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Nonparametric statistical inference. — Proceedings of a colloquium held in Budapest from June 23-27, 1980. — Edited by: B. V. Gnedenko, M. L. Puri and I. Vincze. — *Colloquia mathematica societatis Janos Bolyai*, vol. 32. — Deux vol. reliés, 18×25 , de 909 p. pour l'ensemble des deux vol. — Prix: Dfl 340.00 les deux vol. — North-Holland publishing company; Amsterdam/Oxford/New York, 1982.

The field of nonparametric statistics continues to play an increasingly successful role in statistical theory as well as in its applications. Nonparametric methods provide a variety of applications in several fields such as engineering, economics, agriculture, meteorology and biometrics. These proceedings volumes contain a broad range of topics including testing and estimation, ranking and selection, empirical distributions and stochastic processes.

D. H. SATTINGER. — **Branching in the presence of symmetry.** — CBMS-NSF regional conference series in applied mathematics, vol. 40. — Un vol. broché, 18×25 , de vii, 73 p. — Prix: £9.00. — Society for industrial and applied mathematics, Philadelphia, Penns., distributed by John Wiley and Sons, Chichester, 1983.

Critical points of nonconvex functionals: Minimax theorems. Periodic solutions of a nonlinear wave equation and of Hamiltonian systems. Variational methods for free boundary value problems. Perturbation methods in critical point theory. — *Spontaneous symmetry breaking*: Equivariant equations. Equivariant bifurcation equations. Modules of equivariant mappings. The rotation group. $SU(3)$ model for hadrons. Hopf bifurcation in the presence of spatial symmetries. Stability of bifurcating waves. — *Equivariant singularity theory*: Modules of equivariant mappings. Unfoldings. Universal unfolding of the Z_2 singularity. Universal unfolding of the D_n singularity. Bifurcation analysis for D_3 . — *Critical orbits of linear group actions*: Orbits and strata. Theorems of L. Michel. A trace criterion for critical orbits. Critical orbits for representations of $SO(3)$.

Elwyn R. BERLEKAMP, John H. CONWAY, Richard K. GUY. — **Winning ways for your mathematical plays.** — Deux vol. brochés, 19×25 , de 850 p. pour l'ensemble des deux volumes. — Prix: £10.80 pour chacun des deux volumes. — Academic press, London/New York/Paris/San Diego/San Francisco/Sao Paulo/Sydney/Tokyo/Toronto, 1982.

This treatise is not just another compilation of new tricks. It is in part a rigorous demonstration of exactly how games can be analysed to discover the winning strategy. "Winning ways" includes several theories for a wide range of different compounds which are described in detail in the first volume: "Games in general". In this first part, the

theories and techniques for analysing games are described, while in the second volume: "Games in particular", there is a dazzling presentation of the examples. The analyses start with basic theory using simple examples, but progress to detailed case-studies of well-known games ranging from the elementary to the elaborate and including Tic-Tac-Toe, Dots-and-Boxes, Hackenbush, Peg Solitaire and the maddening Hungarian cube puzzle.

Approximations diophantiennes et nombres transcendants. — Colloque de Luminy, 1982. — Edited by Daniel Bertrand and Michel Waldschmidt. — Progress in mathematics, vol. 31. — Un vol. relié, 16 × 24, de xi, 168 p. — Prix: FS 56.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Considerable progress in this field has been made recently by the introduction of methods from algebraic geometry and from the theory of differential equations. The application of these methods to problems of linear or algebraic independence and to irrationality measures forms the central theme of this book. Contents: 19 papers by D. Bertrand, F. Beukers, W. D. Brownawell, A. I. Galockin, F. Gramain and M. Mignotte, O. Jacquinet, M. Laurent, R. C. Mason, D. W. Masser, J. C. Moreau, Ju. V. Nesterenko, P. Philippon, E. Reyssat, G. Rhin, J. Silverman, W. Schmidt, M. Waldschmidt, G. Wüstholz.

Differential geometry. — Proceedings, special year, Maryland, 1981-82. — Edited by Robert Brooks, Alfred Gray, and Bruce L. Reinhart. — Progress in mathematics, vol. 32. — Un vol. relié, 16 × 24, de vii, 254 p. — Prix: FS 42.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Garth A. Baker: Combinatorial Laplacians and Sullivan-Whitney forms. — *Thomas Banchoff*: Critical points and curvature for embedded polyhedra II. — *Robert Brooks*: Some Riemannian and dynamical invariants of foliations. — *Leon Ehrenpreis*: Conformal geometry. — *Peter B. Gilkey*: Vector bundles with harmonic connections over spheres. — *Franz W. Kamber and Philippe Tondeur*: Foliations and metrics. — *Leon Karp*: The growth of harmonic functions and mappings. — *Ravi S. Kulkarni*: Surface-symmetries, holomorphic maps and tessellations. — *Ravi S. Kulkarni and Frank Raymond*: Three-dimensional Lorentz space forms and Seifert fiber spaces. — *Mark A. Pinsky*: Brownian motion and Riemannian geometry. — *Mehrdad M. Shahshahani*: Invariant hyperbolic systems on symmetric spaces. — *F. Tricerri and L. Vanhecke*: Homogeneous structures. — *H. E. Winkelnkemper*: The number of ends of the universal leaf of a Riemannian foliation.

Claude ZUILY. — **Uniqueness and non-uniqueness in the Cauchy problem.** — Progress in mathematics; vol. 33. — Un vol. relié, 16 × 24, de xi, 168 p. — Prix: FS 32.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

First order differential operators: The elliptic case. The uniqueness theorem under condition. The non-uniqueness theorem. The two dimensional case. — *Calderon's theorem and its extensions*: The case of low multiplicity. Elliptic operators with non-smooth double characteristics. The triple complex characteristic case. A counterexample in higher multiplicity. Uniqueness theorems in case of higher multiplicity. — *Uniqueness*

and pseudo-convexity: Operators with real principal part. A class of quasi-homogeneous operators. The case of double real roots of constant multiplicity. Elliptic operators. Some non-uniqueness results.

Proceedings of the fourth international congress on mathematical education. — Edited by Marilyn Zweng, Thomas Green, Jeremy Kilpatrick, Henry Pollak and Marilyn Suydam. — Un vol. relié, 23 × 29, de xv, 722 p. — Prix: FS 160.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Mathematics is the unique art and science that enables us to cope with the complexity of economic, social, and technical problems in a rational, quantitative way. The proceedings of the ICME on mathematical education present a complete documentation of the 116 papers given at the conference about the following topics: universal basic education, elementary education, post-secondary education, the profession of teaching, geometry, stochastics, applications, problem solving, special mathematical topics, mathematics curriculum, the Begle memorial series on research in mathematics education, research in mathematics education, assessment, competitions, language and mathematics, objectives, technology, forms and modes of instruction, women and mathematics, special groups of students.

Improperly posed problems and their numerical treatment. — Conference held at the mathematisches Forschungsinstitut, Oberwolfach, September 26-October 2, 1982. — Edited by G. Hämmerlin and K.-H. Hoffmann. — International series of numerical mathematics, vol. 63. — Un vol. relié, 17 × 24, de 264 p. — Prix: FS 48.00. — Birkhäuser, Basel/Boston/Stuttgart, 1983.

In this volume, 17 papers read at the conference are collected. They concern problems of regularisation, parameter identification, free boundary and inverse problems in differential and integral equations of the first kind and general operator equations. As to the aspects of application, numerous questions in science and in technical areas as well as in medicine lead to improperly posed problems, the theoretical and numerical treatment of which is reflected by the articles in this volume.

Philip J. DAVIS. — **The thread: a mathematical yarn.** — Un vol. relié, 14 × 21, de 126 p. — Prix: FS 28.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Tschebyscheff. — Cyril. — Watt. — Lipkin. — Pafnuty. — Theodora. — Paphnutius. — Thäis. — Cadbury. — Yeti. — Lama Ted. — Nadra. — Herod. — Babnuda. — The man on the moon.

Barry CIPRA. — **Mistakes . . . and how to find them before the teacher does . . . : a calculus supplement.** — Un vol. broché: 14 × 22, de XIII, 69 p. — Prix: FS 10.80. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Integrals: the power of positive thinking. — Differentiating right from wrong. — More integrals (that's about the size of it). — Derivatives again, and the fine art of being crude. — Reducing to special cases. — Dimensions. — Symmetry (the same thing over and over). — The "what did you expect?" method. — Some common errors.

Markus FIERZ. — **Girolamo Cardano: 1501-1576: physician, natural philosopher, mathematician, astrologer, and interpreter of dreams.** — Translated from the German by Helga Niman. — Un vol. relié, 14 × 22, de xxii, 202 p. — Prix: FS 60.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Cardano's life and writings. — Cardano the physician. — Natural philosophy and theology. — "De Subtilitate" and "De Rerum Varietate". — Astrology. — The interpretation of dreams. — On the art of living with oneself.

Stephen BARNETT. — **Polynomials and linear control systems.** — Pure and applied mathematics, vol. 77. — Un vol. relié, 17 × 24, de xi, 452 p. — Prix: FS 93.00. — Marcel Dekker, Inc., New York/Basel, 1983.

Polynomials: approaches to greatest common divisor: Review of basic concepts. Companion matrix and properties. G.C.D. using companion matrix. Sylvester's resultant matrix. Bezoutian matrix. Recursive algorithms. — *Basic properties of control systems:* State space concepts. Controllability and observability. Relationships with polynomials. Canonical forms: single input and output. Realization of transfer functions. Scalar linear state feedback. — *Root location and stability:* Stability of linear systems. Root location and stability criteria. Some key proofs. Cauchy index method. Additional topics. — *Feedback, realization, and polynomial matrices:* Linear feedback. Transfer function matrices. Relative primeness and G.C.D. for polynomial matrices. — *Generalized polynomials and polynomial matrices:* Congenial matrices. Greatest common divisors. Applications to linear control systems. Other applications. — *Appendices:* Kronecker product and matrix functions. Notation. — Problèmes à la fin de chaque chapitre.

Gregory KARPILOVSKY. — **Commutative group algebras.** — Pure and applied mathematics, vol. 78. — Un vol. relié, 16 × 24, de x, 223 p. — Prix: FS 106.00. — Marcel Dekker, Inc., New York/Basel, 1983.

The study of commutative group algebras has developed in recent decades from a collection of isolated results into a cohesive, well-structured body of basic mathematical knowledge. This work presents the first systematic account of commutative group algebras, and investigates ring-theoretic properties of group algebras: nil and Jacobson radicals, the Krull dimension, integral domains, the structure of unit groups, and isomorphism questions.

Finite geometries and designs. — Proceedings of the 2nd Isle of Thorns conference 1980. — Edited by P. J. Cameron, J.W.P. Hirschfeld, D. R. Hughes. — London mathematical society lecture note series, vol. 49. — Un vol. broché, 16 × 23, de vi, 371 p. — Prix: £15.00. — Cambridge university press, Cambridge/London/New York/New Rochelle Melbourne/Sydney, 1981.

This collection of 33 research papers follows from a conference on the interwoven themes of finite Desarguesian spaces, Steiner systems, coding theory, group theory, block designs, generalized quadrangles, and projective planes. There is a comprehensive introduction which aims to interest the non-specialist in the subject and which indicates how the contributions fit together. These papers include a number of open problems whose statement requires very little mathematical sophistication.

Surveys in combinatorics. — Invited papers for the 9th British combinatorial conference: 1983. — Edited by E. Keith Lloyd. — London mathematical society lecture note series, vol. 82. — Un vol. broché, 16 × 23, de xi, 256 p. — Prix: £14.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

J. C. Bermond, J. Bond, M. Paoli and C. Peyrat : Graphs and interconnection networks: diameter and vulnerability. — *J. M. Hammersley* : The friendship theorem and the love problem. — *J. W. P. Hirschfeld* : Maximum sets in finite projective spaces. — *C. C. Lindner* : Quasigroup identities and orthogonal arrays. — *A. Schrijver* : Bounds on permanents, and the number of 1-factors and 1-factorizations of bipartite graphs. — *J. Sheehan* : Redfield discovered again. — *E. E. Shult* : Characterizations of the Lie incidence geometries — *R. P. Stanley* : $GL(n, \mathbb{C})$ for combinatorialists. — *V. T. Sos* : Irregularities of partitions: Ramsey theory, uniform distribution.

R. C. VAUGHAN. — **The Hardy-Littlewood method.** — Cambridge tracts in mathematics, vol. 80. — Un vol. relié, 15 × 23, de x, 172 p. — Prix: £15.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1981.

Introduction and historical background. — The simplest upper bound for $G(k)$. — Goldbach's problems. — The major arcs in Waring's problem. — Vinogradov's methods. — Davenport's methods. — Vinogradov's upper bound for $G(k)$. — A ternary additive problem. — Homogeneous equations and Birch's theorem. — A theorem of Roth. — Diophantine inequalities.

Stephen D. FISCHER. — **Function theory on planar domains: a second course in complex analysis.** — Pure and applied mathematics. — Un vol. relié, 17 × 24, de xiii, 269 p. — Prix: £33.25. — John Wiley and Sons, New York/Chichester/Brisbane/Toronto/Singapore, 1983.

The opening chapter surveys the fundamental ideas of potential theory, including the solution of the Dirichlet problem by means of subharmonic functions, harmonic measure, the Green's function of a domain, and the logarithmic capacity of a planar set. The 2nd chapter is devoted to a proof of the uniformization theorem. The 3rd, 4th and 5th chapters develop the structure of the Hardy H^p spaces on planar domains and examine a number of classical linear extremal problems on such domains. Recent work on the structure of the set of maximal ideals of the space of bounded analytic functions on an arbitrary domain is presented in the 6th chapter. The final chapter contains work on linear operators on H^p spaces and includes a discussion of the optimal estimation of holomorphic functions, a new and rapidly developing area of research. The author frequently uses the exercises at the end of each chapter to elaborate on and extend results given in the text.

F. J. GOULD, J. W. TOLLE. — **Complementary pivoting on a pseudomanifold structure with applications in the decision sciences.** — Sigma series in applied mathematics, vol. 2. — Un vol. broché, 17 × 24, de iv, 204 p. — Prix: DM 58.00. — Heldermann Verlag, Berlin, 1983.

Definitions of pseudomanifolds. — Examples and constructions of pseudomanifolds. — Complementary pivoting. — Linear complementarity theory. — Fixed points. — Unconstrained nondifferentiable minimization. — Nondifferential programming. — Exercices à la fin de chaque chapitre.

Ki Hang KIM and Fred W. ROUSH. — **Applied abstract algebra.** — Ellis Horwood series in mathematics and its applications. — Un vol. relié, 16×24 , de 265 p. — Prix: £25.00. — Ellis Horwood Limited, Chichester, distributed by John Wiley and Sons, New York/Chichester/Brisbane/Ontario, 1983.

This book contains all the necessary subject matter of abstract algebra, featuring the most recent topics and illustrative applications: it approaches the subject from a broad, non-numerical viewpoint. The material has been worked as a simple and concrete introduction, leading to a good cross-section of applications which include voting theory, automata theory, mathematical linguistics, sociology symmetries in physics and geometry, kinship systems, geometrical constructions, and design of experiments for statistical analysis. Among the major topics covered here are binary relations, lattices, semigroups, Boolean matrices, directed graphs, network theory, group representation (both finite and continuous).

François LE LIONNAIS. — **Les nombres remarquables.** — Avec la collaboration de Jean Brette. Actualités scientifiques et industrielles, vol. 1407. — Un vol. broché, $17,5 \times 24$, de 160 p. — Prix: FF 86.00. — Hermann, Paris, 1983.

Ce livre est une anthologie de nombres remarquables, aux propriétés particulières. Cette collection de nombres intéressants, exceptionnels, bizarres dont la plupart ont compté dans l'histoire de la pensée mathématique ou dans celle de l'humanité, s'est enrichie grâce aux suggestions de nombreux mathématiciens de tous pays. Les mathématiciens retrouveront dans ce livre, leurs univers sans limite et les lycéens y découvriront une vue originale et impressionniste des mathématiques.

Claude TISSERON. — **Géométries affine, projective et euclidienne.** — Actualités scientifiques et industrielles, vol. 1408. — Collection « Formation des enseignants et formation continue ». — Un vol. broché, 18×24 , de XII, 386 p. — Prix: FF 112.00. — Hermann, Paris, 1983.

