel Dekker, Inc., New York/Basel, 1986.

This book reviews and assesses major developments concerning the interaction of these subjects and includes valuable new work that points the way toward future research. It gives hundreds of bibliographic references and provides illustrations, including tables, line drawings and equations, which graphically stress and explain major problems, theories, and ideas.

Yu. I. MANIN. — **Cubic forms: algebra, geometry, arithmetic.** — Translated from Russian by M. Hazewinkel. — Second edition. — North-Holland mathematical library, vol. 4. — Un vol. relié, 16 × 22,5, de x, 326 p. — Prix: Dfl. 175.00. — North-Holland, Amsterdam/New York/Oxford, 1986.

The original text has been left intact, except for a few corrections, and brought up-to-date by the addition of an appendix and recent references. This appendix sketches some of the most essential new results, constructions and ideas, including the solutions of the Lüroth and Zariski problems, the theory of the descent and obstructions to the Hasse principle on rational varieties, and recent applications of  $K$ -theory to arithmetic.

Jun-Iti NAGATA. — **Modern general topology.** — 2nd revised edition. — North-Holland mathematical library, vol. 33. — Un vol. relié, 16 × 22,5, de x, 522 p. — Prix: Dfl. 250.00. — North-Holland, Amsterdam/New York/Oxford, 1985.

The reader will find many new topics: theory of Wallman-Shanin's compactification, realcompact space, various generalizations of paracompactness, generalized metric spaces, Dugundji type extension theory, linearly ordered topological space, theory of cardinal functions, dyadic space, etc., that were, in the author's opinion, mostly special or isolated topics some 20 years ago but now settle down into the main stream of general topology.

R. NARASIMHAN. — **Analysis on real and complex manifolds.** — 2nd revised edition, 1st reprint. — North-Holland mathematical library, vol. 35. — Un vol. relié, 16 × 22,5, de xiv, 246 p. — Prix: Dfl. 150.00. — North-Holland, Amsterdam/New York/Oxford, 1985.

The present edition is a reprint with misprints corrected. This book presents theorems on differentiable functions often used in differential topology, an introduction to real and complex manifolds, and the properties of linear elliptic differential operators. In a new preface, the author mentions an alternative approach to the theory of linear elliptic operators.

Bernard BEAUZAMY. — **Introduction to Banach spaces and their geometry.** — 2nd revised edition. — North-Holland mathematics studies, vol. 68. — Notas de matematica, vol. 86. — Un vol. broché, 16,5 × 24, de xv, 338 p. — Prix: Dfl. 60.00 (relié: Dfl. 125.00). — North-Holland, Amsterdam/New York/Oxford, 1985.

This 2nd edition has been brought up to date by the addition of a completely new section devoted to the local theory of Banach spaces, as well as various other revisions, an expanded bibliography and a new appendix: the unconditional constant of the Haar system.

**Recent progress in Fourier analysis.** — Proceedings of the Seminar on Fourier Analysis held in El Escorial, Spain, June 30-July 5, 1983. — Edited by I. Peral and J.-L. Rubio de Francia. — North-Holland mathematics studies, vol. 111. — Notas de matematica, vol. 101. — Un vol. broché, 16,5 × 24, de vi, 268 p. — Prix: Dfl. 100.00. — North-Holland, Amsterdam/New York/Oxford, 1985.

This volume contains accounts of some significant advances in Fourier analysis and related problems in partial differential equations, probability and several complex variables, which were obtained in the past few years. The book contains long expository articles as well as shorter technical reports. In all cases complete proofs are given.

O. P. MISRA, J. L. LAVOINE. — **Transform analysis of generalized functions.** — North-Holland mathematics studies, vol. 119. — Notas de matematica, vol. 106. — Un vol. broché,  $16,5 \times 24$ , de XIV, 332 p. — Prix: Dfl. 140.00. — North-Holland, Amsterdam/New York/Oxford, 1986.

This book concentrates on finite parts of integrals, generalized functions and distributions. It gives a unified treatment of the distributional setting with transform analysis, i.e. Fourier, Laplace, Stieltjes, Mellin, Hankel and Bessel series. The volume will serve as introductory and reference material for those interested in analysis, applications, physics and engineering.

**Matroid theory.** — Proceedings of the Janos Bolyai Mathematical Society Colloquium on Matroid Theory, Szeged, Hungary, 29 August-4 September, 1982. — Edited by L. Lovasz and A. Recski. — Colloquia mathematica societatis Janos Bolyai, vol. 40. — Un vol. relié,  $18 \times 24$ , de 438 p. — Prix: Dfl. 200.00. — North-Holland, Amsterdam/Oxford/New York, 1985.

Tutorial series on regular matroids and matroid minors, oriented matroids, matroid oracles, engineering applications of matroids, and a large number of invited and contributed talks gave an up-to-date picture of this rapidly developing branch of discrete mathematics. Special attention was paid to the applications of matroids.

**Radical theory.** — Proceedings of the 1st Janos Bolyai Mathematical Society Conference on Radical Theory, Eger, Hungary, 1-7 August, 1982. — Edited by L. Marki and R. Wiegandt. — Colloquia mathematica societatis Janos Bolyai, vol. 38. — Un vol. relié,  $18 \times 24$ , de 753 p. — Prix: Dfl. 200.00. — North-Holland, Amsterdam/Oxford/New York, 1985.

The papers presented in this proceedings volume deal with general and concrete radicals, mostly in rings but also in modules (under the name torsion theories), near rings, groups, universal algebras, and topological spaces. A list of problems is also given.

R. FRAÏSSÉ. — **Theory of relations.** — Studies in logic and the foundations of mathematics, vol. 118. — Un vol. relié,  $16 \times 23$ , de XII, 397 p. — Prix: Dfl. 160.00. — North-Holland, Amsterdam/New York/Oxford, 1986.

The 1st part of this book concerns the present state of the theory of chains (= total or linear orderings), in connection with some refinements of Ramsey's theorem. This leads to the fundamental Laver's embeddability theorem for scattered chains. The 2nd part extends to general relations the main notions and results from order-type theory. An important connection appears with permutation theory and with logics.

**Harvey Friedman's research on the foundations of mathematics.** — Edited by L. A. Harrington, M. D. Morley, A. Šcedrov, S. G. Simpson. — Studies in logic and the foundations of mathematics, vol. 117. — Un vol. relié,  $16 \times 23$ , de XVI, 408 p. — Prix: Dfl. 150.00. — North-Holland, Amsterdam/New York/Oxford, 1985.



This volume discusses various aspects of Harvey Friedman's research on the foundations of mathematics over the past fifteen years. It should appeal to a wide audience of mathematicians, computer scientists, and mathematically oriented philosophers. Much of Friedman's work enjoys a quality of broad accessibility and communicability to anyone who is even slightly interested in the foundations of mathematics.

**Algorithms in combinatorial design theory.** — Edited by C. J. Colbourn and M. J. Colbourn. — North-Holland mathematics studies, vol. 114. — Annals of discrete mathematics, vol. 26. — Un vol. broché,  $16,5 \times 24$ , de VIII, 334 p. — Prix: Dfl. 140.00. — North-Holland, Amsterdam/New York/Oxford, 1985.

The scope of the volume includes all algorithmic and computational aspects of research on combinatorial designs. Algorithmic aspects include generation, isomorphism and analysis techniques. The scope within design theory includes all aspects of block designs, Latin squares and their variants, pairwise balanced designs, and projective planes and related geometries.

**Recent topics in nonlinear PDE.** — Ed. by Masayasu Mimura and Takaaki Nishida. — North-Holland mathematics studies, vol. 98. — Lecture notes in numerical and applied analysis, vol. 6. — Un vol. broché,  $16,5 \times 24$ , de VIII, 240 p. — Prix: Dfl. 125.00. — North-Holland publishing company, Amsterdam/New York/Oxford, Kinokuniya company, Tokyo, 1984.

A meeting on the subject of nonlinear partial differential equations was held at Hiroshima University in Feb. 1983. Leading and active mathematicians were invited to talk on their current research interests in nonlinear pdes occurring in the areas of fluid dynamics, free boundary problems, population dynamics and mathematical physics.

Jacques DOUCHET et Bruno ZWAHLN. — **Calcul différentiel et intégral, vol. 2: Fonctions réelles de plusieurs variables réelles.** — Un vol. broché,  $16 \times 24$ , de 188 p. — Prix: SFr. 38.00. — Presses polytechniques romandes, Lausanne, 1986.

Cet ouvrage de base a pour objectif de présenter de façon aussi élémentaire que possible, tout en les démontrant, les principaux résultats du calcul différentiel et intégral concernant les fonctions réelles de plusieurs variables réelles. Ce livre s'adresse avant tout aux étudiants du 1<sup>er</sup> cycle universitaire. De nombreux résultats sont donnés sous forme d'exemples, et de nombreux exercices sont proposés à la fin de chaque chapitre.

Tetsuhiko MIYOSHI. — **Foundations of the numerical analysis of plasticity.** — North-Holland mathematics studies, vol. 107. — Lecture notes in numerical and applied analysis, vol. 7. — Un vol. broché,  $17 \times 24$ , de XII, 250 p. — Prix: Dfl. 150.00. — Kinokuniya Company Ltd., Tokyo, and North-Holland Publishing Company, Amsterdam/New York/Oxford, 1985.

This monograph describes a theoretical foundation for analysing and developing approximate methods to solve dynamic and quasi-static plasticity problems. Regarding numerical methods, special emphasis is placed on the analysis of explicit integration schemes, since the explicit approximation is one of the basic methods widely used to solve actual problems in engineering.

Robert S. DORAN and Victor A. BELFI. — **Characterizations of  $C^*$ -algebras: the Gelfand-Naimark theorems.** — Pure and applied mathematics: a series of monographs and textbooks,

vol. 101. — Un vol. relié,  $16,5 \times 24,5$ , de XI, 426 p. — Prix: \$69.75 (US and Canada); \$83.50 (all other countries). — Marcel Dekker, Inc., New York/Basel, 1986.

In 1943 I. M. Gelfand and M. A. Naimark published their theorems in their original form, establishing  $C^*$ -algebras as a determinant of the future course of mathematics. The only unified reference of its kind, this new book describes these theorems, historical development, generalizations, applications, and related results. This volume treats algebras with and without identity as well as algebras with arbitrariness, and possibly discontinuous, involutions in order to achieve maximum generality.

**The fascination of statistics.** — Edited by Richard J. Brook, Gregory C. Arnold, Thomas H. Hassard and Robert M. Pringle. — Popular statistics series, vol. 4. — Un vol. relié,  $16 \times 23,5$ , de XI, 433 p. — Prix: \$24.75 (US and Canada); \$29.50 (all other countries). — Marcel Dekker, Inc., New York/Basel, 1986.

Does your doctor understand you? Who still goes to the races? How can one predict stock market trends? What can statistics tell us about the theory of evolution? Is there a limit to how fast man can run? With great enthusiasm, this stimulating new book shows how statistical thinking and methods help answer questions in a wide variety of applied fields. It describes the many practical uses of statistics in any field in which numbers play a role.

Hüseyin KOÇAK. — **Differential and difference equations through computer experiments.** — With diskettes containing PHASER: an animator/simulator for dynamical systems for IBM personal computers. — Un vol. broché,  $15,5 \times 23,5$ , de xv, 224 p. — Prix: DM 128.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

This is not a standard textbook on differential or difference equations. Rather, it is a manual for our animator/simulator, PHASER, and a guidebook, using specific equations, to the world of dynamical systems. PHASER is a sophisticated program for IBM personal computers, developed at Brown University by the author and some of his students, which enables users to experiment with differential and difference equations and dynamical systems in an interactive environment using graphics.

Morton DAVIS. — **The art of decision-making.** — Un vol. relié,  $16 \times 24,5$ , de VIII, 92 p. — Prix: DM 58.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

The bottom line: decisions in business and economics. — Practical problem-solving. — Game theory: the art of making joint decisions. — Decision-making in the boardroom: problems of voting. — A mixture of wit and whimsy.

Rolf LEIS. — **Initial boundary value problems in mathematical physics.** — Un vol. relié,  $15,5 \times 23,5$ , de VIII, 266 p. — Prix: £24.50. — John Wiley and sons, Chichester/New York/Brisbane/Toronto/Singapore, 1986.

Linear operators. — The wave equation. — The spectrum of  $A$  and boundary value problems. — The free space problem for the wave equation. — The wave equation continued: time-asymptotic behaviour of the solutions. — Linear acoustics. — Maxwell's equations. — Linear acoustics and Maxwell's equations continued. — A Schrödinger equation. — Linear elasticity. — The plate equation. — Linear thermoelasticity. — Appendix.

P. E. GREENWOOD and A. N. SHIRYAYEV. — **Contiguity and the statistical invariance principle.** — Stochastics monographs: theory and applications of stochastic processes, vol. 1. — Un vol. relié,  $15,5 \times 23,5$ , de VIII, 236 p. — Prix: \$39.00. — Gordon and Breach science publishers, New York/London/Paris/Montreux/Tokyo, 1985.

An important contribution to modern stochastic calculus, this book enlarges the scope of contiguity and the related statistical theory by excluding the usual assumptions of independence, Markov character, homogeneity, and so on. It also presents a series of new functional limit theorems directed towards inference for stochastic processes.

Paul J. MCCARTHY. — **Introduction to arithmetical functions.** — Universitext. — Un vol. broché,  $15,5 \times 23,5$ , de VI, 365 p. — Prix: DM 98.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

The purpose of this book is to acquaint the reader who has some knowledge of number theory with those topics which constitute an introduction to the subject. *Contents:* Multiplicative functions. — Ramanujan sums. — Counting solutions of congruences. — Generalizations of Dirichlet convolution. — Dirichlet series and generating functions. — Asymptotic properties of arithmetical functions. — Generalized arithmetical functions.

**Stochastic processes — mathematics and physics.** — Proceedings of the 1st BiBos-symposium held in Bielefeld, West Germany, September 10-15, 1984. — Edited by S. Albeverio, Ph. Blanchard and L. Streit. — Lecture notes in mathematics, vol. 1158. — Un vol. broché,  $16,5 \times 24,5$ , de VI, 257 p. — Prix: DM 38.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

The contributions to this proceedings volume provide a survey of recent developments in the theory of stochastic processes. Particular attention is given to the interaction between mathematics and physics. The main topics include: stochastic flows, Malliavin calculus, statistical mechanics, stochastic mechanics, non-standard methods, differential geometry and stochastic processes, quantum stochastic processes, variational problems, and quantum field theory.

**Polynômes orthogonaux et applications.** — Proceedings of the Laguerre Symposium held at Bar-le-Duc, October 15-18, 1984. — Edité par C. Brezinski, A. Draux, A. P. Magnus, P. Maroni et A. Ronveaux. — Lecture notes in mathematics, vol. 1171. — Un vol. broché,  $16,5 \times 24,5$ , de XXXVII, 584 p. — Prix: DM 92.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This meeting was the first to be entirely devoted to orthogonal polynomials and their applications. The research communications presented deal with such aspects as theory of orthogonality, harmonic analysis, graphs and combinatorics, functional analysis, measures, zeros, approximation and, in particular, Padé approximants, special families, special functions, numerical analysis and applications to various physical problems.

**Algebraic topology, Göttingen, 1984.** — Proceedings of a conference held in Göttingen, Nov. 9-15, 1984. — Edited by L. Smith. — Lecture notes in mathematics, vol. 1172. — Un vol. broché,  $16,5 \times 24,5$ , de VI, 209 p. — Prix: DM 31.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1985.

This conference revolved around the subject of algebraic topology in a rather broad sense. There were talks on applications of invariant theory to homotopy theory, injectives over the Steenrod algebra, transformation groups, and algebraic  $K$ -theory.

**Categories in continuum physics.** — Lectures given at a workshop held at SUNY, Buffalo, 1982. — Edited by F. W. Lawvere and S. H. Schanuel. — Lecture notes in mathematics, vol. 1174. — Un vol. broché,  $16,5 \times 24,5$ , de v, 126 p. — Prix: DM 21.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

Among the topics treated are stress in continuum mechanics, non-equilibrium thermodynamics, crystal dislocations, and the foundations of the theory of smooth infinite-dimensional spaces, especially function spaces, necessary for these.

Jean-Pierre SERRE. — **Œuvres-collected papers: vol. 1: 1949-1959, vol. 2: 1960-1971, vol. 3: 1972-1984.** — 3 vol. reliés,  $17,5 \times 25$ , de xxvi, 2064 p. (en 3 volumes, non livrables séparément). — Prix: DM 398.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

This 3-volume set collects together most of the mathematical papers of Jean-Pierre Serre up to 1984, including several unpublished papers and many which are difficult to locate in the literature. The abundance of deep results and insights contained in his research and survey papers in topics ranging through topology, several complex variables, and algebraic geometry to number theory, group theory, commutative algebra and modular forms, will continue to provide inspiring and stimulating reading for mathematicians working in these areas, both for their own research and in teaching courses and seminars. Characteristic of Serre's publications are the many open questions he formulated giving pointers for further directions of research.

Herbert ROBBINS. — **Selected papers.** — Ed. by T. L. Lai and D. Siegmund. — Un vol. relié,  $16,5 \times 24,5$ , de xli, 518 p. — Prix: DM 138.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1985.

Herbert Robbins is widely recognized as one of the most creative and original mathematical statisticians of our time. A distinguishing feature of Robbins' research is its daring originality, which literally creates new specialties for subsequent generations of statisticians. The reprinted articles have been divided into three groups: empirical Bayes methodology and compound decision theory, sequential experimentation and analysis, probability and inference.

Samuel EILENBERG, Saunders MAC LANE. — **Eilenberg-Mac Lane: collected works.** — Un vol. broché,  $15,5 \times 23$ , de x, 841 p. — Prix: \$39.50 (relié: \$69.50). — Academic Press, Inc., Orlando/San Diego/New York/Austin/London/Montréal/Sydney/Tokyo/Toronto, 1986.

The Eilenberg-Mac Lane collaboration covers a period from 1940 to 1954. It started with a study of the relation between the cohomology and homology groups of spaces and continued with an examination of the influence of homotopy groups on cohomology. The collaboration produced 15 papers, reprinted here as well as the various preliminary announcements and some expository summaries. Some papers on which only one of the two names appear have been included because they have a direct connection with the joint work.

Gerd FISHER (Hrsg.). — **Mathematische Modelle: aus den Sammlungen von Universitäten und Museen = Mathematical models from the collections of Universities and Museum.** — 2 vol.

reliés, 22 × 24 (1 vol. de photographies et 1 vol. de commentaires), de XII, 129 p. avec 133 photographies, et de VIII, 89 p., respectivement. — Prix: DM 118.00. — Friedr. Vieweg & Sohn, Braunschweig/Wiesbaden, 1986.

In diesem Buch wurden die Modelle zum ersten Mal systematisch fotografiert. Ausserdem wurden auf der Grundlage der klassischen Beschreibungen von Experten auf den jeweiligen Gebieten ausführliche Kommentare geschrieben. Darin werden die alten Modelle aus moderner Sicht beleuchtet.