Les centres d'intérêt de l'ouvrage sont les géométries affine, projective, et euclidienne — ou métrique —. Ces géométries sont envisagées sous différents aspects faisant intervenir l'algèbre linéaire, la topologie et la théorie des groupes, montrant ainsi l'interaction de ces différentes disciplines. Une bonne place est faite à l'étude des figures, pour leur aspect esthétique, leur contenu intuitif et leur importance historique. En plus des propriétés classiques des géométries considérées, l'ouvrage en présente d'autres, moins usuelles à ce niveau, comme par exemple le paradoxe de Hausdorff-Banach-Tarski.

Marie José BERTIN. — **Calcul par l'informatique: méthode logique d'enseignement des mathématiques.** — Préface de Charles Pisot. — Remarques de Jacques Arzac et Jean-André Ville. — Actualités scientifiques et industrielles, vol. 1409. — Collection « Formation des enseignants et formation continue ». — Un vol. broché, $17,5 \times 24$, de 208 p. — Prix: FF 58.00. — Hermann, Paris, 1983.

Ce livre s'adresse à quiconque veut acquérir le raisonnement logique du calcul moderne. L'auteur présente en détail des calculs conduits jusqu'au bout sur calculettes programmables; ceux-ci peuvent être effectués sur des calculettes de n'importe quelle marque et sont directement transportables sur micro-ordinateurs.

Roger A. FENN. — **Techniques of geometric topology.** — London mathematical society lecture note series, vol. 57. — Un vol. broché, 16×23 , de vi, 280 p. — Prix: £12.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

An introduction to homology: Cell complexes. 2-complexes and group presentations. Homology of cell complexes. Cohomology. The cup product. The homology and cohomology of manifolds. Non-orientable manifolds. Geometric cohomology. — *An introduction to homotopy*: The homotopy groups. Relations with homology. Whitehead's theorem. Pictures. Pictures and homotopies. Path transportation. Crossed modules. Identities. Three-dimensional complexes. Doodles and commutator identities. Commutator identities. Concordance of doodles. Triple points and the μ -invariant. Cobordism of doodles. Group isomorphisms and homotopy equivalences. — *Covering spaces*: Lifting maps. Classification of coverings. The universal covering space. Regular covering spaces. Irregular coverings. Monodromy. Covering spaces of surfaces. Hyperbolic geometry. Branched covering spaces. — *The homology of covering spaces*: Reidemeister chains. Properties of the Fox derivatives. The lower central series. The Magnus embedding and the lower central series. Eilenberg-MacLane spaces. The Alexander module. Some Alexander module theory. Presentation and Alexander polynomials. Reidemeister torsion. — *Knots and links*: The homology of a knot complement. The Alexander module of a knot. The fundamental group of the knot complement. Links. The Alexander module of a link. Metabelian invariants of the link group. Generalised linking numbers: the Milnor invariants. Symmetry properties of Milnor's invariant. Link homotopy. — *Massey products*: Some technical properties of Massey products. Some calculations of Massey products. Massey products and the Milnor numbers. — *Exercises*.

Roger TENAM. — **Navier-Stokes equations and nonlinear functional analysis.** — CBMS-NSF regional conference series in applied mathematics, vol. 41. — Un vol. broché, 18×25 , de xii, 122 p. — Prix: £11.00. — Society for industrial and applied mathematics, Philadelphia, Pa., distributed by John Wiley and Sons, Chichester, 1983.

Questions related to the existence, uniqueness and regularity of solutions: Representation of a flow. The Navier-Stokes equations. Functional setting of the equations. Existence and uniqueness theorems (mostly classical results). New a priori estimates and applications. Regularity and fractional dimension. Successive regularity and compatibility conditions at $t = 0$ (bounded case). Analyticity in time. Lagrangian representation of the flow. — *Questions related to stationary solutions and functional invariant sets (attractors)*: The Couette-Taylor experiment. Stationary solutions of the Navier-Stokes equations. The squeezing property. Hausdorff dimension of an attractor. — *Questions related to the numerical approximation*: Finite time approximation. Long time approximation of the Navier-Stokes equations.

General inequalities 3. — 3rd International conference on general inequalities, Oberwolfach, April 26-May 2, 1981. — Edited by E. F. Beckenbach, W. Walter. — International series of numerical mathematics, vol. 64. — Un vol. relié, 17×24 , de xxi, 563 p. — Prix: FS 88.00.— Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Inequalities are of importance in almost every branch of mathematics. Correspondingly, the contributions of this volume deal with a wide range of fields and applications. The book starts with a short section on "History". The next section entitled "Inequalities

for sums, series and integrals” treats classical questions and contains an introduction to inequalities via majorization. These are followed by sections on “Inequalities of combinatorics and matrix theory”; “Functional inequalities”; Inequalities of geometry and topology”; and “Differential inequalities and inequalities in functional analysis”. The final section, “Remarks and problems”, shows that the field of inequalities is as active and lively as ever.

Global analysis — analysis on manifolds. — Dedicated to Marston Morse (1892-1976). — Edited by Themistocles M. Rassias. — Teubner-Texte zur Mathematik, Band 57. — Un vol. broché, 15 × 21, de 376 p. — Prix: DM 39.00. — B. G. Teubner Verlagsgesellschaft, Leipzig, 1983.

28 exposés par: Th. M. Rassias. — E. F. Beckenbach. — M. S. Berger. — G. G. Birkhoff. — P. H. Chang. — P. Cherenack. — D. G. Ebin. — S. M. Graff. — R. C. Gunning. — S. H. C. Hsiao. — H. H. Hung. — D. H. Hyers. — M. M. Israel, Jr. and S. Reich. — L. Janos. — R. D. Järvinen. — W. Kosinski. — D. L. Landis. — C. N. Maxwell. — R. C. McOwen. — P. E. Parker. — Z. Perjes. — R. Pool. — J. Rauch. — I. Vaisman. — B. Watson. — F. Williamson, Jr.

Computational aspects of complex analysis: proceedings of the NATO Advanced study institute held at Braunlage, Harz, Germany, July 26-August 6, 1982. — Ed. by H. Werner, L. Wuytack, E. Ng and H. J. Bünger. — NATO Advanced study institutes series C: Mathematical and physical sciences, vol. 102. — Un vol. relié, 16,5 × 24,5, de VIII, 426 p. — Prix: Dfl 125.00. — D. Reidel Publishing company, Dordrecht/Boston/Lancaster, 1983.

Many applications of complex analysis have emerged in the last few years, and this book constitutes a comprehensive coverage of the subjects by providing a full overview as well as exploring recent developments. Complemented by extensive references, the advanced presentations represent the current state of the art in this broad field, making the book an ideal source for the specialist. The work concentrates on problems dealing with approximation and interpolation by polynomial and rational functions, in particular Padé approximation, numerical methods for the solution of algebraic equations and differential equations, the large field of conformal mapping, aspects of computer implementation of complex arithmetic and calculations based on complex variable techniques.

Nonlinear stochastic problems. — Ed. by Richard S. Bucy and José M. F. Moura. — NATO Advanced science institutes series C: Mathematical and physical sciences, vol. 104. — Un vol. relié, 16,5 × 24,5, de XII, 623 p. — Prix: Dfl 183.00. — D. Reidel Publishing company, Dordrecht/Boston/Lancaster, 1983.

This volume corresponds to the invited lectures and advanced research papers presented at the NATO advanced study institute on nonlinear stochastic problems with emphasis on identification, signal processing, control and nonlinear filtering held in Algarve (Portugal), on May 1982. The book is a blend of theoretical issues, algorithmic implementation aspects, and application examples. In many areas of science and engineering, there are problems which are intrinsically nonlinear and stochastic in nature. Clear examples arise in identification and modeling, signal processing, nonlinear filtering,

stochastic and adaptive control. The meeting was organized because it was felt that there is a need for discussion of the methods and philosophy underlying these different areas, and in order to communicate those approaches that have proven to be effective.

VAN DER WAERDEN, B. L. — **Zur algebraischen Geometrie: selected papers.** — Un vol. relié, 17 × 25, de VII, 479 p. — Prix: DM 84.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Die bedeutenden Arbeiten zur algebraischen Geometrie von B. L. van der Waerden sind in dem vorliegenden Band ausgewählter Werke dieses berühmten Mathematikers zusammengestellt. Der Band bietet spannende Lektüre und wird dem angehenden algebraischen Geometer als Einführung in manche Arbeitsrichtung eine wertvolle Hilfe sein. Ein vollständiges Verzeichnis der Veröffentlichungen von B. L. van der Waerden wurde am Ende des Bandes zusammengestellt.

EMMY NOETHER. — **Gesammelte Abhandlungen: collected papers.** — Hrsg. von N. Jacobson. — Un vol. relié, 17 × 25, de VIII, 777 p. — Prix: DM 144.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This volume contains what are believed to be all of Emmy Noether's published mathematical papers, beginning with the published version of her dissertation and ending with a posthumous paper published in Crelle in 1950, fifteen years after her death. Also included are a memorial address by Paul Alexandroff, and an instructive introduction by Nathan Jacobson.

Reliability in the acquisitions process. — Ed. by Douglas J. DePriest and Robert L. Launer. — Lecture notes in statistics, vol. 4. — Un vol. broché, 18 × 25, de VIII, 199 p. — Prix: FS 93.00. — Marcel Dekker, New York/Basel, 1983.

Reliability theory has been and continues to be an active area of research. This volume contains the invited papers presented at the combined Office of Naval Research (ONR) and the Army Research Office (ARO) reliability workshop held in Washington, D.C. in 1981. The objectives of this "state-of-the-art" workshop were to review recent developments in reliability research and to provide a forum to facilitate communications between Department of Defense personnel and academic researchers.

ARNAUD BEAUVILLE. — **Complex algebraic surfaces.** — London mathematical society lecture note series, vol. 68. — Un vol. broché, 15 × 23, de 132 p. — Prix: £10.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

The Picard group and the Riemann-Roch theorem. — Birational maps. — Ruled surfaces. — Rational surfaces. — Castelnuovo's theorem, and applications. — Kodaira dimension. — Surfaces with $\kappa = 0$. — Surfaces with $\kappa = 1$ and elliptic surfaces. — Surfaces of general type. — Characteristic p .

Proceedings of the First international conference on teaching statistics, Volumes 1 and 2. — Ed. by D. R. Grey, P. Holmes, V. Barnett and G. M. Constable. — Deux volumes brochés, $14,5 \times 21$, de XII, 426 p. et XII, p. 431-836. — Prix: £10.50. — University of Sheffield, Department of Probability and statistics, 1983.

The 1st International conference on teaching statistics, sponsored by the International statistical institute, was held in the University of Sheffield, England, from 9-13 August 1982. Plenary speakers were V. Barnett, J. Gani, L. Råde and C. R. Rao. Invited papers were given on teaching statistics in schools, teaching statistics to non-statisticians, developing teaching materials at the school level, training teachers of statistics, using calculators and computers in teaching statistics, teaching statistics with the help of case studies, training statistical practitioners, education and training in statistics in developing countries, cooperation between academic and practising statisticians, teaching survey sampling, teaching design and analysis of experiments, training industrial practitioners and on the principles of learning probability and statistics.

Topological topics. — Articles on algebra and topology presented to P. J. Hilton in celebration of his 60th birthday. — London mathematical society lecture note series, vol. 86. — Un vol. broché, 15×23 , de 184 p. — Prix: £11.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

P. Hilton, one of the best known mathematicians of his generation, has published over 300 books and papers on various aspects of topology and algebra. The volume, celebrating the occasion of his 60th birthday, begins with a bibliography of his work, followed by reviews of his contributions to topology and algebra. These are followed by 11 research papers concerned with various topics of current interest in algebra and topology. The articles are contributed by some of the many mathematicians with whom he has worked at one time or another.

Life science models. — Ed. by Helen Marcus-Roberts and Maynard Thompson. — Modules in applied mathematics, vol. 4. — Un vol. relié, 16×24 , de XX, 366 p. — Prix: DM 72.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

F. C. Hoppensteadt: Population mathematics. — *Robert E. Fennell*: Population growth: an age structure model. — *H. Marcus-Roberts*: A comparison of some deterministic and stochastic models of population growth. — *H. R. van der Vaart*: Some examples of mathematical models for the dynamics of several-species ecosystems. — *H. Marcus-Roberts and F. S. Roberts*: Malaria: models of the population dynamics of the malaria parasite. — *D. Ludwig and B. D. Haytock*: MacDONALD's work on helminth infections. — *M. Braun*: A model for the spread of gonorrhoea. — *H. Marcus-Roberts*: DNA, RNA, and random mating: simple applications of the multiplication rule. — *D. A. Drew*: Cigarette filtration. — *F. S. Roberts*: Efficiency of energy use in obtaining food, I: humans. — *F. S. Roberts and H. Marcus-Roberts*: Efficiency of energy use in obtaining food, II: animals. — *D. L. Solomon*: The spatial distribution of cabbage butterfly eggs.

J. NAGATA. — **Modern dimension theory.** — Revised and extended edition. — Sigma series in pure mathematics, vol. 2. — Un vol. broché, 17×24 , de IX, 284 p. — Prix: DM 68.00. — Heldermann Verlag, Berlin, 1983.

This is a revised edition of the text published in 1964. Since the original edition appeared 17 years ago, there have been remarkable developments in dimension theory.

Especially on non-metrizable spaces. Thus a large scale of revisions and additions was made on the original texts. For example, the chapter on dimension of non-metrizable spaces was wholly rewritten, and the chapter on infinite-dimensional spaces was greatly innovated by adding two new sections. A new section on Pontrjagin-Schnirelmann's theorem was added, and many smaller revisions and additions both in the contents and descriptions are found in the new edition.

Alan HOLDEN. — **Orderly tangles: cloverleaves, Gordian knots, and regular polylinks.** — Un vol. relié, 18 × 24, de x, 97 p. — Prix: 26.00. — Columbia university press, New York, 1983.

Highway interchanges. — Nets, knots, and noknots. — Gordian knots. — Cat's cradle. — Chained polylinks. — Regular polylinks. — Appendix, bibliography. This exploration of topological phenomena such as rings, knots and chains, stands on its own as a captivating and informative look at the tangles of everyday life. Most importantly, the notion of "regular polylinks" is detailed, putting on record ideas developed from classical geometry.

Serge LANG. — **Undergraduate analysis.** — Undergraduate texts in mathematics. — Un vol. relié, 16 × 24, de xiii, 545 p. — Prix: DM 94.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

Part 1: Review of calculus: Sets and mappings. Real numbers. Limits and continuous functions. Differentiation. Elementary functions. The elementary real integral. — *Part 2: Convergence*: Normed vector spaces. Limits. Compactness. Series. The integral in one variable. — *Part 3: Applications of the integral*: Approximation with convolutions. Fourier series. Improper integrals. The Fourier integral. — *Part 4: Calculus in vector spaces*: Functions on n-space. Derivatives in vector spaces. Inverse mapping theorem. Ordinary differential equations. — *Part 5: Multiple integration*: Multiple integrals. Differential forms. (This book is a revised version of "Analysis I", published in 1968).

John L. TROUTMAN. — **Variational calculus with elementary convexity.** — Undergraduate texts in mathematics. — Un vol. relié, 16 × 24, de xiv, 364 p. — Prix: DM 86.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

This book is an introduction to the use of variational methods in the formulation and solution of problems of both mathematical and physical interest. It utilizes rudiments of analysis in (normed) linear spaces and the elements of convexity for differentiable functions to obtain exact solutions to most of the standard problems in the literature. It is the first exposition to make systematic use of elementary (partial) convexity of differentiable functions in Euclidean space, both to characterize directive solutions for many minimization problems, and to serve as a prelude to the field theory for sufficiency.

Sibylla PRIESS-CRAMPE. — **Angeordnete Strukturen: Gruppen, Körper, projektive Ebenen.** — Ergebnisse der Mathematik und ihrer Grenzgebiete, Band 98. — Un vol. relié, 17 × 25, de xii, 286 p. — Prix: DM 178.00. — Springer-Verlag: Berlin/Heidelberg/New York/Tokyo, 1983.

Dieser Ergebnisbericht gibt eine langerwartete, gründliche und umfassende Darstellung des Gebietes der angeordneten Gruppen, Körper und projektiven Ebenen. Sätze

und Methoden, die sowohl für angeordnete Gruppen und Körper gelten und auch sinnvolle Verallgemeinerungen auf projektive Ebenen haben, stehen im Mittelpunkt dieses Bandes. Als Beispiel sei die Klassifizierung archimedisch angeordneter Gruppen, Körper und projektiver Ebenen genannt. Ein ausführliches Literaturverzeichnis ermöglicht eine gute Orientierung über Ergebnisse auch aus angrenzenden Gebieten.

Alan F. BEARDON. — **The geometry of discrete groups.** — Graduate texts in mathematics, vol. 91. — Un vol. relié, 16 × 24, de XII, 337 p. — Prix: DM 108.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Preliminary material. — Matrices. — Möbius transformations on R^n . — Complex Möbius transformations. — Discontinuous groups. — Riemann surfaces. — Hyperbolic geometry. — Fuchsian groups. — Fundamental domains. — Finitely generated groups. — Universal constraints on Fuchsian groups. This is an introductory account of the geometry of the discontinuous actions of groups of Möbius transformations in n -dimensions. It is the first comprehensive introduction to the field, accessible as a text to beginning graduate students.

Manuel LERMAN. — **Degrees of unsolvability: local and global theory.** — Perspectives in mathematical logic. — Un vol. relié, 17 × 25, de XIII, 307 p. — Prix: DM 138.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

The book begins with basic results, and proceeds by developing a structure theory for the degrees while simultaneously showing how the structural results can be used to obtain global results. Most of the recent results in the area are included. Within each part of the book, the chapters are ordered by increasing difficulty. A forcing approach is used as much as possible in order to unify the material. The book contains a simpler new proof of the author's result about initial segments below the degree $0'$ which is the basis for many of the recently proved results about the degrees below $0'$.

J. L. LIONS. — **Contrôle des systèmes distribués singuliers.** — Méthodes mathématiques de l'informatique, vol. 13. — Un vol. relié, 16 × 25, de XXIII, 448 p. — Prix: FF 285.00. — Gauthier-Villars, Paris, 1983.

Les systèmes gouvernés par des équations aux dérivées partielles sont dits « systèmes distribués »; ils sont singuliers lorsque les équations considérées sont instables (phénomènes d'explosion, par exemple), ou bien ont des solutions multiples (bifurcations) ou encore n'ont pas en général de solution du tout (problèmes mal posés). Le contrôle de tels systèmes intervient dans diverses questions: biochimie (réactions enzymatiques), transport d'énergie électrique, plasmas, etc. Le présent ouvrage donne les fondements de la théorie « singulière » et étudie notamment le système d'optimalité singulier qui généralise le système d'optimalité dont la structure est généralement connue dans les cas « ordinaires » (non singuliers). Les démonstrations reposent sur des estimations a priori dans les équations aux dérivées partielles, sur la méthode de pénalisation, sur l'usage de certains espaces d'interpolation et sur des résultats d'unicité pour des problèmes d'équations aux dérivées partielles linéaires mais à coefficients réguliers.

Roger TEMAM. — **Problèmes mathématiques en plasticité.** — Méthodes mathématiques de l'informatique, vol. 12. — Un vol. relié, 16 × 25, de 353 p. — Prix: FF 230.00. — Gauthier-Villars, Paris, 1983.

Cet ouvrage a pour objet l'étude d'un certain nombre de problèmes mathématiques posés par la plasticité. Du point de vue de la mécanique non linéaire, les modèles considérés ici sont des modèles statiques en plasticité parfaite et en petites déformations, du type de Hencky. Du point de vue mathématique, ces modèles conduisent à des problèmes de calcul des variations qui échappaient aux méthodes de traitement connues en raison d'un manque de coercivité et de l'existence prévisible de solutions discontinues. L'ouvrage fait le point sur des recherches récentes qui ont abouti à l'introduction d'un ensemble d'outils et d'un cadre fonctionnel adaptés aux problèmes mathématiques de la plasticité ainsi qu'à la prise en compte des singularités du problème.

Wolf D. BEIGLBOECK. — **Lineare Algebra: eine anwendungsorientierte Einführung in die Geometrie, die Gleichungs- und Ungleichungstheorie sowie die Proportionalitätsgesetze zum Gebrauch neben Vorlesungen.** — Un vol. broché, 16,5 × 24, de xxv, 296 p. — Prix: DM 39.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Einleitung. — Motivation. — Lineare Räume. — Die lineare Abbildung. — Die linearen Gleichungen. — Die affine Geometrie. — Die linearen Funktionale. — Die metrischen Strukturen. — Die Rolle der komplexen Zahlen. — Die Reduktions-theorie. — Anhänge.

Lars HÖRMANDER. — **The analysis of linear partial differential operators, volumes I and II.** — Grundlehren der mathematischen Wissenschaften, 256 and 257. — Deux volumes reliés, de 16 × 24, de x, 391 p. et viii, 391 p. — Prix: DM 98.00. et DM 124.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This is an updated and greatly extended version of Hörmander's previous treatment of techniques and results in the theory of linear partial differential operators. Volume I (Distribution theory and Fourier analysis) is primarily directed to a broad range of students with an interest in analysis, assuming a basic knowledge of advanced calculus, integration theory, and some functional analysis. Hörmander places a special emphasis on Fourier analysis, particularly its important microlocal aspects. These are also discussed in the wider framework of hyperfunction theory, providing a useful introduction (in the spirit of Schwartz distributions) to harmonic analysis and to the analytic theory of partial differential equations. Volume II is a systematic study of partial differential operators with constant coefficients, and some of their perturbations, New chapters cover convolution operators, scattering theory, and methods from the theory of analytic functions of several complex variables. This volume (and the projected volume III) are more advanced, and directed to research workers and graduate students in mathematics and mathematical physics.

B. L. VAN DER WAERDEN. — **Geometry and algebra in ancient civilizations.** — Un vol. relié, 17 × 25, de xii, 223 p. — Prix: DM 78.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Algebra and geometry have been central subjects of mathematics through the ages. Traditionally, their history has been traced back through the Greeks to Babylon and Egypt, where there was a flourishing study of arithmetic, geometry, and particularly

the solution of algebraic equations. But this conception has been complicated by recent discoveries: use of the *Pythagorean theorem* is apparent in Hindu altar constructions; *Pythagorean triangles* are evident in the construction of megalithic monuments in southern England and Scotland; and the comparison of an ancient Chinese treatise with its Babylonian counterparts suggests a common pre-Babylonian source. Combining these findings, B. L. van der Waerden gives a conjectural reconstruction of a mathematical science which existed in the Neolithic age, spreading later from Central Europe to Great Britain, to the Near East, to India and to China.

J. TITS. — **Liesche Gruppen und Algebren.** — Unter Mitarbeit von M. Krämer und H. Scheerer. — Hochschultext. — Un vol. broché, 16,5 × 24, de xiv, 242 p. — Prix: DM 36.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Grundbegriffe: Topologische Mannigfaltigkeiten. Differenzierbare und analytische Mannigfaltigkeiten. Topologische und analytische Gruppen. Untergruppen. — *Ueberlagerungstheorie*: Ueberlagerungen. Einfacher Zusammenhang. Universelle Ueberlagerung und Fundamentalgruppe. Lokal isomorphe Gruppen. — *Differentialtheorie und Liesche Algebren*: Allgemeines. Differentialelemente einer Lieschen Gruppe. Der Kommutator. Liesche Algebren, Sätze von Lie. Das Zusammenspiel von Liealgebra und Liegruppe. — *Einige Struktursätze*: Auflösbare Gruppen. Nilpotente Gruppen und Algebren. Halbeinfache Algebren und Gruppen. Erwähnung einiger weiterer Sätze über Liesche Algebren. Klassifikation der komplexen einfachen Liealgebren und Liegruppen. Reelle einfache Liealgebren und Liegruppen.

Bruce L. REINHART. — **Differential geometry of foliations: the fundamental integrability problem.** — Ergebnisse der Mathematik und ihrer Grenzgebiete, vol. 99. — Un vol. relié, 17 × 25, de x, 195 p. — Prix: DM 98.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Differential geometric structures and integrability: Pseudogroups and groupoids. Foliations. The integrability problem. Vector fields and Pfaffian systems. Leaves and holonomy. Examples of foliations. — *Prolongations, connections, and characteristic classes*: Truncated polynomial groups and algebras. Prolongation of a manifold. Higher order structures. Connections and characteristic classes. Foliations, connections, and secondary classes. — *Singular foliations*: The classifying space for a topological groupoid. Vector fields and the cohomology of Lie algebras. Frobenius structures. — *Metric and measure theoretic properties of foliations*: Analytic background. Measure, volume and foliations. Foliations of a Riemannian manifold. Riemannian foliations. Foliations with a few derivatives.

M. R. LEADBETTER, Georg LINDGREN and Holger ROOTZEN. — **Extremes and related properties of random sequences and processes.** — Springer series in statistics. — Un vol. relié, 16 × 24, de xii, 336 p. — Prix: DM 89.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Classical theory of extremes: Asymptotic distributions of extremes. Exceedances of levels and *k*th largest maxima. — *Extremal properties of dependent sequences*: Maxima of stationary sequences. Normal sequences. Convergence of the point process of exceedances, and the distribution of *k*th largest maxima. Nonstationary, and strongly dependent

normal sequences. — *Extreme values in continuous time*: Basic properties of extremes and level crossings. Maxima of mean square differentiable normal processes. Point processes of upcrossings and local maxima. Sample path properties at upcrossings. Maxima and minima and extremal theory for dependent processes. Maxima and crossings of nondifferentiable normal processes. Extremes of continuous parameter stationary processes. — *Applications of extreme value theory*: Extreme value theory and strength of materials. Application of extremes and crossings under dependence. — *Appendix*: Some basic concepts of point process theory.

Thomas BANCHOFF, John WERMER. — **Linear algebra through geometry**. — Undergraduate texts in mathematics. — Un vol. relié, 16 × 24, de x, 257 p. — Prix: DM 64.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Vectors in the line. — The geometry of vectors in the plane. Transformations of the plane. Linear transformations and matrices. Sums and products of linear transformations. Inverses and systems of equations. Determinants. Eigenvalues. Classification of conic sections. Differential systems. — Vector geometry in 3-space. Transformations of 3-space. Linear transformations and matrices. Sums and products of linear transformations. Inverses and systems of equations. Determinants. Eigenvalues. Symmetric matrices. Classification of quadric surfaces. — Vector geometry in 4-space. Transformations of 4-space. Linear transformations and matrices. — Homogeneous systems of equations. Subspace, linear dependence, dimension. Inhomogeneous systems of equations.

Cryptography: proceedings of the workshop on cryptography, Burg Feuerstein, Germany, March 29-April 2, 1982. — Edited by Thomas Beth. — Lecture notes in computer science, vol. 149. — Un vol. broché, 16,5 × 24,5, de viii, 402 p. — Prix: DM 43.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

The book contains the proceedings of a workshop on cryptography that took place from March 29 to April 2, 1982, at Burg Feuerstein. There were 76 participants from 14 nations. The volume contains 26 articles altogether. The introduction is an expository survey for non-specialists and places in context the other papers submitted. These are grouped into sections within which they are arranged with regard to content. The editor has refrained from judging the significance or consistency of all the results. Together with its rather extensive (doubly linked) bibliography, the book could be used as a self-contained text.

Ludger KAUP, Burchard KAUP. — **Holomorphic functions of several variables: an introduction to the fundamental theory**. — With the assistance of Gottfried Barthel, translated by Michael Bridgland. — De Gruyter studies in mathematics, vol. 3. — Un vol. relié, 17,5 × 24,5, de xvi, 350 p. — Prix: DM 112.00. — Walter de Gruyter, Berlin/New York, 1983.

Written with the graduate student in mind, this book develops the theory of several complex variables in great detail, including complete proofs up to the coherence theorems of Oka and Cartan, the finite coherence theorem of Grauert-Remmert, the theorems A and B (with applications) and the finiteness theorem of Cartan-Serre, Grauert's solution of the Levi problem; dimension theory, quotients of complex spaces, normalization. *Contents*: *Function theory on domains in C^n* : Elementary properties of holo-

morphic functions. Regions of holomorphy. — *Function theory on analytic sets*: The Weierstrass preparation theorem and its applications. Complex manifolds and the elementary theory of complex spaces. Complex spaces. — *Function theory on Stein spaces*: Applications of theorem B. Proof of theorem B. Normal complex spaces. List of examples.

Herbert AMANN. — **Gewöhnliche Differentialgleichungen.** — De Gruyter Lehrbuch. — Un vol. relié, 16 × 23,5, de XI, 497 p. — Prix: DM 59.00. — Walter de Gruyter, Berlin/New York, 1983.

Einführung. — Existenz- und Stetigkeitssätze. — Lineare Differentialgleichungen. — Qualitative Theorie. — Periodische Lösungen. — Kontinuitäts- und Bifurkationsprobleme. Der Autor entwickelt die Theorie der gewöhnlichen Differentialgleichungen bis hin zur aktuellen Forschung. Dabei liegt das Schwergewicht der Darstellung auf der dynamischen Theorie, insbesondere auf der qualitativen Theorie und der Theorie der periodischen Lösungen. Besonders hervorzuheben ist eine vollständige Darstellung der Hopf-Verzweigung periodischer Lösungen, die von grossem aktuellem Interesse ist und bisher in keinem Lehrbuch behandelt wurde. Die Theorie der Flüsse, die Theorie der Linearisierungen in der Nähe kritischer Punkte, die Bifurkationstheorie sowie die Theorie des Abbildungsgrads sind weitere erstmals in einem Lehrbuch abgehandelte Stoffgebiete.

M. I. YADRENKO. — **Spectral theory of random fields.** — Translation series in mathematics and engineering. — Un vol. broché, 16,5 × 24, de VII, 259 p. — Prix: DM 68.00. — Optimization Software Inc., Los Angeles & Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

The spectral theory of random fields is currently a very active area because of increasing application to filtering problems in optics, in geodesy, in bathymetry, and in the processing of spatially distributed data generally. This book is the first of its kind to present a unified treatment of the current state of knowledge in this area, bringing together hitherto scattered results. The author gives a definitive account of the spectral theory of homogeneous, isotropic fields, including a wealth of concrete formulas relevant to applications. Equally extensive is the treatment of likelihood ratios, and the associated theory of the absolute continuity of measures induced by random fields. Important related problems of estimation theory, such as prediction and extrapolation, optimal regression, mean value estimation, etc. are discussed also.

Daniel W. STROOCK. — **Lectures on topics in stochastic differential equations.** — Notes by S. Karmakar. — Tata institute lectures on mathematics, vol. 68. — Un vol. broché, 17,5 × 24, de VII, 91 p. — Prix: DM 16.00. — Tata institute of fundamental research, Bombay & Springer-Verlag, Berlin/Heidelberg/New York, 1982.

The properties of solutions of stochastic differential equations constituted the basic subject matter of the lectures which the author gave at the Tata institute in December 1980 and January 1981 and which gave rise to these notes. The first chapter studies the solution of stochastic differential equations as a function of the initial point, giving more attention to integrability estimates than do other existing treatments. The second chapter deals with these solutions as a function of time.

R. PIESSENS, E. de DONCKER-KAPENGA C. W. UEBERHUBER, D. K. KAHANER. — **QUADPACK: a subroutine package for automatic integration.** — Springer series in computational mathematics, vol. 1. — Un vol. broché, 15 × 23, de VIII, 301 p. — Prix: DM 54.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

QUADPACK presents a program package for automatic integration covering a wide variety of problems and various degrees of difficulty. After a theoretical explanation of the quadrature methods, the algorithms used by the integrators are described, providing a detailed outline of the automatic integration strategies. The results for a set of parameter studies reveal efficiency and adequacy for wide ranges of problems. Applications are discussed for solving more complex problems, including double integration, computation of the Hankel transform, and inversion of the Laplace transform.

Computer science and statistics: proceedings of the 14th symposium on the interface. — Ed. by K. W. Heiner, R. S. Sacher, J. W. Wilkinson. — Un vol. broché, 21,5 × 28, de XI, 313 p. — Prix: DM 59.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Graphics software and techniques. — Probabilistic analysis of algorithms. — Computational aspects associated with robustness in statistics. — Graphical data analysis and its applications. — Symbolic computing and statistics. — Software for microcomputers. — Nonparametric statistics. — User interfaces to data analysis systems. — Data analysis in the presence of error. — Difficulties in numerical computation and databases. — Categorical data and generalized linear models. — Computer science, statistics and graphics: the interface. — Implementation strategies for statistical methods.

Joachim PIEHLER. — **Algebraische Methoden in der ganzzahligen Optimierung.** — Teubner-Texte zur Mathematik, Band 51. — Un vol. broché, 14,5 × 21, de 99 p. — Prix: DM 11.00. — B. G. Teubner, Leipzig, 1983.