Y. CHERRUAULT. — **Mathematical modelling in biomedicine: optimal control of biomedical systems.** — Mathematics and its applications. — Un vol. relié, 16 × 23, de XVIII, 258 p. — Prix: Dfl. 130.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

General remarks on modelling. — Identification and control in linear compartmental analysis. — Optimal control in compartmental analysis. — Relations between dose and effect. — General modelling in medicine. — Blood glucose regulation. — Integral equations in biomedicine. — Numerical solution of integral equations. — Problems related to partial differential equations. — Optimality in human physiology. — Errors in modelling. — Open problems in biomathematics.

William H. PRESS, Brian P. FLANNERY, Saul A. TEUKOLSKY, William T. VETTERLING. — **Numerical recipes: the art of scientific computing.** — Un vol. relié, 16 × 24, de XX, 818 p. — Prix: £25.00. — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

Numerical recipes is a complete text and reference book on the art of scientific computing. In a self-contained manner, it proceeds all the way from mathematical and theoretical considerations through to actual, practical computer routines. There are approximately 200 computer routines printed in the book, each in both the FORTRAN and Pascal programming languages. The subroutines and procedures can be used on personal computers such as the IBM PC, XT, and AT.

Joseph P. ROMANO and Andrew F. SIEGEL. — **Counter-examples in probability and statistics.** — Wadsworth & Brooks/Cole statistics/probability series. — Un vol. relié, 17 × 24,5, de XXIV, 303 p. — Prix: \$34.95. — Wadsworth & Brooks/Cole advanced books & software, Monterey, California, 1986.

Probability spaces. — Random variables, densities, and distribution functions. — Moments of random variables. — Properties of real random variables. — Sequences of random variables. — Conditional expectation, martingales, and almost sure convergence of sums of independent random variables. — Properties of statistical experiments. — Construction of estimators. — Optimality of estimators. — Hypothesis testing. — Additional counterexamples.

Roger DESCOMBES. — **Eléments de théorie des nombres.** — Collection Mathématiques. — Un vol. broché, 15 × 21,5, de 279 p. — Prix: FF 180.00. — Presses universitaires de France, Paris, 1986.

Approximation diophantienne dans  $R$ . — Approximation diophantienne dans  $R^n$ . — Valeurs absolues et nombres  $p$ -adiques. — Formes quadratiques rationnelles et  $p$ -adiques. — Entiers et unités dans un corps de nombres. — Factorisation dans un corps de nombres. —



Discriminant et ramification des idéaux d'un corps de nombres. — Répartition des nombres premiers. — Exercices à la fin de chaque chapitre.

Marie-José BERTIN, Elena WEXLER-KREINDLER. — **Algèbre commutative, applications en géométrie et théorie des nombres: exercices.** — Collection Maîtrise de mathématiques pures. — Un vol. broché,  $16 \times 24$ , de 208 p. — Prix: FF 95.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1986.

Chaque problème de ce livre d'exercices est suivi d'une solution constituant une application ou un prolongement du cours de M. P. Malliavin «Algèbre commutative». Cette solution utilise en outre les théorèmes ou résultats traités dans le chapitre de cours correspondant du livre précédemment cité. Ce livre offre un choix varié de problèmes, du simple exercice d'application à la démonstration de résultats profonds, classiques ou plus récents.

Frederick H. SOON. — **Student's guide to "Calculus" by J. Marsden and A. Weinstein, volume II.** — Un vol. broché,  $15,5 \times 23,5$ , de XIV, 281 p. — Prix: DM 48.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1985.

Basic methods of integration. — Differential equations. — Applications of integration. — Comprehensive test for chapters 7-9. — Further techniques and applications of integration. — Limits, L'Hôpital's rule, and numerical methods. — Infinite series. — Comprehensive test for chapters 7-12.

Stephen D. FISHER. — **Complex variables.** — Wadsworth & Brooks/Cole mathematics series. — Un vol. relié,  $17,5 \times 24$ , de XII, 403 p. — Prix: \$39.90. — Wadsworth & Brooks/Cole mathematics series, Belmont/Monterey, 1986.

The complex plane. — Basic properties of analytic functions. — Analytic functions as mappings. — Analytic and harmonic functions in applications. — Transform methods. — *Appendices*: Locating the zeros of a polynomial. A table of conformal mappings. A table of Laplace transforms.

**I. Schur methods in operator theory and signal processing.** — Edited by I. Gohberg. — Operator theory: Advances and applications, vol. 18. — Un vol. relié,  $17 \times 24$ , de 324 p. — Prix: Sfr. 88.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1986.

This volume opens with a paper by T. Kailath on the impact of Schur's methods. This is followed by the English translations of two papers of Schur: "On the power series which are bounded in the interior of the unit circle, I and II". The remaining and major part of this volume consists of selected papers in operator theory and signal processing which are related to the Schur method and its manifold applications.

Herbert AMANN. — **Mathematik für Chemiker.** — Birkhäuser Skripten, Bd. 1. — Un vol. broché,  $20 \times 24$ , de IV, 283 p. — Prix: SFr. 32.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1986.

Lineare Algebra: Matrizen, Determinanten und lineare Gleichungen. Vektoren, Geraden und Ebenen. Lineare Transformationen. — Analysis: Komplexe Zahlen. Gewöhnliche Differentialgleichungen zweiter Ordnung. Fourierreihen und Fouriertransformationen. Partielle Dif-

ferentialgleichungen. Mehrdimensionale Integrale. Differentialformen und Kurvenintegrale. Flächen und Oberflächenintegrale. Die Integralsätze.

Saunders MAC LANE. — **Mathematics: form and function.** — Un vol. relié,  $16 \times 24$ , de XI, 476 p. — Prix: DM 128.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

The book begins with a general chapter on formal structure, and goes on to discuss various mathematical structures and concepts, among them natural numbers, real numbers, geometry, topology, groups, calculus, linear algebra, logic, mechanics, and complex analysis. The final chapter draws some philosophical conclusions.

Horst HERRLICH. — **Einführung in die Topologie.** — Unter Mitarbeit von H. Bargenda und C. Trompelt. — Berliner Studienreihe zur Mathematik, Bd. 1. — Un vol. broché,  $17 \times 24$ , de VIII, 214 p. — Prix: DM 36.00. — Heldermann Verlag, Berlin, 1986.

Das vorliegende Buch ist konzipiert als ein Kurs zum Selbststudium der Topologie, versehen mit zahlreichen Studierhinweisen, Beispielen und Aufgaben. Es eignet sich jedoch auch als Grundlage oder Begleitmaterial für eine Vorlesung oder ein Seminar.

David BARNETTE. — **Map coloring, polyhedra, and the four-color problem.** — The Dolciani mathematical expositions, vol. 8. — Un vol. relié,  $14,5 \times 22$ , de X, 168 p. — Prix: £27.60. — Published by the Mathematical Association of America, marketed and distributed by John Wiley and Sons, Chichester, 1983.

From the preface: "Although the Four-Color Theorem has now been proved, the mathematics developed during the numerous unsuccessful attempts is nevertheless of lasting value. Much of combinatorial mathematics had its beginnings in work on the Four-Colour Conjecture. The applications of this mathematics goes far beyond coloring problems... The exercises are an important part of this book".

M. M. SCHIFFER, Leon BOWDEN. — **The role of mathematics in science.** — New mathematical library, vol. 30. — Un vol. broché,  $15 \times 23$ , de XI, 207 p. — Prix: £14.70. — The Mathematical Association of America, marketed and distributed by John Wiley and Sons, Chichester, 1984.

The authors write: "Our primary aim is to illustrate the power and elegance of mathematical reasoning in science; our secondary aim, to show also that science engenders mathematics... We have restricted technical mathematics to a minimum, just algebra and some calculus. Therefore let none be deterred"!

Pierre LELONG, Lawrence GRUMAN. — **Entire functions of several complex variables.** — Grundlehren der mathematischen Wissenschaften, Bd. 282. — Un vol. relié,  $16 \times 24$ , de XI, 270 p. — Prix: DM 148.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

The classical techniques of several complex variables based on sheaf theory and differential geometry give only existence for solutions, and so it was necessary to develop new constructive methods to treat these problems where the control of the growth becomes the central element. This book presents these new techniques. Another purpose of this book is to give applications to other areas of analysis which will be of interest to researchers in other fields.

Gary CHARTRAND, Linda LESNIAK. — **Graphs and digraphs.** — 2nd edition. — The Wadsworth and Brooks/Cole mathematics series. — Un vol. relié, 17 × 24, de VIII, 359 p. — Prix: \$39.15. — Wadsworth and Brooks/Cole Advanced Books & Software, a Division of Wadsworth, Inc., Monterey, California.

Graphs and digraphs. — Connected graphs and digraphs. — Trees. — Graph embeddings. — Connectivity and networks. — Hamiltonian graphs and digraphs. — Oriented graphs. — Factors and factorizations. — Graphs and groups. — Graph colorings. — Extremal graph theory and Ramsey theory. — Enumeration of graphs and digraphs.

Stanislaw M. ULAM. — **Science, computers, and people: from the tree of mathematics.** — Mark C. Reynolds, Gian-Carlo Rota, Editors. — With a preface by Martin Gardner. — Un vol. relié, 16,5 × 24, de XXI, 264 p. — Prix: SFr. 78.00. — Birkhäuser, Boston/Basel/Stuttgart, 1986.

This collection of essays was written by one of the most creative mathematicians of our time, Stanislaw Ulam. This collection of what Ulam preferred to call his "little notes" offers a comprehensive cross-examination of the areas of mathematics, physics, and biology he pursued throughout his life.

**Proceedings of the fifth International Congress on Mathematical Education.** — Edited by Marjorie Carss. — Un vol. relié, 16 × 24, de IX, 399 p. — Prix: SFr. 98.00. — Birkhäuser, Boston/Basel/Stuttgart, 1986.

This Congress was held in Adelaide, Australia, August 24-30, 1984. As the major activity for the Congress sessions was discussion rather than the presentation of papers, the bulk of this book is a report of the sessions rather than a set of prepared papers.

G. P. BEAUMONT. — **Probability and random variables.** — Ellis Horwood series in mathematics and its applications. — Un vol. broché, 16,5 × 24, de 345 p. — Prix: £12.50 (relié: £35.00). — Ellis Horwood Limited, Chichester, and distributed by John Wiley & Sons, New York/Chichester/Brisbane/Toronto, 1986.

The presentation of this book is built on the use of illustrative examples and the solution of the problems, both typical of what is found in examination papers as well as in the real world. As a result, the book is ideal both for private study and for the classroom.

**Studies in mathematics education, vol. 4: the education of secondary school teachers of mathematics.** — Edited by Robert Morris. — Un vol. broché, 15,5 × 24, de XII, 175 p. — Prix: environ FF 50.00. — Organisation des Nations Unies pour l'Education, la Science et la Culture (UNESCO), Paris, 1986.

This book is divided into three sections. The 1st is about the ever-changing curriculum and how it relates to initial teacher training. The 2nd described day to day support to mathematics teachers already in schools. The 3rd section consists of two case studies: the evolution of mathematics curricula in the People's Republic of China, and a description of a project in Zimbabwe.

Serge LANG. — **A first course in calculus.** — 5th edition. — Undergraduate texts in mathematics. — Un vol. relié, 16,5 × 24, de xv, 727 p. — Prix: DM 128.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.



Much of the book has been rewritten, and many new worked out examples and exercises with extensive answers have been added. The book treats the basic material of one variable calculus. It is well suited to a one year course, the first half of which treats differentiation, and the second half of which treats integration.

Adolf HURWITZ. — **Lectures on number theory.** — Edited for publication by Nikolaos Kritikos. — Translated, with some additional material, by William C. Schulz. — Universitext. — Un vol. broché,  $15,5 \times 23,5$ , de XIV, 273 p. — Prix: DM 58.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

In 1916, Hurwitz gave a series of lectures on elementary number theory. This book is based on notes taken at these lectures. It discusses congruences, quadratic reciprocity, and the classical theory of binary quadratic forms, including applications of continued fractions. The text is supplemented by many exercises.

Michio SUZUKI. — **Group theory II.** — Grundlehren der mathematischen Wissenschaften, Bd. 248. — Un vol. relié,  $16,5 \times 24$ , de X, 621 p. — Prix: DM 268.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

From the author's preface to the English edition: "This is a translation from the Japanese of the second volume ... of my book *Gunron* ... After discussing the concept of commutators ... we turn to a discussion of the methods and theorems pertaining to finite groups. The last chapter is intended as an introduction to the recent progress in the theory of simple groups..."

Khavtgain NAMSRAI. — **Nonlocal quantum field theory and stochastic quantum mechanics.** — Fundamental theories of physics. — Un vol. relié,  $16,5 \times 24,5$ , de XVIII, 426 p. — Prix: Dfl. 240.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

This book offers a refreshing, unorthodox perspective on the developing field of quantum physics. It presents a systematic development of the implications to both quantum mechanics and quantum field theory of the hypothesis of a stochastic structure of space-time. Some applications to elementary particle physics are also considered.

Vladimir F. DEM'YANOV, Leonid V. VASIL'EV. — **Nondifferentiable optimization.** — Translation series in mathematics and engineering. — Un vol. relié,  $17 \times 24,5$ , de XVII, 452 p. — Prix: DM 198.00. — Optimization Software, Inc., Publications Division, New York, worldwide distribution rights, by Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1985.

From the preface: Of recent coinage, the term "nondifferentiable optimization" (NDO) covers a spectrum of problems related to finding extremal values of nondifferentiable functions. Problems of minimizing nonsmooth functions arise in engineering applications as well as in mathematics proper. The Chebyshev approximation problems is an ample illustration of this. Without loss of generality, we shall consider only minimization problems.

Steven C. FRAUTSCHI, Richard P. OLENICK, Tom M. APOSTOL, David L. GOODSTEIN. — **The mechanical universe: mechanics and heat, advanced edition.** — Un vol. relié,  $21 \times 25$ , de XVIII, 585 p. — Prix: £17.50. — Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

“Most chapters of this book corresponds to programs in the television series: The Mechanical Universe. The purpose of this book is to make it possible for you to enjoy the combined benefits of a rigorous training in physics and the less demanding pleasures of the television programs ... Throughout The Mechanical Universe, history is used as a means to humanize physics”.

Vadim KOMKOV. — **Variational principles of continuum mechanics with engineering applications, vol. 1: Critical points theory.** — Mathematics and its applications. — Un vol. relié, 16 × 23, de VIII, 387 p. — Prix: Dfl. 150.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

This volume presents a review of some topics of classical calculus of variations with applications to engineering mechanics. The critical points theory approach, which is the main subject of this volume, is applied to a number of problems of continuum mechanics. Duality of the Hamiltonian systems, Legendre transformation, and Noble's duality are discussed using this unifying viewpoint. The theory is illustrated by numerous examples from engineering mechanics and physics.

**Essays on supersymmetry.** — Edited by C. Fronsdal. — With contributions by M. Flato, C. Fronsdal, T. Hirai. — Mathematical physics studies, vol. 8. — Un vol. relié, 16,5 × 24,5, de IX, 270 p. — Prix: Dfl. 130.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

*C. Fronsdal and T. Hirai:* Unitary representations of supergroups. — *C. Fronsdal:* 3+2 De Sitter superfields. — *M. Flato and C. Fronsdal:* Spontaneously generated field theories, zero-center modules, colored singletons and the virtues of  $N = 6$  supergravity. — *C. Fronsdal:* Massless particles, orthosymplectic symmetry and another type of Kaluza-Klein theory.

James W. BREWER, John W. BUNCE, F. S. VAN VLECK. — **Linear systems over commutative rings.** — Lecture notes in pure and applied mathematics, vol. 104. — Un vol. broché, 18 × 25,5, de VIII, 199 p. — Prix: \$59.75 (US and Canada); \$71.50 (all other countries). — Marcel Dekker, Inc., New York/Basel, 1986.

This book provides an overview of the relevant commutative ring theory, it includes a general formulation of Sontag's recent results on stabilization of linear systems (unifying several results concerning parametric stabilization). It relates projective modules, Bézout domains, and the pole assignability property, organizes and clarifies results on Hankel matrices and Silverman's formulas and describes results on rationality and descending realizability from the quotient field.

**Advanced in microlocal analysis.** — Edited by H. G. Garnir. — NATO ASI series, series C: Mathematical and physical sciences, vol. 168. — Un vol. relié, 16,5 × 24,5, de XVII, 390 p. — Prix: Dfl. 160.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

15 exposés par: G. Bengel. — J.-M. Bony. — L. Cattabriga and L. Zanghirati. — G. F. D. Duff. — F. G. Friedlander. — H. Komatsu. — P. Laubin. — G. Lebeau. — R. B. Melrose. — T. Ôaku. — P. Schapira. — B. Helffer and J. Sjöstrand. — M. Tsuji. — J. Vaillant. — S. Wakabayashi.

K. WAGNER and G. WECHSUNG. — **Computational complexity.** — Mathematics and its applications (East European series). — Un vol. relié, 16 × 23, de 551 p. — Prix: Dfl. 205.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

This volume presents a study of the complexity of effective computations. Part I considers basic concepts of the theory of computing, formal language theory, and computational complexity. Part II deals with the complexity of single problems and investigates the properties of complexity classes and measures from various points of view. Part III deals with relationships between different measures and considers aspects such as time-efficient simulations, determinism versus non-determinism, and the problem of space versus time.

V. KRISHNAMURTHY. — **Combinatorics: theory and applications.** — Ellis Horwood series in mathematics and its applications. — Un vol. relié, 18,5 × 24,5, de xxxii, 483 p. — Prix: £39.50. — Ellis Horwood Ltd, Chichester, distributed by John Wiley and Sons, New York/Chichester/Brisbane/Toronto, 1986.

Classical techniques. — Polya theory. — Schur functions. — Character theory of  $S_n$ . — More on Schur functions. — Matching theory. — Inversion techniques. — Designs. — Ramsey theory. — Each section is preceded by a set of problems, which motivate the subsequent development of concepts and techniques.

C. F. GARDINER. — **Algebraic structures.** — Ellis Horwood series in mathematics and its applications. — Un vol. broché, 16,5 × 24, de 280 p. — Prix: £14.50 (relié: £29.50). — Ellis Horwood Ltd, Chichester, distributed by John Wiley and Sons, New York/Chichester/Brisbane/Toronto, 1986.

This book completes the coverage initiated by the author's "Modern algebra", building on the foundations laid therein to combine into a closely-related symbiosis of complementary books which will fill a gap in the literature of mathematics with a modern and comprehensive overview of abstract algebra. It also provides one of the first expositions at this level of use of computers in abstract mathematics.

J. BLIEDTNER, W. HANSEN. — **Potential theory: an analytic and probabilistic approach to balayage.** — Universitext. — Un vol. broché, 16,5 × 24,5, de xi, 434 p. — Prix: DM 84.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

Classical potential theory. — General preliminaries. — Excessive functions. — Hyperharmonic functions. — Markov processes. — Examples. — Balayage theory. — Dirichlet problem. — Partial differential equations. — This is the first book to combine the axiomatic and the probabilistic approach to potential theory.