Die ganzzahlige Optimierung ist ein Teilgebiet der mathematischen Optimierung, das jedoch wegen der Diskretheit der Variablen spezielle Untersuchungsmethoden erfordert. Die in der Theorie der mathematischen Optimierung wesentlichen Methoden der Analysis spielen hier keine Rolle, vielmehr sind Gruppentheorie, Zahlentheorie und Graphentheorie von Bedeutung. Gegenstand des vorliegenden Buches sind die Beziehungen der ganzzahligen Optimierung zu diesen Gebieten, wobei es sich allerdings nur um eine Auswahl handeln kann. Die Beschränkung auf den rein ganzzahligen Fall lässt die Zusammenhänge deutlicher hervortreten und gestattet zugleich einen weiteren Ausbau der Theorie.

Bernd LISEK & Johannes HOCHSCHILD. — **Sequentielle Zuverlässigkeitsprüfung.** — Teubner-Texte zur Mathematik, Band 53. — Un vol. broché, 14,5 × 21, de 152 p. — Prix: DM 16.00. — B. G. Teubner, Leipzig, 1983.

Das mathematische Modell der Zuverlässigkeitsprüfung. — Testproblem und Nebenbedingungen. — Nichtsequentielle Prüfungen. — Grundlagen der mathematischen Theorie sequentieller Prüfungen. — Gestützte sequentielle Prüfungen. — Vertrauensbereiche. — Modifizierte Aufgabenstellungen.

H. BAUERSFELD, H. BUSSMANN, G. KRUMMHEUER, J. H. LORENZ, J. VOIGT. — **Lernen und Lehren von Mathematik: Analysen zum Unterrichtshandeln II.** — IDM-Reihe: Untersuchungen zum Mathematikunterricht, Band 6. — Un vol. broché, 14 × 21, de x, 283 p. — Prix: DM 39.00. — Aulis Verlag Deubner & Co., Köln, 1983.

Subjektive Erfahrungsbereiche als Grundlage einer Interaktionstheorie des Mathematiklernens und -lehrens. — Das Arbeitsinterim im Mathematikunterricht. — Rechenschwäche: ihre symptomatik Anhand von Fallbeispielen. — Die heimliche Organisation von Aufgabelösungsprozessen im Mathematikunterricht einer achten Klasse. — Vom Menschenbild in der gegenwärtigen Mathematikdidaktik oder über die Bedingungen mathematischer Fähigkeitsprozesse.

Advances in Hamiltonian systems. — Ed. by J. P. Aubin, A. Bensoussan, I. Ekeland. — Annals of the CEREMADE. — Un vol. relié, 15,5 × 23,5, de VIII, 195 p. — Prix: FS 46.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

A. Ambrosetti: Recent advances in the study of the existence of periodic orbits of Hamiltonian systems. — *V. Benci*: The direct method in the study of periodic solutions of Hamiltonian systems with prescribed period. — *G. Mancini*: Periodic solutions of Hamiltonian systems having prescribed minimal period. — *I. Ekeland and J.-M. Lasry*: Duality in non convex variational problems. — *P. Bernhard*: La théorie de la seconde variation et le problème linéaire quadratique. — *J. Blot*: Méthodes asymptotiques dans l'étude de systèmes hamiltoniens non autonomes. — *E. Gaussens*: Numerical research of periodic solutions for a Hamiltonian system.

K. L. CHUNG, R. J. WILLIAMS. — **Introduction to stochastic integration.** — Progress in probability and statistics, vol. 4. — Un vol. relié, 15,5 × 23,5, de XIII, 191 p. — Prix: FS 49.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Contents: Preliminaries. — Definition of the stochastic integral. — Extension of the predictable integrands. — Quadratic variation process. — The Ito formula. — Applications of the Ito formula. — Local time and Tanaka's formula. — Reflected Brownian motions. — Generalized Ito formula and change of time. This book provides an introduction to stochastic integration, combining the developments of the basic theory with applications of it. Using the modern approach, the stochastic integral is defined for "predictable" integrands and martingales. Applications include a characterization of Brownian motion, Hermite polynomials of martingales, the Feynman-Kac functional, and Schrödinger equations. Attention is focused on the canonical case when M is a Brownian motion in discussions of local time and Tanaka's formula, reflected Brownian motion and change of time.

Séminaire de probabilités XVII, 1981/82: proceedings. — Edité par J. Azéma et M. Yor. — Lecture notes in mathematics, vol. 986. — Un vol. broché, 16,5 × 24, de v, 512 p. — Prix: DM 62.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This 17th volume of the "Séminaire de probabilités" deals with topics within the theory of processes, Markov processes, and stochastic calculus. — 43 exposés par: F. B. Knight. — J. F. Le Gall. — M. T. Barlow, E. Perkins. — P. Protter, A. S. Sznitman. — E. Perkins. — S. Weinryb. — J. A. Yan. — J. F. Le Gall, M. Yor. — S. D. Jacka. — C. S. Chou. —

J. A. Yan. — M. O. Gebuhrer. — M. Pratelli. — K. Bichteler, J. Jacod. — R. Leandre. — J. Y. Calais, M. Genin. — S. W. He, J. A. Yan, W.A. Zheng. — M. Emery. — P. A. Meyer. — G. C. Price, D. Williams. — R. L. Karandikar. — M. F. Chen, D. W. Stroock. — R. F. Bass. — I. Meilijson. — P. Vallois. — P. J. Holewijn, I. Meilijson. — D. Aldous. — R. Aboulaich, C. Stricker. — M. Pratelli. — E. Lengart. — S. W. He. — H. Doss, P. Priouret. — J. Memin. — M. Ledoux. — D. Nualart. — G. Mazziotto. — V. Mandrekar. — D. Bakry. — M. Talagrand.

Angelo B. MINGARELLI. — **Volterra-Stieltjes integral equations and generalized ordinary differential expressions.** — Lecture notes in mathematics, vol. 989. — Un vol. broché, $16,5 \times 24$, de xiv, 318 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Comparison theorems for Stieltjes integro-differential equations. — Separation theorems. — The Green's function. — Non-oscillation criteria for linear Volterra-Stieltjes integral equations. — Oscillation criteria. — An oscillation theorem in the nonlinear case. — Generalized derivatives. — Generalized differential expressions of the second order. — The Weyl classification. — Applications. — Limit-point and limit-circle criteria. — J -self-adjointness of generalized differential operators. — Dirichlet integrals associated with generalized differential expressions. — Dirichlet conditions for three-term recurrence relations. — Sturm-Liouville difference and differential equations with an indefinite weight-functions. — The discrete spectrum of generalized differential operators. — The continuous spectrum of generalized differential operators. — Functions of bounded variation. — The Riemann-Stieltjes integral. — General theory of Volterra-Stieltjes integral equations. — Construction of the Green's function. — Compactness in L^p and other spaces. — Eigenvalues of generalized differential equations. — Linear operators in a Hilbert and in a Krein space. — Formally self-adjoint even order differential equations with an indefinite weight-function.

Harmonic analysis. — Proceedings of a conference held in Cortona, Italy, July 1-9, 1982. — Edited by Giancarlo Mauceri, Fulvio Ricci and Guido Weiss. — Lecture notes in mathematics, vol. 992. — Un vol. broché, $16,5 \times 24$, de x, 449 p. — Prix: DM 55.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

26 exposés par: R. R. Coifman, Y. Meyer and E. M. Stein. — R. Johnson. — P. Sjögren. — M. G. Cowling. — W. Strauss and S. Wainger. — S. Janson, M. Taibleson and G. Weiss. — P. M. Sordi. — L. Colzani. — S. Poornima. — N. Danikas and V. Nestoridis. — E. M. Stein. — F. Soria. — S. Semmes. — S. Bloom. — J. J. Benedetto and H. P. Heinig. — M. Cotlar and C. Sadosky. — R. Blei. — C. Karanikas. — A. M. Manteo and A. Zappa. — A. Iozzi and M. A. Picardello. — M. Rigoli and G. Travaglini. — H. M. Reimann. — J. E. Gilbert, R. A. Kunze, R. J. Stanton and P. A. Tomas. — A. Kaplan and F. Ricci. — L. Accardi and C. Cecchini. — M. Cowling and J. F. Price.

Jean-Lin JOURNÉ. — **Calderon-Zygmund operators, pseudo-differential operators and the Cauchy integral of Calderon.** — Lecture notes in mathematics, vol. 994. — Un vol. broché, $16,5 \times 24$, de vi, 128 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

In this research monograph, a great deal of material which would otherwise be scattered in the literature is collected together and, at least in part, simplified. The reason for

doing this is that the techniques employed, originally developed to study convolution kernels, turned out to have applications in a much wider field. They are usually referred to as real variable techniques: in combination with some older ones involving complex variables and Fourier transform, they led to Calderon's theorem in 1977 and found new applications in PDEs or in operator theory. Hence, this book addresses harmonic analysts, as well as graduate students interested in harmonic analysis, since it is essentially self-contained.

Probability in Banach spaces IV. — Proceedings of the seminar held in Oberwolfach, Germany, July 1982. — Ed. by A. Beck and K. Jacobs. — Lecture notes in mathematics, vol. 990. — Un vol. broché, 16,5 × 24, de v, 234 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

A. de Acosta, J. Kuelbs, and M. Ledoux: An inequality for the law of the iterated logarithm. — *S. Chevet*: Gaussian measures and large deviations. — *J. P. R. Christensen, and Paul Ressel*: Norm-dependent positive definite functions on B -spaces. — *E. Dettweiler*: Banach space valued processes with independent increments and stochastic integration. — *E. Eberlein*: On the covariance function of Banach space valued very weak Bernoulli processes. — *A. Ehrhard*: Un principe de symétrisation dans les espaces de Gauss. — *E. Giné*: A counterexample on domains of partial attraction in Banach spaces. — *E. Giné, M. G. Hahn and J. Zinn*: Limit theorems for random sets: an application of probability in Banach space results. — *B. Heinkel*: Majorizing measures and limit theorems for c_0 -valued random variables. — *M. Ledoux*: Sur les théorèmes limites dans certains espaces de Banach lisses. — *V. Mandrekar*: Some remarks on various definitions of Feynman integral. — *V. Paulauskas*: On the density of the norm of Gaussian vector in Banach spaces. — *K. D. Schmidt*: On the Jordan decomposition for vector measures. — *M. Weber*: Polar sets of some Gaussian processes. — *W.A. Woyczynski*: Survey of asymptotic behavior of sums of independent random vectors and general martingales in Banach spaces. — *A. Hertle*: On the asymptotic behaviour of Gaussian spherical integrals.

Banach space theory and its applications. — Proceedings of the first Romanian-GDR seminar held at Bucharest, Romania, August 31-September 6, 1981. — Edited by A. Pietsch, N. Popa, and I. Singer. — Lecture notes in mathematics, vol. 991. — Un vol. broché, 16,5 × 24, de x, 302 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

26 exposés par: J. Arazy. — M. Attéia, J. Audounet. — R. Brigola. — D. van Dulst, B. Sims. — G. Godini. — A. Gulisashvili. — S. Heinrich, C. W. Henson, L. C. Moore. — S. Heinrich, P. Mankiewicz. — J. Hennefeld. — H. U. Hess. — R. C. James. — K. John. — H. Junek. — K. D. Kürsten. — R. H. Lohman. — E. R. Lorch. — R. Mennicken. — K. Musiał. — C. Niculescu. — N. Popa. — G. Racher. — H. U. Schwarz. — I. Stephani. P. Terenzi. — D. Vuza. — D. Yost.

Richard D. BOURGIN. — **Geometric aspects of convex sets with the Radon-Nikodym property.** — Lecture notes in mathematics, vol. 993. — Un vol. broché, 16,5 × 24, de XII, 474 p. — Prix: DM 55.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Background. — Basic results. — Extreme points. — Dual spaces. — Asplund spaces and the *GSP*. — Integral representations. — Selected topics. — This research monograph

is a self-contained survey of results relating the existence of Banach-valued Radon-Nikodym derivatives and the geometry of the spaces containing the ranges of such derivatives. The theory has been localized and appears in the main as a study of certain closed bounded convex subsets — called *RN* sets — of Banach spaces.

Algebraic geometry: open problems. — Proceedings of the conference held in Ravello, May 31-June 5, 1982. — Edited by C. Ciliberto, F. Ghione, and F. Orecchia. — Lecture notes in mathematics, vol. 997. — Un vol. broché, $16,5 \times 24$, de viii, 411 p. — Prix: DM 49.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This volume contains research papers reflecting recent developments, dealing in particular with such promising fields as classification of varieties, moduli problems, singularities, and vector bundles. A few contain, where useful, some survey material and known results; many, in line with the idea of the conference, point out interesting open problems.

Recent developments in the algebraic, analytical, and topological theory of semigroups. — Proceedings of a conference held at Oberwolfach, Germany, May 24-30, 1981. — Edited by K. H. Hofmann, H. Jürgensen, and H. J. Weinert. — Lecture notes in mathematics, vol. 998. — Un vol. broché, $16,5 \times 24$, de vi, 486 p. — Prix: DM 55.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

About one half of the contributions reproduced in these proceedings cover the algebraic theory of semigroups, while the other half concerns topological semigroups, Lie semigroups, and functional analytic questions in the context of semigroup theory. Whilst in the main research articles, some contributions are broad enough to serve as introductions to an entire subspeciality. Further, a few papers are expository and reflect recent developments in their respective areas.

Chris PRESTON. — **Iterates of maps on an interval.** — Lecture notes in mathematics, vol. 999. — Un vol. broché, $16,5 \times 24$, de vii, 205 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Introduction. — Piecewise monotone functions. — Well-behaved piecewise monotone functions. — Property R and negative Schwarzian derivatives. — The iterates of functions in S. — Reductions. — Getting rid of homtervals. — Kneading sequences. — An “almost all” version of theorem. — Occurrence of the different types of behaviour.

Heinz HOPF. — **Differential geometry in the large: seminar lectures New York University 1946, and Stanford University, 1956.** — With a preface by S. S. Chern. — Lecture notes in mathematics, vol. 1000. — Un vol. broché, $16,5 \times 24$, de vii, 184 p. — Prix: DM 26.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Selected topics in geometry (New York University 1946, notes by Peter Lax): The Euler characteristic and related topics. Selected topics in elementary differential geometry. The isoperimetric inequality and related inequalities. The elementary concept of area and volume. — *Differential geometry in the large* (Stanford University 1956, notes by J. W. Gray): Differential geometry of surfaces in the small. Some general remarks on

closed surfaces in differential geometry. The total curvature (Curvatura integra) of a closed surface with Riemannian metric and Poincaré's theorem on the singularities of fields of line elements. Hadamard's characterization of the ovaloids. Closed surfaces with constant Gauss curvature (Hilbert's methods) — generalizations and problems — general remarks on Weingarten surfaces. General closed surfaces of genus 0 with constant mean curvature, generalizations. Simple closed surfaces (of arbitrary genus) with constant mean curvature, generalizations. The congruence theorem for ovaloids. Singularities of surfaces with constant negative Gauss curvature.

Albert EDREI, Edward B. SAFF, Richard S. VARGA. — **Zeros of sections of power series.** — Lecture notes in mathematics, vol. 1002. — Un vol. broché, 16,5 × 24, de VIII, 115 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This problem is not new and in first approximation, it was solved by F. Carlson (1924, 1948) and P. S. Rosenbloom (1943). In a paper of fundamental importance, Szegő (1924) studied the case, and treated the zeros of the associated partial sums with surprising accuracy. The authors of the present volume study similar cases, and obtain theorems as precise as those of Szegő. In particular, they establish, for the Mittag-Leffler functions, the Width conjectures of Saff-Varga (1976).

Universal algebra and lattice theory. — Proceedings of the 4th international conference, held at Puebla, Mexico, 1982. — Edited by R. S. Freese and O. C. Garcia. — Lecture notes in mathematics, vol. 1004. — Un vol. broché, 16,5 × 24, de VI, 308 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

C. Bergman: The amalgamation class of a discriminator variety is finitely axiomatizable. — *J. Berman*: Free spectra of 3-element algebras. — *G. Brenner, D. Monk*: Tree algebras and chains. — *S. Burris*: Boolean constructions. — *S. D. Comer*: Extensions of polygroups by polygroups and their representations using color schemes. — *G. Czedli*: A characterization for congruence semi-distributivity. — *A. Day*: Geometrical applications in modular lattices. — *R. Freese*: Subdirectly irreducible algebras in modular varieties. — *W. C. Holland*: A survey of varieties of lattice ordered groups. — *J. Jezek*: On join-indecomposable equational theories. — *J. Jezek, T. Kepka*: Idealfree CIM-groupoids and open convex sets. — *R. McKenzie*: Finite forbidden lattices. — *G. F. McNulty, C. R. Shallon*: Inherently nonfinitely based finite algebras. — *R. S. Pierce*: Tensor products of Boolean algebras. — *F. Poyatos*: G-principal series of stocks in an algebra. — *A. Romanowska*: Algebras of functions from partially ordered sets into distributive lattices. — *I. G. Rosenberg*: Galois theory for partial algebras. — *N. Sauer, M. G. Stone and R. H. Weedmark*: Every finite algebra with congruence lattice M_7 has principal congruences. — *M. R. Vaughan-Lee*: Nilpotence in permutable varieties.

Numerical methods. — Proceedings of the international workshop held at Caracas, June 14-18, 1982. — Edited by V. Pereyra and A. Reinoza. — Lecture notes in mathematics, vol. 1005. — Un vol. broché, 16,5 × 24, de V, 296 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

20 exposés par: E. H. Bareiss. — C. A. Brebbia. — B. Chen Charpentier. — Q. V. Dinh, B. Mantel, J. Periaux, R. Glowinski. — I. Duff. — S. C. Eisenstat. — J. P. Fink, W. C. Rheinboldt. — C. W. Gear, L. R. Petzold. — B. Gustafsson. — R. B. Kearfott. —

D. R. Kincaid, T. C. Oppe. — M. Lentini, A. Reinoza. — G. Miranda, H. Power. — C. A. de Moura. — J. Nokedal and M. L. Overton. — G. Pagallo, C. Maulino. — S. M. Robinson. — R. T. Rockafellar, R. J.-B. Wets. — L. Ruiz. — R. Schreiber.

T. A. CHAPMAN. — **Controlled simple homotopy theory and applications.** — Lecture notes in mathematics, vol. 1009. — Un vol. broché, $16,5 \times 24$, de III, 94 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Applications. — Definitions and notations. — Construction of $Wh(Y)_\varepsilon$. — Functorial properties. — Controlled Whitehead torsion. — Construction of $K_o(Y)_\varepsilon$. — Controlled finiteness obstruction. — Further properties of the controlled finiteness obstruction. — The splitting homomorphism. — The splitting sequence. — The realization theorem. — Calculations. — The controlled boundary theorem. — The controlled s-cobordism theorem.

Jacques-Edouard DIES. — **Chaînes de Markov sur les permutations.** — Lecture notes in mathematics, vol. 1010. — Un vol. broché, $16,5 \times 24$, de IX, 226 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Structures et librairies: Structures de permutation. Librairies, librairies stationnaires. Mesures stationnaires. — *Récurrence des librairies*: Récurrence positive des librairies. Transience des librairies. Variantes mixtes finies des librairies de Tsetlin. — *Géométrie des structures et récurrence des librairies*: Structures récurrentes et structures transientes. Récurrence positive des librairies mixtes. Classification des librairies et des structures mixtes. — *Questions d'optimalité*: Optimalité de la police de transposition. — *Appendice*: Marches aléatoires simultanées. Piles de Tsetlin.

G. I. MARCHUK, V. V. SHAIUROV. — **Difference methods and their extrapolations.** — Applications of mathematics, vol. 19. — Un vol. relié, 16×24 , de X, 334 p. — Prix: DM 148.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

General properties: The simplest example. Expansion theorems. Acceleration of convergence. Correction by higher-order differences. Various extrapolation methods. The effects of computational errors. — *First-order ordinary differential equations*: The Crank-Nicholson scheme. Explicit difference schemes. The splitting-up method for systems of equations. Equations with singularities. — *The one-dimensional stationary diffusion equation*: The Dirichlet problem. Boundary-value problems of the third kind. Equations with discontinuous coefficients. The Sturm-Liouville problem. Improving the accuracy of the finite elements method. The quasilinear problem. — *Elliptic equations*: The statement of the problem. Difference methods for the Dirichlet problem on a domain with a smooth boundary. The Dirichlet problem in a rectangle. A quasilinear equation in a triangular region. On the diffraction problem. On the separation of singularities. — *Nonstationary problems*: The simplest type of parabolic equation. Increasing the accuracy of the splitting-up method. The two-dimensional heat equation. The equation of motion. — *Extrapolation for algebraic problems and integral equations*: Regularization of a singular system of linear algebraic equations. Regularization of a system with a self-adjoint matrix. Extrapolation of solutions containing boundary-layer functions. The Fredholm equation of the second kind. The Volterra equation of the second kind and of the first kind. — *Appendix*: Expansion of difference relations in the mesh-size. On the solution of some special systems of equations. Some results on the Lagrange interpolation polynomials.

P. BAIRD. — **Harmonic maps with symmetry, harmonic morphisms and deformations of metrics.** — Research notes in mathematics, vol. 87. — Un vol. broché, 17 × 24,5, de 181 p. — Prix: £9.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

First constructions. — Isoparametric functions. — The stress-energy tensor. — Equivariant theory. — Examples of equivariant maps. — On certain ordinary differential equations of the pendulum type. — The general theory of harmonic morphisms. — Harmonic morphisms defined by homogeneous polynomials. — Deformations of metrics.

LAWTENCE DRESNER. — **Similarity solutions of nonlinear partial differential equations.** — Research notes in mathematics, vol. 88. — Un vol. broché, 17 × 24,5, de 124 p. — Prix: £ 7.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

This book aims to popularize the method of similarity solutions by teaching it as a practical technique. The author concentrates on the mathematics of partial differential equations while briefly describing the physical background and drawing on illustrative examples from his own work. *Contents*: Ordinary differential equations. — Linear diffusion. — Nonlinear diffusion. — Boundary-layer problems. — Wave propagation problems. — Miscellaneous topics. — Problems. — Solutions to problems.

C. BARDOS, A. DAMLAMIAN, J. I. DIAZ and J. HERNANDEZ. — **Contributions to nonlinear partial differential equations.** — Research notes in mathematics, vol. 89. — Un vol. broché, 17 × 24,5, de 284 p. — Prix: £11.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

This volume contains the proceedings of an international meeting devoted to nonlinear partial differential equations. Most of the communications presented here deal with genuine non-linear problems and they give a comprehensive survey of recent results and applications to realistic problems in physics or engineering (e. g. porous media, combustion, plasma physics, non-linear waves,...). Some communications also deal with linear problems in so far as they are actually motivated by non-linear theory (e. g. Schrödinger equation in L^p -spaces or products of distributions).

M. J. DUPRE and R. M. GILLETTE. — **Banach bundles, Banach modules and automorphisms of C^* -algebras.** — Research notes in mathematics, vol. 92. — Un vol. broché, 17 × 24,5, de 111 p. — Prix: £7.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

This book provides a concise introduction to the basics of bundle theory as needed by the functional analyst and then applies the theory to the problem of classifying certain automorphisms of C^* -algebras. *Contents*: Banach bundles. — Banach modules. — Automorphisms of a C^* -algebra and Hilbert submodules. — Relation to the classical Picard group.

Nonlinear partial differential equations and their applications, Collège de France seminar, volume V. — Edited by H. Brezis and J. L. Lions. — Coordinated by D. Cioranescu. — Research notes in mathematics, vol. 93. — Un vol. broché, 17 × 24,5, de 370 p. —

Prix: £12.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

I. J. Bakelman: Variational problem connected with Monge-Ampère equation. — *M. Ben-Artzi*: Some results in the spectral and scattering theory of Stark-like Hamiltonians. — *P. M. Fitzpatrick*: Global multidimensional existence results for m -parameter compact vector fields. — *S. Kamin*: Elliptic singular perturbation problems with turning points. — *P. L. Lions*: Optimal control of diffusion processes and Hamilton-Jacobi Bellman equations, III-regularity of the optimal cost function. — *F. Mignot, J. P. Puel*: Flambage d'une tige viscoélastique. — *J. C. Saut, B. Scheurer*: Unique continuation and uniqueness of the Cauchy problem for elliptic operators with unbounded coefficients. — *M. Schatzman*: Spatial structuring in a model in neurophysiology. — *R. Sentis*: Equation de Riccati non classique, liée aux équations de transport. — *H. J. Sussman*: On the spatial differential equations of nonlinear filtering.

Convexity and its applications. — Edited by Peter M. Gruber, Jörg M. Wills. — Un vol. relié, 17,5 × 24, de 421 p. — Prix: Sfr. 110.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

A. Bachem: Convexity and optimization in discrete structures. — *C. Bandle*: Isoperimetric inequalities. — *G. D. Chakerian and H. Groemer*: Convex bodies of constant width. — *J. H. H. Chalk*: Algebraic lattices. — *H. S. M. Coxeter*: The twenty-seven lines on the cubic surface. — *W. Fenchel*: Convexity through the ages. — *P. M. Gruber*: Approximation of convex bodies. — *K. Leichtweiss*: Geometric convexity and differential geometry. — *P. McMullen and R. Schneider*: Valuations on convex bodies. — *P. L. Papini*: Minimal and closest points, nonexpansive and quasinonexpansive retractions in real Banach spaces. — *C. M. Petty*: Ellipsoids. — *R. R. Phelps*: Convexity in Banach spaces: some recent results. — *R. Schneider and W. Weil*: Zonoids and related topics. — *G. Fejes Toth*: New results in the theory of packing and covering. — *W. Weil*: Stereology: a survey for geometers. — *J. M. Wills*: Semi-platonic manifolds.

Daoxing XIA. — **Spectral theory of hyponormal operators.** — Operator theory: advances and applications, vol. 10. — Un vol. relié, 17 × 24, de xiv, 241 p. — Prix: FS 54.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Elementary properties of hyponormal operators and semi-hyponormal operators: Introduction and definitions. Some elementary properties of hyponormal and semi-hyponormal operators. Homotopy properties of the spectrum and the spectral cutting. — *Symbols*: The definition of symbols and their basic properties. The symbols of a hyponormal operator and the polar symbols of a semi-hyponormal operator. The projection of the spectrum and the spectral radius. — *Singular integral models*: A class of singular integral operators. Function models of unitary operators and of operators commuting with a unitary operator. Models of operators in SHU and hyponormal operators. The function model of a semi-hyponormal operator. — *Relations between the spectra of semihyponormal operators and those of the general polar symbols*: Spectra of the general symbols. Some lemmas. Spectra of hyponormal and semi-hyponormal operators. — *Mosaics and characteristic functions*: Riemann-Hilbert problems. The mosaics. Determining sets and Putnam inequality. Characteristic functions. Toeplitz operator related to a semi-hyponormal operator. — *Spectral mapping*: Functional transformations of hyponormal operators. Spectral mapping theorems of hyponormal and semi-hyponormal

operators. Estimate of resolvents. Quasi-hyponormal operators. — *Pincus principal functions, traces and determinants*: Traces. Pincus principal functions and the trace formula. The trace formula of a nearly normal operator. Pincus principal functions and determinants. — *Spectral analysis of contractions*: Characteristic functions. Function models. Invariant subspaces.

Dilation theory, Toeplitz operators, and other topics. — 7th international conference on operator theory, Timisoara and Herculane (Romania), June 7-17, 1982. — Edited by C. Apostol, C. M. Pearcy, B. Sz. — Nagy, D. Voiculescu. — Operator theory: advances and applications, vol. 11. — Un vol. relié, 17 × 24, de 408 p. — Prix: FS 74.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

24 exposés par: E. Albrecht, F.-H. Vasilescu. — S. Alpay. — Zoia Ceausescu, I. Suciuc — K. F. Clancey. — L. A. Coburn. — T. Constantinescu. — D. Gurarie, M. A. Kon. — F. Haslinger. — H. Helson. — D. A. Herrero. — J. A. Holbrook. — J. Janas. — B. Kummerer. — N. K. Nikol'skii. — C. Pasnicu. — M. Putinar. — N. Riedel. — N. Salinas. — K. Schmüdgen. — J. Stochel. — J. Stochel, F. H. Szafraniec. — B. Sz.-Nagy, C. Foias. — D. Timotin. — H. Upmeyer.

Optimization: theory and algorithms. — Edited by Jean-Baptiste Hiriart-Urruty, Werner Oettli, Josef Stoer. — Lecture notes in pure and applied mathematics, vol. 86. — Un vol. broché, 18 × 25, de 272 p. — Prix: FS 119.00. — Marcel Dekker, Inc., New York/Basel, 1983.

S. Dolecki: Hypertangent cones for a special class of sets. — *I. Singer*: Optimization by level set methods I: duality formulae. — *J.-E. Martinez-Legaz*: A generalized concept of conjugation. — *E. Cavazzuti, J. Morgan*: Well-posed saddle point problems. — *J.-P. Penot*: Continuity properties of performance functions. — *W. Oettli*: On a general formulation of the Hahn-Banach principle with application to optimization theory. — *J.-J. Strodiot, V. H. Nguyen, N. Heukemes*: A note on the Chebyshev ε -approximation problem. — *H.-P. Blatt, U. Kaiser, B. Ruffer-Beedgen*: A multiple exchange algorithm in convex programming. — *J.-P. Delahaye*: Algorithmes pour extraire une sous-suite convergente d'une suite non convergente. — *J. Stoer*: The n -step square convergence of some minimization algorithms related to Powell's derivative free method. — *P. Cinquin*: Optimal reconstruction of surfaces using parametric spline functions. — *J. Gwinner*: On the penalty method for constrained variational inequalities. — *U. Mackenroth*: Bang-Bang-controls for time-optimal parabolic boundary control problems with integral state constraints. — *B. Rousselet*: Static and dynamic loads, pointwise constraint in structural optimization. — *M. Schäl*: Estimation and control in finite state discounted dynamic programming.

Alessandro FIGA-TALAMANCA, Massimo A. PICARDELLO. — **Harmonic analysis on free groups.** — Lecture notes in pure and applied mathematics, vol. 87. — Un vol. broché, 18 × 25, de 160 p. — Prix: FS 94.00. — Marcel Dekker, Inc., New York/Basel, 1983.

This volume presents the latest findings on the theory of representations and harmonic analysis on free groups. The authors take an original approach to this material, highlighting an important analogy with the theory of representations of noncompact semi-simple Lie groups for which they set up an important discrete model. Contents: Convolution

ution theorems, spherical functions, eigenfunctions of the Laplace operator and representations, unitary representations, uniformly bounded representations, local limit theorems and unitary representations, algebras of coefficients of representations.

Surveys in set theory. — Edited by A. R. D. Mathias. — London mathematical society lecture note series, vol. 87. — Un vol. broché, $15,5 \times 23$, de vi, 247 p. — Prix: £14.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

James E. Baumgartner: Iterated forcing. — *Keith J. Devlin*: The Yorkshireman's guide to proper forcing. — *Saharon Shelah*: The singular cardinals problem, independence results. — *David Guaspari*: Trees, norms and scales. — *Karel Prikry*: On the regularity of ultrafilters. — *Akihiro Kanamori*: Morasses in combinatorial set theory. — *Lee Stanley*: A short course on gap-one morasses with a review of the fine structure of L .

K. P. S. BHASKARA RAO, and M. BHASKARA RAO. — **Theory of charges: a study of finitely additive measures.** — Pure and applied mathematics, vol. 109. — Un vol. relié, $16 \times 23,5$, de x, 315 p. — Prix: £33.40. — Academic press, London/New York/Paris/San Diego/San Francisco/Sao Paulo/Sydney/Tokyo/Toronto, 1983.

Preliminaries: Classes of sets. Set theoretical concepts. Topological concepts. Boolean algebras. Functional analytic concepts. — *Charges*: Basic concepts. The space of all bounded charges, $ba(\Omega, \mathcal{F})$. Measures. The space of all bounded measures. Jordan decomposition theorem. Hahn decomposition theorem. — *Extensions of charges*: Real valued set functions and induced functionals. Real partial charges and their extensions. Extension procedure of Los and Marczewski. Extension of partial charges in the general case. Miscellaneous and common extensions. — *Integration*: Total variation and outer charges. Null sets and null functions. Hazy convergence. D -integral. S -integral. L_p -spaces. $ba(\Omega, \mathcal{F})$ as a dual space. — *Nonatomic charges*: Basic concepts. Sobczyk-Hammer decomposition theorem. Existence of nonatomic charges. Denseness. — *Absolute continuity*: Absolute continuity and singularity. Lebesgue decomposition theorem. Radon-Nikodym theorem. — *V_p -spaces*: L_p -spaces: an overview. Duals of V_p -spaces. Strong convergence. Weak convergence. — *Nikodym theorem, weak convergence, and Vitali-Hahn-Saks theorem*: Nikodym and Vitali-Hahn-Saks theorems in the classical case. Examples. Phillips' lemma. Nikodym theorem. Norm bounded sets in the presence of uniform absolute continuity. A decomposition theorem. Weak convergence. — *The dual of $ba(\Omega, \mathcal{F})$ and the refinement integral.* — *Pure charges*: A decomposition theorem. Pure charges on σ -fields. Examples. Pure charges on Boolean algebras. — *Ranges of charges*: Ranges of bounded charges on fields. Ranges of charges on σ -fields. Cardinalities of ranges of charges. Charges with closed range. Charges whose ranges are neither Lebesgue measurable nor have the property of Baire. — *On lifting.*

Hans FREUDENTHAL. — **Didactical phenomenology of mathematical structures.** — Mathematics education library. — Un vol. relié, 17×25 , de x, 595 p. — Prix: Dfl 215.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster, 1983.