Birger IVERSEN. — **Cohomology of sheaves.** — Universitext. — Un vol. broché, 16,5 × 24,5, de xi, 464 p. — Prix: DM 75.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

Homological algebra. — Sheaf theory. — Cohomology with compact support. — Cohomology and analysis. — Duality with coefficient in a field. — Poincaré duality with general coefficients. — Direct image with proper support. — Characteristic classes. — Borel Moore homology. — Application to algebraic geometry. — Derived categories.

PAPPUS of Alexandria. — **Book 7 of the "Collection", part 1: Introduction, text, and translation; part 2: Commentary, index and figures.** — Ed. with translation and commentary by Alexander Jones. — Sources in the history of mathematics and physical sciences, vol. 8. — 2 vol. reliés, 16 × 24,5, de, respectivement, x, 375 p. et xvi, 371 p. — Prix: DM 258.00 (les 2 volumes). — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

The seventh book of Pappus's Collection, his commentary on the domain (or treasury) of analysis, figures prominently in the history of both ancient and modern mathematics: as our chief source of information concerning several lost works of Greek geometers Euclid and Apollonius, and as a book that inspired later mathematicians, among them Viète, Newton, and Chasles, to original discoveries in their pursuit of the lost science of antiquity. This presentation of it is concerned solely with recovering what can be learned from Pappus about Greek mathematics.

Hans DELFS, Manfred KNEBUSCH. — **Locally semialgebraic spaces.** — Lecture notes in mathematics, vol. 1173. — Un vol. broché,  $16,5 \times 24$ , de xvi, 329 p. — Prix: DM 45.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1985.

From the preface: "The primary occupation of real algebraic geometry, or better semialgebraic geometry, is to study the set of solutions of a finite system of polynomial inequalities in a finite number of variables over the field  $R$  of real numbers".

Karl MATHIAK. — **Valuations of skew fields and projective Hjelmslev spaces.** — Lecture notes in mathematics, vol. 1175. — Un vol. broché,  $16,5 \times 24$ , de vii, 116 p. — Prix: DM 23.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

The concept of valuation used in the book is due to F. Rado. It is more general than that of Schilling valuation and includes non-invariant valuations. The book deals with projective Hjelmslev spaces induced by valuations.

R. R. BRUNER, J.-P. MAY, J. E. McCLURE, M. STEINBERGER. —  **$H_\infty$  ring spectra and their applications.** — Lecture notes in mathematics, vol. 1176. — Un vol. broché,  $16,5 \times 24$ , de vii, 388 p. — Prix: DM 57.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

This volume studies various topics in stable homotopy theory. It is a research monograph addressed to readers with a good working knowledge of algebraic topology. The unifying theme is the use of extended powers of spectra to study torsion phenomena.

**Representation theory I: finite dimensional algebras and Representation theory II: groups and orders.** — Proceedings of the 4th international conference on representations of algebras, held in Ottawa, Canada, August 16-25, 1984. — Edited by V. Dlab, P. Gabriel and G. Michler. — Lecture notes in mathematics, vol. 1177 and vol. 1178. — 2 vol. brochés,  $16,5 \times 24$ , de, respectively, xv, 340 p., et xv, 370 p. — Prix: DM 57.50, chacun des deux volumes. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

This meeting followed the pattern of the previous ones in that it comprised a workshop, in which short series of lectures were presented, followed by a conference. In these 2 volumes of proceedings many of the contributions both to the conference and to the workshop are recorded. The publication attempts as did the meeting itself, to bridge general representations theory and the representation theory of finite groups. These volumes will be a valuable reference for all researches in the field.

SHI, Jian-Yi. — **The Kazhdan-Lusztig cells in certain affine Weyl groups.** — Lecture notes in mathematics, vol. 1179. — Un vol. broché,  $16,5 \times 24$ , de x, 307 p. — Prix: DM 50.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

In this book the decomposition into cells is determined for the 1st time in a family of infinite Coxeter groups, namely the affine Weyl groups of type A. The book begins with a general exposition of properties of these groups, from the algebraic, geometric and combinatorial points of view. The subsequent discussion of their decomposition into cells is self-contained and uses various combinatorial techniques involving partitions and Young tableaux.

**The William Lowell Putnam mathematical competition. Problems and solutions: 1965-1984.** — Edited by Gerald L. Alexanderson, Leonard F. Klosinski, Loren C. Larson. — Un vol. relié, 18,5 × 24,5, de XII, 147 p. — Prix: £22.00. — Published by the Mathematical Association of America, distributed by John Wiley, Chichester, 1985.

*From the preface:* "We have compiled material essentially already available in the American Mathematical Monthly and Mathematics Magazine, correcting in several cases solutions where errors had crept in. The present volume is mainly an attempt to put together in convenient form existing material. We hope that the present collection will benefit students interested in preparing for the Competition, faculty who wish to organize problem seminars, or any others just interested in problems".

Melvyn W. JETER. — **Mathematical programming: an introduction to optimization.** — Monographs and textbooks in pure and applied mathematics, vol. 102. — Un vol. relié, 16 × 23,5, de IX, 342 p. — Prix: \$34.50 (US and Canada), \$41.25 (all other countries). — Marcel Dekker, New York/Basel, 1986.

An introduction to mathematical programming. — Subspaces, matrices, affine sets, cones, convex sets, and the linear programming problem. — The primal simplex procedure. — Duality and the linear complementarity problem. — Other simplex procedures. — Network programming. — Convex and concave functions. — Optimality conditions. — Search techniques for unconstrained optimization problems. — Penalty function methods.

**Buildings and the geometry of diagrams.** — Lectures given at the 3rd 1984 Session of the Centro internazionale matematico estivo (CIME) held at Como, Italy, August 26-September 4, 1984. — Ed. by L. A. Rosati. — Lecture notes in mathematics, vol. 1181. — Un vol. broché, 16,5 × 24,5, de VII, 277 p. — Prix: DM 42.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

The aim of the 3rd CIME session of 1984 was to describe some of the principal aspects of a field of geometry which is intrinsically interesting and which draws the attention of the mathematical world to its applications in the theory of finite groups and in particular of simple groups. The main survey courses were delivered by F. Buekenhout, W. M. Kantor, J. Tits. They are followed by 5 shorter papers.

Saharon SHELAH. — **Around classification theory of models.** — Lecture notes in mathematics, vol. 1182. — Un vol. broché, 16,5 × 24,5, de VII, 279 p. — Prix: DM 42.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

This volume comprises several recent unpublished articles by S. Shelah and deals with the ramifications of classification theory of models and addresses researchers from several areas of mathematical logic and also from related subjects such as abelian groups, uniserial modules, Boolean algebras, general topology, set theory and of course model theory.



**Algebra, algebraic topology and their interactions.** — Proceedings of a conference held in Stockholm, August 3-13, 1983, and later developments. — Ed. by J.-E. Roos. — Lecture notes in mathematics, vol. 1183. — Un vol. broché, 16,5 × 24,5, de XI, 396 p. — Prix: DM 65.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

During the last decade, it has become increasingly clear that the (homological) theory of local rings and algebraic topology (mainly rational homotopy theory, but also other parts of algebraic topology) are closely related to each other. The aim of the Nordic Summer School on Algebra, Algebraic Topology and their Interactions which took place in Stockholm in August 1983, was both to give non specialists an education in algebra and algebraic topology and to encourage further research developments in these areas.

W. ARENDT *et al.* — **One-parameter semigroups of positive operators.** — Ed. by R. Nagel. — Lecture notes in mathematics, vol. 1184. — Un vol. broché, 16,5 × 24,5, de X, 460 p. — Prix: DM 73.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

One-parameter semigroups of positive linear operators describe the solutions of those well-posed abstract Cauchy problems (abundant in concrete situations) which have positive solutions for each positive initial value. The contributors in this volume present a state of the art of the recent developments of the theory concentrating on the characterization and on the spectral theory (Perron-Frobenius theory) of the generator and on the asymptotic behavior of the semigroup.

**Lyapunov exponents.** — Proceedings of a workshop held in Bremen, November 12-15, 1984. — Ed. by L. Arnold and V. Wihstutz. — Lecture notes in mathematics, vol. 1186. — Un vol. broché, 16,5 × 24,5, de VI, 374 p. — Prix: DM 57.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

These are the proceedings of a workshop that brought together, for the first time, the leading specialists in the various fields in which the concept of Lyapunov exponents (exponential growth rates) is relevant. The volume contains an introductory survey and 22 invited papers (5 of which are survey papers).

Richard E. BELLMAN, Robert S. ROTH. — **Methods in approximation:** techniques for mathematical modelling. — Mathematics and its applications. — Un vol. relié, 16 × 23, de XV, 224 p. — Prix: Dfl. 120.00. — D. Reidel Publ. Co., Dordrecht/Boston/Lancaster/Tokyo, 1986.

It is the authors' contention that the search for accurate mathematical modelling is fundamentally intertwined with the ideas of approximation. This book is intended as a collection of techniques which can be useful when dealing with such problems. The analytic techniques discussed include polynomial approximation, spline approximation, and exponential approximation.

J. LAMBEK, P. J. SCOTT. — **Introduction to higher order categorical logic.** — Cambridge studies in advanced mathematics, vol. 7. — Un vol. relié, 16 × 23,5, de IX, 293 p. — Prix: \$49.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

In this book the authors reconcile two different viewpoints of the foundations of mathematics, mathematical logic and category theory. In Part I, they show that typed lambda-

calculi, a formulation of higher order logic, and cartesian closed categories are essentially the same. In Part II, it is demonstrated that another formulation of higher order logic type theories, is closely related to topos theory. Part III is devoted to recursive functions.