As an example: length. — The method. — Sets. — Natural numbers. — Fractions. — Ratio and proportionality. — Structures: in particular, geometrical structures. — Putting into geometrical contexts. — Topology as a geometrical context. — The topographical

context. — Figures and configurations. — Geometrical mappings. — Measuring by means of geometry. — Topography with geometry. — Negative numbers and directed magnitudes. — The algebraic language. — Functions.

Roland CAULCUTT, Richard BODDY. — **Statistics for analytical chemists.** — Un vol. relié, 17 × 24, de x, 253 p. — Prix: £22.50. — Chapman and Hall, London/New York, 1983.

What is statistics? — Describing a set of data. — Errors and repeatability. — Fixed bias; detection, estimation and correction. — Relative bias; detection, estimation and correction. — Precision. — Calibration. — Reproducibility. — Various experiments. — Precision experiments; advisory publications. — Miscellaneous topics.

G. P. BEAUMONT. — **Introductory applied probability.** — Ellis Horwood series in mathematics and its applications. — Un vol. broché, 16 × 23, de 235 p. — Prix: £7.90 (relié: £19.50). — Ellis Horwood Limited, Chichester, John Wiley & Sons, New York/Brisbane/Chichester/Ontario, 1983.

Introduction. — Birth and death processes. — Queueing theory. — Renewal theory. — Reliability of systems. — Inventory theory. — Probability generating functions. — The Laplace transform. — Computing the mean of a distribution.

Banach spaces, harmonic analysis, and probability theory. — Proceedings of the special year in analysis, held at the University of Connecticut 1980-1981. — Edited by R. C. Blei and S. J. Sidney. — Lecture notes in mathematics, vol. 995. — Un vol. broché, 16,5 × 24, de v, 173 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Dale E. Alspach and William B. Johnson: Projections onto L_1 subspaces of $L_1(\mu)$. — *J. Bourgain*: New Banach space properties of the disc algebra and H^∞ . — *S. W. Drury*: Remarks on Von Neumann's inequality. — *Sten Kaijser*: A simpleminded proof of the Pisier-Grothendieck inequality. — *T. W. Körner*: The behavior of power series on their circle of convergence. — *Daniel M. Oberlin*: L^p - L^q mapping properties of the Radon transform. — *A. G. O'Farrell*: Qualitative rational approximation on plane compacta. — *Gilles Pisier*: Some applications of the metric entropy condition to harmonic analysis. — *H. P. Rosenthal*: Sign-embeddings of L^1 . — *S. J. Sidney*: Exposed points for duals of separable Fréchet spaces. — *Brent Smith*: A strong convergence theorem for $H^1(\mathbb{T})$.

Invariant theory. — Proceedings of the 1st 1982 session of the Centro internazionale matematico estivo (C. I. M. E.) held at Montecatini, Italy, June 10-18, 1982. — Edited by F. Gherardelli. — Lecture notes in mathematics, vol. 996. — Un vol. broché, 16,5 × 24, de v, 159 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

C. De Concini and C. Procesi: Complete symmetric varieties. — *D. Gieseker*: Geometric invariant theory and applications to moduli problems. — *V. G. Kac*: Root systems, representations of quivers and invariant theory. — *G. Almkvist*: Invariant of Z/pZ in characteristic p . — *A. Lascoux and M. P. Schützenberger*: Symmetric and flag manifolds. — *V. B. Mehta*: On some restriction theorems for semistable bundles.

Dennis A. HEJHAL. — **The Selberg trace formula for $PSL(2, \mathbb{R})$, volume 2.** — Lecture notes in mathematics, vol. 1001. — Un vol. broché, $16,5 \times 24$, de viii, 806 p. — Prix: DM 89.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This volume is a direct continuation of Springer Lecture notes 548. In the 7 years that have elapsed since the appearance of volume 1, interest in trace formulas has only increased. Volume 2 is concerned primarily with the classical trace formula for Fuchsian groups Γ having at least one cusp. *Contents*: Development of the trace formula (version A). — Poincaré series and the spectral decomposition of $L_2(\Gamma \backslash H, \mathcal{L})$. — Version B of the Selberg trace formula. — Version C of the Selberg trace formula. — Selected applications. — Some examples. — *Appendices*: Some remarks concerning the asymptotic behavior of hypergeometric functions. — On the analog of Poisson's equation. — Eigenvalues of the non-Euclidean Laplacian for $PSL(2, \mathbb{Z})$. — Fourier coefficients for modular forms of negative weight. — Some estimates related to Kloosterman sums. — An alternate approach to the analytic continuation of $E(z; s; \mathcal{L})$.

Abelian group theory. — Proceedings of the conference held at the University of Hawaii, Honolulu, U.S.A. December 28, 1982-January 4, 1983. — Edited by R. Göbel, L. Lady and A. Mader. — Lecture notes in mathematics, vol. 1006. — Un vol. broché, $16,5 \times 24$, de xvi, 771 p. — Prix: DM 78.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

From the contents: *D. Arnold, C. I. Vinsonhaler*: Pure subgroups of finite rank completely decomposable groups II. — *P. C. Eklof*: Set theory and structure theorems. — *D. Beers, R. Hunter, E. Walker*: Finite valued p -groups. — *R. S. Pierce, C. I. Vinsonhaler*: Realizing algebraic number fields. — *L. Fuchs*: On projective dimensions of modules over valuation domains. — *F. Richman*: Mixed groups. — *A.L.S. Corner*: On the existence of very decomposable Abelian groups.

Algebraic geometry. — Proceedings of the third Midwest algebraic geometry conference held at the University of Michigan, Ann Arbor, U.S.A., November 14-15, 1981. — Edited by I. Dolgachev. — Lecture notes in mathematics, vol. 1008. — Un vol. broché, $16,5 \times 24$, de v, 138 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

D. Burns: On the geometry of elliptic modular surfaces and representations of finite groups. — *F. Catanese*: On the rationality of certain moduli spaces related to curves of genus 4. — *D. Gieseker*: A construction of special space curves. — *N. Goldstein*: Springer fibres with non-ample normal bundles. — *C. Huneke*: The invariants of liaison. — *T. Kambayashi, V. Srinivas*: On étale coverings of the affine space. — *N. Nygaard*: On supersingular abelian varieties. — *P. Slodowy*: Platonic solids, Kleinian singularities and Lie groups.

Israel Michael SIGAL. — **Scattering theory for many-body quantum mechanical systems: rigorous results.** — Lecture notes in mathematics, vol. 1011. — Un vol. broché, $16,5 \times 24$, de iv, 132 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Spectral decomposition. — Two-space scattering theory. — Scattering theory for N -body systems. — Exact parametrices. — Quasibound states and finiteness of the discrete spectrum. — Boundary values of the resolvent. The general single channel case.

— Boundary values of the resolvent. The general case. — Non-dilation-analytic potentials. — Instability of quasibound-state and embedded eigenvalues. — *Appendices*: Representations for $L(z)$ and $F(z)$. — Boundary values of $L(z)$ and $\hat{F}(z)$. — Compactness of smooth graphs. — Relatively bounded, relatively compact and relatively smooth operators. — Balslev-Combes theorem.

Shmuel KANTOROVITZ. — **Spectral theory of Banach space operators: C^k -classification, abstract Volterra operators, similarity, spectrality, local spectral analysis.** — Lecture notes in mathematics, vol. 1012. — Un vol. broché, 16,5 × 24, de v, 179 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Operational calculus. — Examples. — First reduction. — Second reduction. — Volterra elements. — The family $S + \xi V$. — Convolution operators in L^p . — Some regular semigroups. — Similarity. — Spectral analysis. — The family $S + \xi V$, S unbounded. — Similarity (continued). — Singular C^n -operators. — Local analysis.

Probability theory and mathematical statistics. — Proceedings of the 4th USSR-Japan symposium, held at Tbilisi, USSR, August 23-29, 1982. — Edited by K. Itô and J. V. Prokhorov. — Lecture notes in mathematics, vol. 1021. — Un vol. broché, 16,5 × 24, de VIII, 747 p. Prix: DM 78.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

The subject of this joint meeting between probabilists from Japan and the USSR ranged over probability theory, mathematical statistics, and probabilistic approaches to mathematical physics. The volume consists of research papers presented to the Organizing Committee and provides a representative sample of recent mathematical activity related to probability theory in both countries. Particular topics dealt with include limit theorems, stochastic equations and martingales, mathematical statistics, statistical physics, stochastic analysis, stochastic control, Gaussian processes, ergodic theory, stability of stochastic models, semi-Markov processes, and probability distributions.

Paul BRATLEY, Bennett L. FOX and Linus E. SCHRAGE. — **A guide to simulation.** — Un vol. relié, 16 × 24, de XIX, 383 p. — Prix: DM 72.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

This is an effective introduction to discrete-event digital simulation with indepth coverage of both computer and statistical issues. The book enables the reader to judge correctly the worth of results provided by simulation study and to estimate their probable accuracy and reliability. It allows the reader to carry out simulation studies efficiently and economically, without long and costly computer runs. *Contents*: Introduction. — Variance reduction. — Output analysis. — Rational choice of input distributions. — Nonuniform random numbers. — Uniform random numbers. — Simulation programming. — Programming to reduce the variance. *Appendices*: The Shapiro-Wilk test for normality. Routines for random number generation. Examples of simulation programming.

Jens C. JANTZEN. — **Einhüllende Algebren halbeinfacher Lie-Algebren.** — Ergebnisse der Mathematik und ihrer Grenzgebiete, 3. Folge, Bd 3. — Un vol. relié, 17 × 25, de v, 298 p. — Prix: DM 118.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Einhüllende Algebren. — Halbeinfache Lie-Algebren. — Zentralisatoren in Einhüllenden halbeinfacher Lie-Algebren. — Moduln mit einem höchsten Gewicht. — Annulatoren einfacher Moduln mit einem höchsten Gewicht. — Harish-Chandra-Moduln. — Primitive Ideale und Harish-Chandra-Moduln. — Gel'fand-Kirillov-Dimension und Multiplizität. — Die Multiplizität von Moduln. — Gel'fand-Kirillov-Dimension von Harish-Chandra-Moduln. — Lokalisierungen von Harish-Chandra-Moduln. — Goldie-Rang und Kostants Problem. — Schiefpolynomringe und der Übergang zu den m -Invarianten. — Goldie-Rang-Polynome und Darstellungen der Weylgruppe. — Induzierte Ideale und eine Vermutung von Gel'fand und Kirillov. — Kazhdan-Lusztig-Polynome und spezielle Darstellung der Weylgruppe. — Assoziierte Varietäten.

Emmy Noether in Bryn Mawr. — Proceedings of a symposium sponsored by the Association for women in mathematics in honor of Emmy Noether's 100th birthday. — Edited by Bhama Srinivasan and Judith D. Sally. — Un vol. relié, 16 × 24, de viii, 182 p. — Prix: DM 78.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

N. Jacobson: Brauer factor sets, Noether factor sets, and crossed products. — *R. G. Swan*: Noether's problem in Galois theory. — *J. D. Sally*: Noether normalization. — *O. Taussky*: Some non-commutative methods in algebraic number theory. — *M. Vergne*: Representations of Lie groups and the orbit method. — *K. Uhlenbeck*: Conservation laws and their application in global differential geometry. — *W. Feit*: Finite simple groups. — *A. Borel*: L^2 -cohomology and intersection cohomology of certain arithmetic varieties. — *E. P. and G. E. Noether*: Emmy Noether in Erlangen and Göttingen. — *G. S. Quinn, R. S. McKee, M. Lehr, and O. Taussky*: Emmy Noether in Bryn Mawr. — *J. LaDuke*: The study of linear associative algebras in the United states, 1870-1927. — *U. C. Merzbach*: Emmy Noether: historical contexts.

Serge LANG. — **Complex multiplication.** — Grundlehren der mathematischen Wissenschaften, Bd. 255. — Un vol. relié, 16 × 24, de viii, 184 p. — Prix: DM 128.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

Complex multiplication is an important subject in modern algebraic number theory with major developments during the last two decades. This book is mainly based on the work of Shimura, Serre, Tate, Kubota and Ribet, summarizing these developments in a concise but extensive and accessible presentation. Complex multiplication is a classical subject with its roots in number theory and in algebraic geometry, specifically the theory of elliptic curves and abelian varieties. *Contents*: Analytic complex multiplication. Some algebraic properties of Abelian varieties. Algebraic complex multiplication. The CM character. Moduli, Kummer varieties, and descents. The type norm. Arbitrary conjugations of CM types.

Peter L. DUREN. — **Univalent functions.** — Grundlehren der mathematischen Wissenschaften, Bd. 259. — Un vol. relié, 16 × 24, de xiv, 382 p. — Prix: DM 138.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

The theory of univalent functions is a fascinating interplay of geometry and analysis, directed primarily toward extremal problems. A branch of complex analysis with classical roots, it is an active field of modern research. This book describes the major methods of the field and their applications to geometric function theory. Designed to serve both as an introduction and as a reference for research workers, it includes prerequisite material and full expositions, while emphasizing recent results and open problems. Topics developed for the first time in book form, include subordination theory, integral means via Baernstein's maximal functions and the method of boundary variation with applications. Other topics developed are: Loewner's methods and its applications, the Grunsky inequalities and their exponentiations, methods of Milin and FitzGerald, convolutions of convex functions, and various elementary topics, including special subclasses of univalent functions.

D. GIESEKER. — **Lectures on moduli of curves.** — Notes by D. R. Gokhale. — Tata institute of fundamental research lectures on mathematics and physics, vol. 69. — Un vol. broché, 17 × 24, de III, 99 p. — Prix: DM 16.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

In these notes, based on lectures given during January and February 1980, the author uses Mumford's geometric invariant theory to construct a projective moduli space for stable curves of genus at least 2. The book begins with a preliminary chapter recalling standard results and definitions in geometric invariant theory and deformation theory in particular. The first main chapter reviews questions of stability of Hilbert points, and the second uses those results to prove that the n -canonical embedding of a stable curve is stable if $n \geq 10$ and to construct the projective moduli space for stable curves.

G. B. FOLLAND. — **Lectures on partial differential equations.** — Notes by K. T. Joseph and S. Thangavelu. — Tata institute of fundamental research lectures on mathematics and physics, vol. 70. — Un vol. broché, 17 × 24, de VI, 160 p. — Prix: DM 16.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

These notes arose from a course given by the author at the Tata institute of fundamental research in autumn 1981. The theme of the course was the applications of Fourier analysis (i.e. convolution operators as well as the Fourier transform itself) to partial differential equations. More precisely, the essential features of some significant and useful techniques were presented and some interesting results—illustrations of these techniques—then derived.

M. A. ARMSTRONG. — **Basic topology.** — Undergraduate texts in mathematics. — Un vol. relié, 16 × 24, de XII, 251 p. — Prix: DM 48.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

Introduction. — Continuity. — Compactness and connectedness. — Identification spaces. — The fundamental group. — Triangulations. — Surfaces. — Simplicial homology. — Degree and Lefschetz number. — Knots and covering spaces. — *Appendix* : generators and relations.

Kennan T. SMITH. — **Primer of modern analysis.** (Directions for knowing all dark things, Rhind Papyrus, 1800 B.C.). — 2nd edition. — Undergraduate texts in mathematics. — Un vol. relié, 21 × 23,5, de xv, 446 p. — Prix: DM 97.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

Applications. — Calculation of derivatives. — Deeper properties of continuous functions. — Riemann integration. — Taylor's formula. — Sequences and series. — Metric spaces. — Functions from R^1 to R^n . — Algebra and geometry in R^n . — Linear approximation. — Surfaces. — Higher derivatives. — Integration. — Differentiation. — Surface area. — The Brouwer degree. — Extensions of differentiable functions.