P. B. BHATTACHARYA, S. K. JAIN, S. R. NAGPAUL. — **Basic abstract algebra**. — Un vol. broché, 15,5 × 23,5, de XVII, 454 p. — Prix: \$69.50 relié, \$27.50 broché. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

This book is intended as a text on abstract algebra for undergraduate and beginning graduate students. As such it is self-contained and gives a complete and comprehensive coverage of the topics usually taught at this level. The book is divided into 5 parts: Preliminaries, Groups, Rings and modules, Field theory and Additional topics (Wedderburn-Artin theorem for semisimple artinian rings, Smith-Normal form over a PID, finitely generated modules over a PID and their applications to rational and Jordan canonical forms).

Gabriel KLAMBAUER. — **Aspects of calculus**. — Undergraduate texts in mathematics. — Un vol. relié, 16 × 24, de X, 515 p. — Prix: DM 98.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

The logarithmic and exponential functions. — Limits and continuity. — Differentiation. — Applications of differentiation. — Integration. — Additional topics in integration. — Infinite series. The purpose of this book is to aid students' transition from a first calculus course with little or no emphasis on basic concepts to a rigorous, substantive analysis course.

Carl Friedrich GAUSS. — **Disquisitiones arithmeticae**. — Translated by Arthur A. Clarke, revised by William C. Waterhouse, with the help of C. Greither and A. W. Grootendorst. — Un vol. relié, 16 × 24, de XX, 472 p. — Prix: DM 148. — 2<sup>e</sup> éd. corrigée. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

This volume is a new revised printing of the English translation of Gauss's classical introduction to (algebraic) number theory. His work is one of the most important books published in the history of mathematics. It provides the foundations of modern number theory.

J. D. LOUCK, N. METROPOLIS. — **Symbolic dynamics of trapezoidal maps**. — Mathematics and its applications. — Un vol. relié, 16 × 23, de VIII, 312 p. — Prix: Dfl. 145.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

The main text develops the concepts and proves the principal theorems required for giving the complete classification of the stable limit cycles of trapezoidal maps for which the initial point is the midpoint of the interval. The properties of trapezoidal maps developed in this monograph should be useful in the formulation of the concept of a universal map of the interval.

A. G. RAMM. — **Scattering by obstacles**. — Mathematics and its applications. — Un vol. relié, 16 × 23, de XIV, 423 p. — Prix: Dfl. 210.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

Available in book form for the first time, the material presented in this monograph deals with the mathematical theory of wave scattering by obstacles, which are bodies with finite or infinite boundaries. The author has attempted to present all the material as simply as possible. It is essentially self contained.

Richard BELLMAN, Ramabhadra VASUDEVAN. — **Wave propagation: an invariant imbedding approach.** — Mathematics and its applications. — Un vol. relié, 16 × 23, de XIV, 367 p. — Prix: Dfl. 160.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

The basic principles of imbedding concepts are explained and their application to obtaining solutions for wave equations propagating in inhomogeneous media to different approximations are treated in detail. Copious exercises are given at the end of the book.

**Fibonacci numbers and their applications.** — Edited by Andreas N. Philippou, Gerald E. Bergum, Alwyn F. Horadam. — Mathematics and its applications. — Un vol. relié, 16 × 23, de XXIV, 304 p. — Prix: Dfl. 135.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

This book describes recent advances within the field of elementary number theory (Fibonacci numbers) and probability theory, and furnishes some novel applications in electrical engineering (ladder networks, transmission lines) and chemistry (aromatic hydrocarbons).

C. CUVELIER, A. SEGAL, A. A. VAN STEENHOVEN. — **Finite element methods and Navier-Stokes equations.** — Mathematics and its applications. — Un vol. relié, 16 × 23, de XIII, 483 p. — Prix: Dfl. 165.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

This book is devoted to two- and three-dimensional finite element analysis of the Navier-Stokes equations describing the flow of a viscous incompressible fluid. The increasing interest in this field is due in part to the important role that viscous fluids play in many scientific and industrial applications. It is also attributable to the development of computational fluid dynamics.

**Nonlinear functional analysis and its applications.** — Ed. by S. P. Singh. — NATO ASI series C: Mathematical and physical sciences, vol. 173. — Un vol. relié, 16,5 × 24,5, de XI, 418 p. — Prix: Dfl. 165.00. — D. Reidel Publishing Company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

These are the proceedings of the NATO Advanced study institute on nonlinear functional analysis and its applications held at Maratea, Italy, April 22-May 3, 1985, published in cooperation with NATO Scientific Affairs Division. The main topics covered include: degree and generalized degree theory, theory of Nielsen numbers, bifurcation theory, Hamiltonian systems, minimax theory, heat equations, pendulum equation, Dirichlet and Neumann problems for elliptic equations and the periodic Dirichlet problem for semilinear beam equations.

Galen R. SHORACK, Jon A. WELLNER. — **Empirical processes with applications to statistics.** — Wiley series in probability and mathematical statistics. — Un vol. relié, 16,5 × 24, de XXXVII, 938 p. — Prix: £57.45. — John Wiley & Sons, New York/Chichester/Brisbane/Toronto/Singapore, 1986.

This work is the first complete discussion of one-dimensional empirical processes in a single volume. It presents a unified treatment of the theory of empirical processes, emphasizing those processes related to real random variables. Two basic techniques are stressed: reduction to the case of uniform (0, 1) random variables on the unit interval, and use of Skorokhod versions of weakly convergent processes. After establishing this theoretical underpinning, the authors then illustrate the power of empirical process methods through a wide variety of applications.



Adelina GEORGESCU. — **Hydrodynamic stability theory.** — Mechanics: Analysis. — Un vol. relié,  $15,5 \times 23$ , de 306 p. — Prix: Dfl. 155.00. — Martinus Nijhoff, Dordrech/Boston/Lancaster, 1985.

The aim of this book is to provide a complete mathematical treatment of hydrodynamic stability theory by combining the earlier results of engineers and applied mathematicians with the recent achievements of pure mathematicians. The main topics discussed refer to the mathematical, linear and nonlinear stability of fluid flows.

Dieter RASCH and Günter HERRENDOERFER. — **Experimental design: sample size determination and block designs.** — Un vol. relié,  $15,5 \times 23$ , de vi, 200 p. — Prix: Dfl. 110.00. — D. Reidel Publishing Co., Dordrecht/Boston/Lancaster/Tokyo, 1986.

Many textbooks deal with experimental design; however, the authors' work considers new results, contains a model-free approach specifically to the definitions of balanced designs and presents first results of the authors and members of the Wilhelm Pieck Univ. (Rostock) on determining the number of non-isomorphic elementary block designs. Balanced complete block designs and methods of sample size determination in special designs are discussed in detail.

Christian GOUJET et Claire NICOLAS. — **Mathématiques appliquées: probabilités, initiation à la recherche opérationnelle.** — 3<sup>e</sup> éd. révisée. — Un vol. broché,  $16 \times 24$ , de 271 p. — Prix: FF 93.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1986.

L'ouvrage recouvre le programme de Mathématiques Appliquées des sections de 2<sup>e</sup> année de BTS comptable, mais les questions qu'il aborde: calcul des probabilités, initiation à la recherche opérationnelle, sont partie intégrante de la plupart des formations à la gestion. La présentation se veut accessible à des étudiants du secteur économique dont la formation mathématique n'a pas toujours été très poussée; certains résultats sont donc admis sans démonstration, et l'insistance est mise sur leurs utilisations possibles en matière de gestion.

K. J. FALCONER. — **The geometry of fractal sets.** — Cambridge tracts in mathematics, vol. 85. — Un vol. broché,  $15,5 \times 23$ , de xiv, 162 p. — Prix: £8.95. — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1985.

This book is filled with the geometric jewels of fractional and integral Hausdorff dimension. It contains a much-needed unified notation and includes many recent results with simplified proofs. Each chapter contains a short and important problem set.

Anthony F. RUSTON. — **Fredholm theory in Banach spaces (Theori Fredholm yng ngofodau Banach).** Cambridge tracts in mathematics, vol. 86. — Un vol. relié,  $16 \times 23,5$ , de x, 293 p. — Prix: £30.00. — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

In this volume, the author presents analogues for operators on a Banach space of Fredholm's solution of integral equations of the second kind. *Contents:* Asymptotically quasi-compact operators and the Riesz theory. — Tensor products of normed spaces. — Fredholm theory for operators of finite rank. — Operators with a Fredholm determinant. — Fredholm formulae and the Riesz theory. — Fredholm formulae for special classes of operators.

**Diophantine analysis.** — Proceedings of the Number theory section of the 1985 Australian mathematical society convention. — Edited by J. H. Loxton and A. J. van der Poorten. — London mathematical society lecture note series, vol. 109. — Un vol. broché,  $15,5 \times 23$ , de 169 p. — Prix: £12.50. — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

The contributors of these proceedings are leading mathematicians in the world, and their articles are state of the art accounts, many of which include open problems pointing the way to further research. The contributions will be of general interest to number theorists and of particular interest to workers in transcendence theory, Diophantine approximation and exponential sums.

Mieczyslaw ALTMAN. — **A unified theory of nonlinear operator and evolution equations with applications: a new approach to nonlinear partial differential equations.** — Monographs and textbooks in pure and applied mathematics, vol. 103. — Un vol. relié,  $16 \times 23,5$ , de xiv, 292 p. — Prix: \$69.75 (US and Canada), \$83.50 (all other countries). — Marcel Dekker, Inc., New York/Basel, 1986.

Utilizing the full potential of the very powerful theory of linear evolution equations based on the  $C_0$ -semigroups theory, this monograph presents results for nonlinear evolution equations based on approximate linearization. It offers three different methods for both nonlinear operator and evolution equations. It also contains the latest developments in functional analysis since Kato's famous theorem on quasilinear evolution equations was generalized by the author in 1981.

M. R. SCHROEDER. — **Number theory in science and communication: with applications in cryptography, physics, digital information, computing, and self-similarity.** — Second enlarged edition. — Springer series in information sciences, vol. 7. — Un vol. broché,  $15,5 \times 23,5$ , de xix, 374 p. — Prix: DM 68.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

In this book, important concepts such as continued fractions, the Golden ratio, quadratic residues and Chinese remainders, trapdoor functions, pseudoprimes and primitive elements are highlighted. Their applications to problems in the real world is one of the main themes of the book. The second edition is augmented by recent advances in error-free computing, fractals, self-similarity, deterministic chaos and quasicrystals.

**Goodness-of-fit techniques.** — Edited by Ralph B. D'Agostino and Michael A. Stephens. — Statistics: textbooks and monographs, vol. 68. — Un vol. relié,  $16 \times 24$ , de xviii, 560 p. — Prix: \$95.50. — Marcel Dekker, Inc., New York/Basel, 1986.

Conveniently grouping methods by techniques, such as chi-squared and empirical distribution function, and also collecting methods of testing for specific famous distributions, this useful reference is the first comprehensive review of the extensive literature on the subject. It surveys the leading methods of testing fit ... provides tables to make the tests available ... assesses the comparative merits of different test procedures ... and supplies numerical examples to aid in understanding these techniques.

Frederick H. SOON. — **Student's guide to "Calculus" by J. Marsden and A. Weinstein, volume III.** — Un vol. broché,  $15,5 \times 23,5$ , de xiv, 293 p. — Prix: DM 48.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

This book is intended to help the student of volume III of Marsden and Weinstein's "Calculus". It runs in parallel with this text, and reinforces the concepts introduced there with exercises, study hints, and quizzes. *Contents*: Vectors. — Curves and surfaces. — Partial differentiation. — Gradients, maxima, and minima. — Multiple integration. — Vector analysis.

Bernard CHARLES. Avec la collaboration de Denis ALLOUCH. — **Algèbre générale**. — Collection «Mathématiques». — Un vol. broché, 15 × 21,5, de 336 p. — Prix: FF 150.00. — Presses universitaires de France, Paris, 1984.

Notions préliminaires. — Structures algébriques. — Éléments de théorie des groupes. — Anneaux, polynômes, équations. — Algèbre linéaire. — Algèbres de Boole.

Daniel LEBORGNE. — **Calcul différentiel et géométrie**. — Collection «Mathématiques». — Un vol. broché, 15 × 21,5, de 262 p. — Prix: FF 130.00. — Presses universitaires de France, Paris, 1982.

Ce livre présente quelques aspects sous lesquels apparaît le calcul différentiel en géométrie; c'est dire qu'il s'agit d'un livre élémentaire. Outre de nombreux exemples, figures ou diagrammes, le livre contient plus de 200 énoncés d'exercices dont quelques-uns inédits.

Henri MASCART, Marius STOKA. — **Fonctions d'une variable réelle: exercices et corrigés**. — Collection «Mathématiques». — 2 vol. brochés, 15 × 21,5, de, respectivement, 218 et 197 p. — Prix: FF 160.00 chaque ouvrage. — Presses universitaires de France, Paris, 1986.

L'objet de ces 2 ouvrages est de présenter des questions d'analyse couvrant les trois premières années d'études après le baccalauréat en vue de la préparation d'une carrière scientifique. Ceci est la raison de l'importance donnée aux exemples numériques et aux «calculs d'erreurs». *Tome 1*: Nombres réels. — Limites. — Suites. — Fonctions réelles. — Fonctions élémentaires. *Tome 2*: Courbes. — Intégrales.

Henri MASCART, Marius STOKA. — **Algèbre linéaire et applications: exercices et corrigés**. — Collection «Mathématiques». — 2 vol. brochés, 15 × 21,5, de, respectivement, 196 et 254 p. — Prix: FF 165.00 (tome 1) et FF 180.00 (tome 2). — Presses universitaires de France, Paris, 1984 et 1985.

*Tome 1*: Espaces vectoriels. — Applications linéaires. — Matrices. — Déterminants. — Équations linéaires. — Espaces affines. — Espaces projectifs. — *Tome 2*: Théorie spectrale en dimension finie. — Formes quadratiques. — Espaces hermitiens et espaces euclidiens. — Algèbre tensorielle. — Systèmes différentiels linéaires à coefficients constants. — Analyse vectorielle et tensorielle.

Jean GEFFROY. — **Equations différentielles**. — Collection «Mathématiques». — Un vol. broché, 15 × 21,5, de 161 p. — Prix: FF 75.00. — Presses universitaires de France, Paris, 1983.

Séparation des variables. — Intégration d'équations différentielles de certains types. — Equations différentielles et familles de courbes planes. — Quelques résultats généraux sur les équations différentielles et les systèmes différentiels. — Equations différentielles linéaires du second ordre. — Systèmes différentiels linéaires.

Pierre SAMUEL. — **Géométrie projective.** — Collection «Mathématiques». — Un vol. broché,  $15 \times 21,5$ , de 176 p. — Prix: FF 150.00. — Presses universitaires de France, Paris, 1986.

Partant d'un prérequis assez élémentaire d'algèbre, ce livre expose les fondements — tant algébriques qu'axiomatiques — de la géométrie algébrique et donne une grande place à leurs applications aux cercles, coniques et quadriques.

Michel HERVÉ. — **Transformation de Fourier et distributions.** — Collection «Mathématiques». — Un vol. broché,  $15 \times 21,5$ , de 182 p. — Prix: FF 185.00. — Presses universitaires de France, Paris, 1986.

Fonctions intégrables. — Transformation de Fourier des fonctions intégrables. — Distributions sur  $R$  et sur  $R^2$ . — Transformation de Fourier des distributions tempérées. — Transformation de Fourier des fonctions dites de carré intégrable. — Transformation de Laplace.

Georges PUPION. — **Exercices d'algèbre avec solutions et cours résumé.** — Collection «Mathématiques». — Un vol. broché,  $15 \times 21,5$ , de 174 p. — Prix: FF 85.00. — Presses universitaires de France, Paris, 1983.

Ensembles. Relations. Dénombrement. — Groupes. Anneaux. Corps. — Corps des complexes. — Polynômes et fractions rationnelles. — Espaces vectoriels. Applications linéaires. Dualité. — Calcul matriciel. Déterminant. Systèmes linéaires. — Applications linéaires et matrices. Sous-espaces propres. — Formes bilinéaires. Formes quadratiques. Espaces euclidiens.

Georges PUPION. — **Exercices d'analyse avec solutions et cours résumé.** — Collection «Mathématiques». — Un vol. broché,  $15 \times 21,5$ , de 158 p. — Prix: FF 160.00. — Presses universitaires de France, Paris, 1985.

Nombres réels. Suites numériques. — Topologie sur  $R$ . Fonctions numériques. — Formule de Taylor. Développement limités. — Intégrales simples. — Intégrales généralisées. — Éléments de topologie dans un espace vectoriel normé. Fonctions de deux variables.

Paul DEHEUVELS. — **L'intégrale.** — Collection «Que sais-je?», n° 2250. — Un vol. broché,  $11,5 \times 17,5$ , de 126 p. — Presses universitaires de France, Paris, 1986.

L'approche géométrique élémentaire de l'intégrale. — L'approche fonctionnelle élémentaire de l'intégrale. — Intégrales multiples, calculs de volumes et d'aires. — L'extension de l'intégrale par complétion. — Espaces de mesures. — Les relations entre dérivées et primitives. Intégrales de Perron et de Denjoy.

**Operator theory and systems.** — Proceedings workshop Amsterdam, June 4-7, 1985. — Edited by H. Bart, I. Gohberg, M. A. Kaashoek. — Operator theory: advances and applications, vol. 19. — Un vol. relié,  $17 \times 24$ , de 475 p. — Prix: FS 118.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1986.

The papers which appear in this book review recent advances and discuss problems that are currently under investigation. They give a reasonable cross-section of the theoretical developments in abstract operator theory as well as in the area of concrete classes of operators. Applications concern different fields, among them Mathematical systems theory, network theory and transport theory.

Dan AMIR. — **Characterizations of inner product spaces.** — Operator theory: advances and applications, vol. 20. — Un vol. relié, 17 × 24, de 200 p. — Prix: FS 60.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1986.

This book contains a systematic presentation of a collection of about 350 characterizations of inner product spaces among normed linear spaces. The characterizations are linear isometric, and geometrically this means characterizations of the ellipsoids among all symmetric convex bodies. The book is designed in such a way that one can easily isolate characterizations relevant to, for example, the geometry of Banach spaces, the theory of convex bodies, and approximation theory.

Solomon G. MIKHLIN. — **Constants in some inequalities of analysis.** — A Wiley-Interscience publication. — Translated by Reinhard Lehmann. — Un vol. relié, 16 × 24, de 107 p. — Prix: £13.75. — John Wiley and Sons, Chichester/New York/Brisbane/Toronto/Singapore, 1986.

The extension constant. — The smallest extension constant for  $W_2^1$ -functions. — Some inequalities in the theory of Sobolev spaces. — Constants in error estimates for the finite element approximation. — Constants in some inequalities for functions of anisotropic Sobolev spaces.