Gerhard P. HOCHSCHILD. — **Perspectives of elementary mathematics.** — Un vol. broché, $15,5 \times 23,5$, de vii, 120 p. — Prix: DM 54.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

This book is a modern account of basic facts and ideas concerning the number system, metric geometry, algebra, and analysis, addressed primarily to beginning graduate students who are interested in becoming mathematicians or computer scientists. Fundamental concepts and techniques are presented in familiar contexts in a manner designed to illuminate the nature of mathematics as an art.

Max KOECHER. — **Lineare Algebra und analytische Geometrie.** — Grundwissen Mathematik, Bd. 2. — Un vol. broché, $16,5 \times 24$, de xi, 286 p. — Prix: DM 38.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Lineare Algebra I: Vektorräume. Matrizen. Determinanten. — *Analytische Geometrie*: Elementar-Geometrie in der Ebene. Euklidische Vektorräume. Der R^n als Euklidischer Vektorraum. Geometrie im dreidimensionalen Raum. — *Lineare Algebra II*: Polynome und Matrizen. Homomorphismen von Vektorräumen.

Masaki KASHIWARA — **Systems of microdifferential equations.** — Notes and translation by Teresa Monteiro Fernandes. — Introduction by Jean-Luc Brylinski. — Progress in mathematics, vol. 34. — Un vol. relié, $15,5 \times 23,5$, de xv, 159 p. — Prix: FS 42.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

The field of microdifferential equations, to which the author has made substantial contributions, is an active area of mathematical research with applications to real and complex analysis, Lie groups, algebraic geometry, the topology of algebraic varieties, and mathematical physics (Feynman amplitudes). *Contents*: Microfunctions, microdifferential systems, structure of coherent \mathcal{E}_x -modules, holomorphic solutions of systems of partial differential equations, solutions of holonomic systems, index theorem, derived categories and functors.

Mathématique et physique. — Séminaire de l'École normale supérieure, 1979-1982. — Edited by Louis Boutet de Monvel, Adrien Douady et Jean-Louis Verdier. — Progress in mathematics, vol. 37. — Un vol. relié, $15,5 \times 23,5$, de x, 438 p. — Prix: FS 90.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Ce volume contient les exposés du Séminaire de mathématique physique de l'École normale supérieure des années 1979-80, 1980-81, et trois articles des années 1981-82. Les sujets abordés sont: équation de Yang-Mills, matrices de transfert, équations différentielles algébriques de Lie et courbes algébriques, problèmes de Riemann Hilbert et déformation isomonodromique.

Studies in pure mathematics: to the memory of Paul Turan. — Edited by Paul Erdős, Laszlo Alpar, Gabor Halasz and Andras Sarközy. — Un vol. relié, 17×24 , de 773 p. — Prix: SF 86.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

This volume, written by his friends, collaborators and students, is offered to the memory of Paul Turan. Most of the papers they contributed discuss subjects related to his own fields of research. The wide range of topics reflects the versatility of his mathematical activity. His work has inspired many mathematicians in analytic number theory, theory of functions of a complex variable, interpolation and approximation theory, numerical algebra, differential equations, statistical group theory and theory of graphs. One of the strenghts of Turan was to ask unusual questions that became starting points of many further results, sometimes opening up new fields of research.

Hans TRIEBEL. — **Theory of function spaces.** — Monographs in mathematics, vol. 78. — Un vol. relié, 17×24 , de 284 p. — Prix: FS 78.00. — Birkhäuser-Verlag, Basel/Boston/Stuttgart, 1983.

FUNCTION SPACES AND ELLIPTIC DIFFERENTIAL EQUATIONS: *Spaces of entire analytic functions*: Inequalities of Plancherel-Polya-Nikol'skij type. L_p -spaces of analytic functions. Fourier multipliers for L_p -spaces. $L_p(I_q)$ -spaces of analytic functions. — *Functions spaces on R_n* : The historical background, motivations and principles. Definition and fundamental properties. Interpolation. Equivalent quasi-norms and representations. Fourier multipliers. Embedding theorems. Pointwise multipliers. Extensions. Diffeomorphic maps. Dual spaces. Further properties. — *Function spaces on domains*: Preliminaries, motivations and methods. Definitions, and basic, main, further properties. — *Regular elliptic differential equations*: Definitions and preliminaries. A priori estimates. Boundary value problems. — FURTHER TYPES OF FUNCTION SPACES: *Homogeneous function spaces*: Definitions, basic and further properties. — *Ultra-distributions and weighted spaces of entire analytic functions*: Ultra-distributions. Inequalities of Plancherel-Polya-Nikol'skij type. L_p -spaces of analytic functions. — *Weighted function spaces on R_n* : Maximal inequalities, Fourier multipliers and Littlewood-Paley theorems. Weighted spaces. — *Weighted function spaces on domains degenerate elliptic differential equations*. — *Periodic function spaces*. — *Further type of function spaces*: Anisotropic function spaces. Generalizations. Abstract spaces and spaces related to orthogonal expansions.

Serge LANG. — **Abelian varieties.** — Reprint. — Un vol. broché, $15,5 \times 23,5$, de XII, 256 p. — Prix: DM 42.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

This is an unchanged reprint of this classic book first published in 1959. Although more than 25 years old, it contains material of current interest which is hard to find or long since integrate in the literature, including the construction of the Picard variety, the Albanese variety, some formulas concerning numerical questions and the reciprocity law for correspondences.

Serge LANG. — **Fundamentals of Diophantine geometry.** — Un vol. relié, 16×24 , de XVIII, 369 p. — Prix: DM 132.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

The original edition of this book appeared twenty years ago: this new edition is very substantially revised, reflecting the work of the past two decades. Still, most of the content

of the volume is essentially qualitative; as in the original version, abelian varieties play an important role. The last chapter of the book contains the presentation of important new work by Silverman and Tate on heights in algebraic families. *Contents*: Absolute values. — Proper sets of absolute values, divisors and units. — Heights. — Geometric properties of heights. — Canonical heights on abelian varieties. — The Mordell-Weil theorem. — The Thue-Siegel-Roth theorem. — Siegel's theorem and integral points. — Hilbert's irreducibility theorem. — Néron divisors and Weil functions. — Néron functions on abelian varieties. — Algebraic families of Néron functions. — Néron functions over the complex numbers.

Loren C. LARSON. — **Problem-solving through problems.** — Problem books in mathematics. — Un vol. relié, 16 × 24, de xi, 332 p. — Prix: DM 88.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1983.

This is a practical anthology of some of the best elementary problems in different branches of mathematics, culled from journals, contests, and other sources. They have been selected for their aesthetic appeal as well as their instructional value, and organized so as to highlight the most common problem-solving techniques encountered in undergraduate mathematics. — *Contents*: Heuristics. — Two important principles: induction and pigeonhole. — Arithmetic. — Algebra. — Summation of series. — Intermediate real analysis. — Inequalities. — Geometry.

Tosiya TANIUTI and Katsunobu NISHIHARA. — **Nonlinear waves.** — Translation from the Japanese prepared by Tosiya Taniuti and Alan Jeffrey. — Monographs and studies in mathematics, vol. 15. — Un vol. relié, 16 × 24, de xiv, 258 p. — Prix: £32.00. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Considerations involving model equations: Theory of overtaking waves. Physical examples. The limit of weak dissipation and shock waves. — *Wave equations*: Linear wave equations and the method of characteristics. Hydrodynamics. Nonlinear hyperbolic equations, multi-component systems and characteristic curves. Shock waves in gas dynamics. Extensions to the multi-dimensional case. — *Asymptotic methods*: Far fields for hyperbolic equations. Dissipative systems. Weakly dispersive systems. The reductive perturbation method for long waves and its extension. A far field for linear wave modulation, the Schrödinger field. Strongly dispersive systems. Self-focusing of waves. Three-wave interaction. Self-induced transparency and the Sine-Gordon equation. — *The inverse scattering method for the initial value problem for a nonlinear evolution equation*: The inverse scattering method for the Korteweg-de Vries equation. The conservation laws and the canonical form of the KdV equation. Periodic solutions and lattice dynamics. The theory of the Lax pair. Application of the inverse scattering method to the nonlinear Schrödinger equation. The Sine-Gordon equation and the Bäcklund transformation. Bäcklund transformation and the inverse scattering method. Hirota's method. — *Two-fluid model of a plasma (electron fluid and ion fluid)*.

Operator algebras and group representations. — Proceedings of the international conference held in Neptun (Romania), September 1-13, 1980, volume I. — Edited for INCREST by Gr. Arsene, S. Stratila, A. Verona and D. Voiculescu. — Monographs and studies in mathematics, vol. 17. — Un vol. relié, 16 × 24, de xx, 277 p. — Prix: £35.00. — Pitman advanced publishing program, Boston/London/Melbourne, 1984.

22 exposés par: J. F. Aarnes. — V.A. Arzumian and A. M. Vershik. — A. Borel. — O. Bratteli. — L. G. Brown. — C.-H. Chu. — F. Combes. — A. Connes and H. Moscovici. — A. Connes and E. Størmer. — J. Cuntz. — C. d'Antoni. — J. de Cannière. — M. Duflo. — G. A. Elliott. — J. Feldman. — I. M. Gelfand, M. I. Graev and R. Rosu. — S. Gérardin. — N. Giovannini. — R. W. Henrichs. — R. H. Herman. — K. H. Hofmann. — R. Howe.

Bent E. PETERSEN. — **Introduction to the Fourier transform and pseudo-differential operators.** — Monographs and studies in mathematics, vol. 19. — Un vol. relié, 16 × 24, de XI, 356 p. — Prix: £36.00. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

The first two chapters form a self-contained introduction to the theory of distributions, and to the Fourier transform in the distributional setting. The remainder of the book is devoted to pseudo-differential operators. Each chapter begins with an introduction which gives a detailed description of the contents of the chapter, and, where appropriate, some historical remarks. The author has taken great care to make the text as accessible as possible.

Helmut GRUNSKY. — **The general Stokes' theorem.** — Surveys and reference works in mathematics, vol. 9. — Un vol. relié, 16 × 24, de x, 113 p. — Prix: £18.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Stokes' theorem in the plane: Proof of Stokes' theorem in the plane. Looking towards generalizations. — *Basic concepts*: The objects to be integrated: alternating multilinear differential forms. Domains of integration: smooth pieces of space in R^n with almost smooth boundary. Integrals and differential of a differential form. — *Stokes' theorem for pieces of space*: A preliminary form of Stokes' theorem and Poincaré's lemma. Stokes' theorem for k -dimensional pieces in R^k . Stokes' theorem for a k -dimensional piece in R^n . — *The calculus of alternating multilinear forms*: The exterior product of alternating forms. The differential of a differential form. The pullback in the calculus of differential forms. — *Stokes' theorem on manifolds*: The concept of manifold. Differential forms on a manifold and their integrals. Stokes' theorem on a manifold.

Paul VER EECHE. — **Fondements du calcul différentiel.** — Collection « Mathématiques ». — Un vol. broché, 15 × 21,5, de 344 p. — Prix: FF 185.00. — Presses universitaires de France, Paris, 1983.

Un manuel accessible aux étudiants des Universités et des Grandes Ecoles, mais qui soit aussi un texte de référence pour mathématiciens professionnels, doit imbriquer un exposé dogmatique suffisamment abstrait pour bien clarifier les concepts fondamentaux, avec leur illustration aux situations concrètes classiques. D'où l'idée, mise en œuvre par l'auteur, d'un traité complet, réalisant la synthèse d'un manuel traditionnel du calcul différentiel des fonctions de plusieurs variables réelles et d'un ouvrage de mise au point du calcul différentiel actuel dans les espaces vectoriels topologiques. Ce livre constitue le premier tome de ce traité et porte sur les fonctions de la variable réelle, la dérivation des applications vectorielles, les dérivées d'ordre supérieur. Chaque chapitre est accompagné d'une bibliographie propre classée et commentée, formée de la totalité des mémoires originaux en rapport avec les matières de l'ouvrage et signalés entre 1940 et 1975.

Kurt ARBENZ, Jean-Claude MARTIN. — **Transmission de l'information: méthodes mathématiques.** — Un vol. broché, 16 × 24, de 132 p. — Prix: FF 90.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Le théorème du transfert maximum de puissance. — Les lignes de transmission. — Les fonctions de Bessel et le guide d'onde cylindrique. — Les fonctions de Bessel appliquées à la modulation exponentielle. — Synthèse de la distribution de Dolph-Tchebycheff pour un réseau linéaire d'antennes. — Réseaux d'antennes continus. — Synthèse du filtre de Tchebycheff. — Modulation d'amplitude à bande latérale unique et transformation de Hilbert. — Détection optimale d'un signal en présence de bruit: le filtre adapté. — Les intégrales de Fresnel appliquées à la modulation de fréquence linéaire. — Échantillonnage d'un signal continu. — Transformée de Fourier discrète. — La transformée en Z appliquée au registre à décalage à réaction.

Roger PETIT. — **L'outil mathématique: distributions, convolution, transformations de Fourier et de Laplace, fonctions d'une variable complexe.** — Un vol. broché, 16 × 24, de 232 p. — Prix: FF 80.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Rappels et compléments d'analyse. — Espaces fonctionnels, fonctionnelles, distributions. — Opérations sur les distributions. — Distributions de « plusieurs variables ». — Produit de convolution. — Transformation de Fourier des fonctions. — Transformation de Fourier des distributions. — Notions sur la transformation de Fourier des fonctions et distributions de plusieurs variables. — Notions sur la transformation de Fourier des distributions périodiques. — Compléments sur quelques familles de fonctions et leurs transformées de Fourier. — Transformation de Laplace des fonctions et des distributions. — Commentaires sur les transformations de Fourier et de Laplace, inversion de la transformation de Laplace. — Fonctions d'une variable complexe.

N. BOURBAKI. — **Eléments de mathématique: algèbre commutative, chapitres 8 et 9.** — Un vol. broché, 18 × 24, de 192 p. — Prix: FF 150.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Ce volume poursuit la série consacrée à l'algèbre commutative dans les « Eléments de mathématique ». Le chapitre 8 traite de la dimension des anneaux commutatifs. Cette théorie est la contrepartie algébrique des propriétés liées à la dimension des variétés algébriques. Elle fournit aussi le fondement rigoureux de la notion de multiplicité d'un point singulier d'une variété algébrique. Bien que les méthodes soient purement algébriques, on s'est efforcé de donner quelques interprétations géométriques; en particulier, on a utilisé le spectre des anneaux pour donner un tour plus topologique à certaines définitions. Une des originalités de l'exposé est l'emploi de la série génératrice, dite de Hilbert-Samuel, qui donne des informations plus précises que les caractéristiques utilisées d'habitude. Une attention particulière a été donnée aux propriétés des anneaux locaux réguliers, qui correspondent aux points simples des variétés algébriques. Le chapitre 9, est consacré à la structure des anneaux locaux complets. Le théorème de structure de Cohen est donné dans toute sa généralité, y compris dans le cas difficile des anneaux d'inégale caractéristique. Ceci justifie une étude très approfondie — et nouvelle sur plusieurs points — des vecteurs de Witt, dont l'importance n'est plus à démontrer. Cette partie se termine par un exposé assez condensé des résultats très profonds, dus à Zariski,

Chevalley et Nagata, sur les complétions des anneaux locaux de la géométrie algébrique. Les deux parties sont complétées par de très longues séries d'exercices, consacrées à l'exposé de théories parallèles (par exemple les anneaux de Witt universels et les théorèmes de Macaulay).

Claude BERGE. — **Graphes.** — 3^e édition. — Collection μ , série B. — Un vol. broché, 15,5 × 24, de x, 400 p. — Prix: FF 180.00. — Gauthier-Villars, Paris, 1983.

Cet ouvrage représente la mise à jour de la première partie consacrée aux graphes du traité « Graphes et hypergraphes » paru en 1970 aux Editions Dunod. La théorie des graphes continue à se développer, des conjectures simplificatrices ont pu être démontrées, des théorèmes se sont affinés, l'outil est devenu plus sophistiqué. C'est pourquoi il a été tenu compte, dans cette nouvelle édition, de théorèmes nouveaux (tel celui du graphe parfait de Lovász) et de démonstrations nouvelles de théorèmes classiques. *Table des matières*: Nombre cyclomatique. — Arbres et arborescences. — Chemins, centres, diamètre. — Problèmes de flots. — Caractérisation des degrés et des demi-degrés. — Coupages. — c-couplages. — Connectivité. — Cycles hamiltoniens. — Recouvrement des arêtes par des chaînes. — Indices chromatique. — Nombre de stabilité. — Noyaux et fonctions de Grundy. — Nombre chromatique. — Graphes parfaits.