**Robustness of statistical methods and nonparametric statistics.** — Edited by Dieter Rasch and Moti Lal Tiku. — Theory and decision library. Series B: Mathematical and statistical methods. — Un vol. relié, 21 × 30, de 172 p. — Prix: Dfl. 140.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1984.

This volume contains a selection of the invited and contributed papers presented at a conference on robustness of statistical methods and nonparametric statistics held in Schwerin, June 1983. Various aspects of robustness are discussed. The emphasis, however, is on the presentation of new results concerning the robustness of classical statistical methods — in particular, tests confidence estimations, and selection procedures — and to compare the performance of new methods with nonparametric procedures.

Yu. B. GERMEIER. — **Non-antagonistic games.** — Translated by Anatol Rapoport. — Theory and decision library, vol. 46. — Un vol. relié, 16 × 23, de XIII, 331 p. — Prix: Dfl. 180.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster/Tokyo, 1986.

A general description of models with non-coincident interests. — Some principles involved in choosing rational strategies. — The guaranteed payoff principle in two-person games. — Some game models for multiple players.

H. P. YAP. — **Some topics in graph theory.** — London mathematical society lecture note series, vol. 108. — Un vol. broché, 15 × 23, de 230 p. — Prix: £12.50. — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

This book provides a rapid introduction to some topics in graph theory typically covered in a graduate course. The author sets out the main recent results in several areas of current research in graph theory. Topics covered include edge-colouring, symmetries of graphs, the packing of graphs, and computational complexity.



Ernst KUNZ. — **Kähler differentials.** — Advanced lectures in mathematics. — Un vol. broché,  $16,5 \times 23$ , de VII, 402 p. — Prix: DM 76.00. — Friedr. Vieweg und Sohn, Braunschweig/Wiesbaden, 1986.

Dieses Buch entwickelt die Theorie der Kähler-Differentiale unter ringtheoretischen Aspekten von Grund auf und bereitet die Anwendung der Ergebnisse in der algebraischen Geometrie vor. Es gibt einen Überblick über Resultate, die seit dem Erscheinen von Kählers „Algebra und Differentialrechnung“ im Bericht über die Mathematiker-Tagung in Berlin 1953 auf diesem Gebiet erzielt worden sind.

Dennis STANTON, Dennis WHITE. — **Constructive combinatorics.** — Undergraduate texts in mathematics. — Un vol. relié,  $16 \times 24,5$ , de X, 183 p. — Prix: DM 48.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1986.

Constructive combinatorics is a modern introductory text in combinatorics. The emphasis is on the algorithmic approach using combinatorial algorithms as constructive proofs of theorems and as sources of data for conjectures. These algorithms are listed in a shorthand Pascal, but a knowledge of Pascal is not required to understand them.

Takeshi AMEMIYA. — **Advanced econometrics.** — Un vol. relié,  $15,5 \times 23,5$ , de VI, 521 p. — Prix: £35.00. — Basil Blackwell, Oxford, 1985.

The main features of this book are a thorough treatment of cross-section models, including qualitative response models, censored and truncated regression models, and Markov and duration models, as well as a rigorous presentation of large sample theory, classical least-squares and generalized least squares theory, and nonlinear simultaneous equation models.

Robert L. DEVANEY. — **An introduction to chaotic dynamical systems.** — Global analysis series, pure and applied, vol. 3. — Un vol. relié,  $17 \times 24,5$ , de XII, 320 p. — The Benjamin/Cummings publishing Co. Inc., Menlo Park/Reading/Don Mills/Wokingham/Amsterdam/Sydney/Singapore/Tokyo/Mexico/Bogota/Santiago/San Juan, 1986.

Unlike other textbooks on this subject, this book assumes no prior acquaintance with advanced mathematical topics such as measure theory, topology, and differential geometry. Assuming only calculus at the outset, the author introduces many of the basic concepts of modern dynamical systems theory, and leads the reader to the point of current research in several areas. The last chapter brings the reader to the brink of contemporary research, but assumes some familiarity with linear algebra and complex systems.

**Group theory, Beijing 1984.** — Proceedings of an international symposium held in Beijing, Aug. 27-Sep. 8, 1984. — Edited by Tuan Hsio-Fu. — Lecture notes in mathematics, vol. 1185. — Un vol. broché,  $17 \times 24,5$ , de IV, 403 p. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

The chief topics of the symposium were finite groups and their connections with combinatorics, classical groups, algebraic groups and Lie groups (with emphasis on connections with algebra). The symposium was conducted by an organization committee consisting of seven Chinese professors of group theory. Its purpose was to provide a timely forum for the exchange of information and therefore, eight well-known mathematicians from abroad were invited.

Béla BOLLOBAS. — **Combinatorics: set systems, hypergraphs, families of vectors and combinatorial probability.** — Un vol. broché, 15,5 × 23, de XII, 177 p. — Prix: £5.95 (broché), £17.50 (relié). — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1986.

“Combinatorics” is a book whose main theme is the study of subsets of a finite set. It gives a thorough grounding in the theories of set systems and hypergraphs, while providing an introduction to matroids, designs, combinatorial probability and Ramsey theory for infinite sets. The gems of the theory are emphasized: beautiful results with elegant proofs.

**Contributions to several complex variables: in honour of Wilhelm Stoll.** — Edited by Alan Howard, Pit-Mann Wong. — Aspects of mathematics, vol. E9. — Un vol. broché, 16,5 × 23, de XII, 353 p. — Prix: DM 68.00. — Friedr. Vieweg und Sohn, Braunschweig/Wiesbaden, 1986.

In October 1984 the University of Notre Dame held a conference in complex analysis in honour of Wilhelm Stoll. This volume contains articles dedicated to him at this occasion. They give an insight into recent research activities in many different branches of complex analysis such as value distribution theory, meromorphic maps, positive currents, complex differential and algebraic geometry, the  $\bar{\partial}$ -Neumann problem, homogeneous manifolds, arithmetic Hilbert modular functions and others.

Francesco GUARALDO, Patrizia MACRI, Alessandro TANCREDI. — **Topics on real analytic spaces.** — Vieweg advanced lectures in mathematics. — Un vol. broché, 16,5 × 23, de X, 163 p. — Prix: DM 42.00. — Friedr. Vieweg und Sohn, Braunschweig/Wiesbaden, 1986.

The contents of this book can be summarized by the following topics: Complexification, normalization, desingularization, pathology of non coherence, embedding theorems, theory of relative approximations of differentiable functions by analytic functions, classifications of analytic vector bundles.

R. CARMONA, H. KESTEN, J. B. WALSH. — **Ecole d'été de probabilités de Saint-Flour XIV.** — 1984. — Edité par P. L. Hennequin. — Lecture notes in mathematics, vol. 1180. — Un vol. broché, 16,5 × 24,5, de X, 438 p. — Prix: DM 65.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

*R. Carmona:* Random Schrödinger operators. — *H. Kesten:* Aspects of first passage percolation. — *J. B. Walsh:* An introduction to stochastic partial differential equations. — Each of these courses provides a state-of-the-art survey of a central topic in current research, and may be used as a reference on the topic.

Yves DIERS. — **Categories of Boolean sheaves of simple algebras.** — Lecture notes in mathematics, vol. 1187. — Un vol. broché, 16,5 × 24,5, de VI, 168 p. — Prix: DM 28.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

This book studies and classifies categories of commutative regular algebras, with or without unit, equipped with extra structure such as: ordered, lattice, differential, continuous group representation, algebraic structure. It continues and deepens the earlier study of locally finitely presentable categories by P. Gabriel and F. Ulmer.

**Fonctions de plusieurs variables complexes V: Séminaire François Norguet, Octobre 1979-juin 1985.** — Edité par François Norguet. — Lecture notes in mathematics, vol. 1188. — Un vol. broché,  $16,5 \times 24,5$ , de VII, 301 p. — Prix: DM 50.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

Almost all the results published here concern various aspects of integral transforms, including the general cohomological residue theory, as well as the integral representation of functions, differential forms and currents. They are about formulae of Cauchy-Fantappiè-Leray type, Andreotti-Norguet-Barlet integration on analytic cycles, and Radon-Gindikin-Henkin transform.

**Optimization and related fields.** — Proceedings of the G. Stampacchia International School of Mathematics held at Erice, Sicily, September 17-30, 1984. — Edited by R. Conti, E. De Giorgi and F. Giannessi. — Lecture notes in mathematics, vol. 1190. — Un vol. broché,  $16,5 \times 24,5$ , de VIII, 419 p. — Prix: DM 65.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

Both finite and infinite dimensional optimization are discussed. The main topics are duality, convergence, calculus of variations, variational inequalities, control theory, Lagrangian multipliers, applications to aerospace, elasticity, games, stochastic homogenization, and programming problems.

Alexander R. ITS, Victor Yu. NOVOKSHENOV. — **The isomonodromic deformation method in the theory of Painlevé equations.** — Lecture notes in mathematics, vol. 1191. — Un vol. broché,  $16,5 \times 24,5$ , de IV, 313 p. — Prix: DM 50.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1986.

A new approach to the study of solutions of the classical Painlevé equations is developed. This approach (the isomonodromic deformation method) was recently proposed by H. Flaschka, A. Newell, M. Jimbo, T. Miwa and K. Ueno.

Alain HILLION. — **Les théories mathématiques des populations.** — Que sais-je? — Un vol. broché,  $11 \times 17,5$ , de 127 p. — Presses universitaires de France, Paris, 1986.

Généralités sur les modèles mathématiques de l'évolution des populations. — Les modèles déterministes à temps discret et à temps continu. — Les modèles stochastiques à temps discret, et à temps continu.

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