Jiří MOČKOR. — **Groups of divisibility.** — Mathematics and its applications (East European series). — Un vol. relié, 15,5 × 23, de viii, 184 p. — Prix: Dfl 90.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster, 1983.

Partially ordered groups. — Groups of divisibility. — Basic properties of d-groups. — d-convex subgroups. — Valuations of d-groups. — Approximation theorems. — Realization of groups of divisibility. — Jaffard-Ohm's theorem. — Exact sequences of groups of divisibility. — Groups of divisibility of Krull domains. — Topological groups of divisibility. — Applications of groups of divisibility. — Generalizations of semivaluations.

Wanda SZMIELEW. — **From affine to Euclidean geometry: an axiomatic approach.** — Edited, prepared for publication and translated from the Polish by Maria Moszynska. — Un vol. relié, 16 × 23, de xiii, 194 p. — Prix: Dfl 80.00. — D. Reidel publishing company, Dordrecht/Boston/London, PWN-Polish scientific publishers, Warszawa, 1983.

This monograph is the result of the author's research concerning "the best possible" axiomatic approach to affine and Euclidean geometry. The first part contains a full exposition of affine geometry based on the new primitive notion of parallelity instead of the traditional collinearity relation. The second part of the book is devoted to the affine planes of characteristic $\neq 2$ and to the ordered affine planes. It contains the author's new results concerning midpoint algebras and linear orders. The third part concerns a new approach to elementary Euclidean geometry as a theory of the class of Euclidean planes over arbitrary 2-formally real fields (for the first time not necessarily commutative). — *Contents*: *Part I*: Algebraic structures. Collinearity structures. Affine planes. Desarguean and Pappian affine planes. Coordinatization and algebraic representation of affine planes. — *Part II*: Midpoint algebras. Translation planes of characteristic $\neq 2$. Algebraic structures with a linear ordering. Ordered affine planes. — *Part III*: Euclidean planes.

Systems of nonlinear partial differential equations. — Edited by J. M. Ball. — NATO advanced science institutes series C, vol. 111. — Un vol. relié, 16,5 × 24,5, de ix, 481 p. — Prix: Dfl 150.00. — D. Reidel publishing company, Dordrecht/Boston/Lancaster, 1983. Publishing in cooperation with NATO scientific affairs division.

This volume contains the proceedings of a NATO/London mathematical society advanced study institute held in Oxford from 25 July — 7 August 1982. The institute concerned the theory and applications of systems of nonlinear partial differential equations, with emphasis on techniques appropriate to systems of more than one equation. Most of the lecturers and participants were analysts specializing in partial differential equations, but also present were a number of numerical analysts, workers in mechanics, and other applied mathematicians. — 27 exposés par: C. C. Conley and J. A. Smoller. — C. M. Dfermos. — J. L. Ericksen. — L. C. Evans. — M. Giaquinta. — E. Giusti. — S. Hildebrandt. — D. G. Schaeffer. — L. Tartar. — S. S. Antman. — L. Brun and M. Potier-Ferry. — R. J. DiPerna. — J. H. Maddocks. — P. J. Olver. — J. Carr. — E. N. Dancer. — J. Mallet-Paret. — J. E. Marsden. — J. F. Toland. — B. Dacorogna. — N. Fusco. — K. Höllig and J. A. Nohel. — N. Alikakos. — C. W. Bardos. — P. de Mottoni. — J. K. Hale. — M. Slemrod.

Alexander OSTROWSKI. — **Collected mathematical papers: vol. II, multivariate algebra, formal algebra.** — Un vol. relié, 18 × 24, de 652 p. — Prix: FS 93.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

MULTIVARIATE ALGEBRA: Über die Existenz einer endlichen Basis bei gewissen Funktionensystemen. — Über eine neue Eigenschaft der Diskriminanten und Resultanten binärer Formen. — Beweis der Irreduzibilität der Diskriminante einer algebraischen Form von mehreren Variablen. — Über die Existenz einer endlichen Basis bei Systemen von Potenzprodukten. — Auszug aus einem Briefe von A. Ostrowski an L. Bieberbach. — Über ein algebraisches Übertragungsprinzip. — Über eine fundamentale Eigenschaft der Invarianten einer allgemeinen binären Form. — Über eine neue Fragestellung in der algebraischen Invariantentheorie. — Mathematische Miszellen I: die Maxwellsche Erzeugung der Kugelfunktion. — Mathematische Miszellen V: über eine Erweiterung des Irreduzibilitätsbegriffs und ihre Anwendung auf ein funktionentheoretisches Problem. — On multiplication and factorization of polynomials I: lexicographic orderings and extreme aggregates of terms. — On a theorem by Kronecker. — On multiplication and factorization of polynomials II: irreducibility discussion. — The irreducibility of the resultant and connected irreducibility theorems. — FORMAL ALGEBRA: Zur Algebra der endlichen Felder. — Über einige Fragen der allgemeinen Körpertheorie. — Über einige Lösungen der Funktionalgleichung $\varphi(x) \cdot \varphi(y) = \varphi(xy)$. — Über sogenannte perfekte Körper. — Untersuchungen zur arithmetischen Theorie der Körper. — Bemerkungen über die Struktur von Ringen, die aus Polynomen in einer Variabel bestehen. — On two problems in abstract algebra connected with Horner's rule. — On some metrical properties of operator matrices and matrices partitioned into blocks. — Iterative solution of linear systems of functional equations. — Algebraic closure of modules. — On Kronecker's elimination theory.

George ALEXITS. — **Approximation theory (selected papers).** — Ed. by Karoly Tandori, Dezsö Kralik, Laszlo Leindler, Ferenc Schipp, Jozsef Szabados. — Un vol. relié, 17 × 25, de 298 p. — Prix: \$24.00. — Akadémiai Kiado, Budapest, 1983.

The volume is a collection of selected papers by George Alexits. Included are his articles on approximation theory, the papers developing the theory of multiplicative

function systems, and the recent items on function series. His earlier function-theoretic, set-theoretic and curve-theoretic papers and his works on the history of mathematics have been left out together with those earlier papers on the theory of function series, the results of which were incorporated in his monograph "Konvergenztheorie der Orthogonalreihen" published also in English and in Russian. The volume presents the selected papers reprinted in their original form. The only exception is the English translation of an article originally published in Hungarian. In addition to the papers, the volume contains a short description of the life and scientific activities of the author and the full list of his scientific works.

Complex analysis: methods, trends, and applications. — Edited by Eberhard Lanckau and Wolfgang Tutschke. — Mathematische Lehrbücher und Monographien, Abteilung mathematische Monographien, Bd. 61. — Un vol. relié, 18 × 25, de 398 p. — Prix: DM 78.00. — Akademie Verlag, Berlin, 1983.

The book written by an international team introduces into the whole sphere of complex analysis. It describes the new methods of complex analysis, which are based on the solution of the inhomogeneous Cauchy-Riemann equations. Those differential equations make it possible to reduce nonholomorphic functions to holomorphic ones. The book introduces classical and new applications of complex analysis, especially those in linear and nonlinear differential equations. The book is written not only for specialists in complex analysis. Moreover it is directed to all mathematicians, physicists and scientists who are interested in analysis, in general.

Studies in partial differential equations. — Edited by Walter Littman. — MAA studies in mathematics, vol. 23. — Un vol. relié, 14 × 21, de xiii, 268 p. — Prix: £19.70. — Published by the Mathematical Association of America, Washington, and distributed by John Wiley and Sons, Chichester, 1982.

David S. Jerison and Carlos E. Kenig: Boundary value problems on Lipschitz domains. — *Johannes C. C. Nitsche*: Minimal surfaces and partial differential equations. — *Steven Orey*: Probabilistic methods in partial differential equations. — *James Ralston*: Gaussian beams and the propagation of singularities. — *Luis A. Caffarelli and Walter Littman*: Representation formulas for solutions to $\Delta u - u = 0$ in R^n .

Séminaire de théorie des nombres, Paris 1981-82: séminaire Delange-Pisot-Poitou. — Edited by Marie-José Bertin. — Progress in mathematics, vol. 38. — Un vol. relié, 15,5 × 23,5, de vi, 348 p. — Prix: FS 64.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

This volume is a collection of lectures given at the Séminaire de théorie des nombres (Delange-Pisot-Poitou), Paris 1981-1982. It continues the outstanding tradition of this annual seminar. The new results presented here by an international group of mathematicians reflect the most recent work in many areas of number theory. — 25 exposés par: B. J. Birch and N. M. Stephens. — G. Brattström. — Ph. Cassou-Noguès et M. J. Taylor. — G. Christol. — R. Gillard. — G. Harder. — J.-F. Jaulent. — J.-R. Joly. — S. Lang. — M. Laurent. — M. Mendes France. — J. F. Mestre. — J.-C. Moreau. — J.-L. Nicolas. — J. Oesterlé. — J. Queyruat. — G. Robin. — P. Satgé. — N. Schappacher. — W. M. Schmidt. — T. N. Shorey. — G. Tenenbaum. — K. Väinänen. — M.-F. Vigneras.

Classification of algebraic and analytic manifolds. — Katata symposium proceedings 1982 sponsored by the Taniguchi foundation. — Edited by Kenfu Ueno. — Progress in mathematics, vol. 39. — Un vol. relié, 15,5 × 23,5, de xiii, 630 p. — Prix: FS 86.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

A. Beauville: Some remarks on Kähler manifolds with $c_1 = 0$. — *F. Catanese*: On the period map of surfaces with $K^2 = \chi = 2$. — *I. Enoki*: Deformations of surfaces containing global spherical shells. — *T. Fujita*: Canonical rings of algebraic varieties. — *A. Fujiki*: On primitively symplectic compact Kähler V-manifolds of dimension four. — *T. Mabuchi*: Asymptotic fibrations of complex varieties. — *Y. Miyaoka*: Algebraic surfaces with positive indices. — *D. R. Morrison*: Some remarks on the moduli of K3 surfaces. — *I. Nakamura*: VII_0 surfaces and a duality of cusp singularities. — *Y. Nami-kawa*: Surjectivity of period map for K3 surfaces. — *C. Peters and J. H. M. Steenbrink*: Infinitesimal variations of Hodge structure and the generic Torelli problem for projective hypersurfaces (after Carlson, Donagi, Green, Griffiths, Harris). — *A. J. Sommese*: Configurations of rational curves on hyperplane sections of projective threefolds. — *S. Tsunoda and M. Miyanishi*: The structure of open algebraic surfaces, II. — *K. Ueno*: Degenerations of elliptic surfaces and certain non-Kähler manifolds. — *E. Viehweg*: Weak positivity and the additivity of the Kodaira dimension, II: the local Torelli map. — Open problems.

Representation theory of reductive groups. — Proceedings of the University of Utah conference 1982. — Edited by P. C. Trombi. — Progress in mathematics, vol. 40. — Un vol. relié, 15,5 × 23,5, de xi, 290 p. — Prix: FS 62.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

J. Arthur: Multipliers and a Paley-Wiener theorem for real reductive groups. — *D. Barbasch and D. Vogan*: Weyl group representations and nilpotent orbits. — *A. Beilinson and J. Bernstein*: A generalization of Casselman's submodule theorem. — *N. Berline and M. Vergne*: Fourier transforms of orbits of the coadjoint representation. — *W. Casselman*: Cohomology for groups of real rank one. — *H. W. Chang*: Character relations between singular holomorphic representations. — *T. Enright, R. Howe and N. Wallach*: A classification of unitary highest weight modules. — *S. Helgason*: The range of the Radon transform on a symmetric space. — *R. Herb*: Weighted orbital integrals. — *R. Howe*: Reciprocity laws in the theory of dual pairs. — *T. Kengmana*: Characters of the discrete series for pseudo-Riemannian symmetric spaces. — *P. C. Kutzko and P. J. Sally Jr.*: All supercuspidal representations of SL_1 over a p -adic field are induced. — *B. Speh*: A note on invariant forms on locally symmetric spaces. — *V. S. Varadarajan*: Oscillatory integrals and their application to harmonic analysis on semisimple Lie groups. — *D. A. Vogan Jr.*: The Kazhdan-Lusztig conjecture for real reductive groups. — *N. R. Wallach and J. A. Wolf*: Completeness of Poincaré series for automorphic forms associated to the integrable discrete series. — *G. J. Zuckerman*: Geometric methods in representation theory.

Richard P. STANLEY. — **Combinatorics and commutative algebra.** — Progress in mathematics, vol. 41. — Un vol. relié, 15,5 × 23,5, de viii, 88 p. — Prix: FS 36.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Some remarkable connections between commutative algebra and combinatorics have been discovered in recent years. This book provides an overview of two of the main

topics in this area. The first concerns the solutions of linear equations in nonnegative integers. Applications are given to the enumeration of integer stochastic matrices (or magic squares), the volume of polytopes, combinatorial reciprocity theorems, and related results. The second topic concerns the face ring of a simplicial complex and includes a proof of the upper bound conjecture for spheres. An introductory chapter giving background information in algebra, combinatorics and topology broadens access to this material for non-specialists in the field.

Jean-Pierre JOUANOLOU. — **Théorèmes de Bertini et applications.** — Progress in mathematics, vol. 42. — Un vol. relié, 15,5 × 23,5 de 126 p. — Prix: FS 36.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Propriétés constructibles et théorèmes de Bertini: Ensembles constructibles. Morphismes de type fini: théorèmes de Chevalley et platitude générique. Corps commutatifs: extensions séparables, primaires, universellement intègres. Constructibilité de certaines propriétés géométriques. Corps commutatifs: dérivations et différentielles. Théorèmes de Bertini. Application à des questions de connexité. — *Structure des modules projectifs*: Rang libre d'un module. Théorème de Serre. Théorème de simplification de Bass. Théorème de simplification de Suslin. Un théorème de Bertini.

Encyclopedia of statistical sciences, volume 3: Faà di Bruno's formula to Hypothesis testing. — Editorial board: M. H. deGroot, R. Ferber, M. R. Frankel, E. Seneta, G. S. Watson. Editor-in-Chief: S. Kotz, N. L. Johnson. Associate editor: C. B. Read. — Un vol. relié, 19 × 26, de ix, 722 p. — Prix: £75.50. — John Wiley & Sons: New York/Chichester/Brisbane/Toronto/Singapore, 1983.

Extrait de la liste des auteurs des articles: *R. J. Adler*: Hausdorff dimension. — *O. Barndorff-Nielsen*: Hyperbolic distributions. — *R. N. Bhattacharya*: Fokker-Planck equations. — *W. G. Cochran*: Horvitz-Thompson estimator. — *W. T. Federer*: Fractional factorial designs. — *A. S. Gupta*: Generalized canonical variables. — *J. Hannan*: Fair-Jaffee model. — *J. L. Hodges*: Hodges-Lehmann estimators. — *W. Hoeffding*: Hajek's projection lemma; Hoeffding's independence test. — *M. Hollander*: Hollander bivariate symmetry test; Hollander extreme test; Hollander parallelism test; Hollander-Proschan NBU test. — *G. M. Jenkins*: Feedforward-feedback control schemes. — *S. Kullback*: Fisher information. — *E. L. Lehmann*: Hodges-Lehmann estimators. — *W. F. Lucas*: Game theory. — *A. E. Maxwell*: Factor analysis. — *P. A. P. Moran*: Geometric probability theory. — *J. A. Nelder*: Generalized linear models: GLIM. — *B. L. Raktoe*: Fractional factorial designs. — *P. S. R. S. Rao*: Hansen-Hurwitz method for subsampling nonrespondents. — *C. B. Read*: Fermi-Dirac statistics; Fieller's theorem; Fisher-Yates test; Five-number summaries; Fixed-width confidence intervals; Folded distributions; Fundamental identity of sequential analysis? Gompertz distribution; Gosset, William Sealy; Greenwood's statistic; Helmert, Friedrich Robert. — *S. R. Searle*: General linear model. — *J. N. Srivastava*: Galois fields. — *E. Sverdrup*: Frequency interpretation in probability and statistical inference. — *G. S. Watson*: Geology, statistics in; hypothesis testing.

Miklos CSORGO. — **Quantile processes with statistical applications.** — CBMS-NSF regional conference series in applied mathematics, vol. 42. — Un vol. broché, 17,5 × 25 de xiii, 156 p. — Prix: £12.50. — Society for industrial and applied mathematics (SIAM), Philadelphia, Pa., 1983. (Distributed in Europe by J. Wiley & Sons.)

A preliminary study of quantile processes. — A weak convergence of the normed sample quantile process. — Strong approximations of the normed quantile process. The Kiefer process. — Two approaches to constructing simultaneous confidence bounds for quantiles. — Weak convergence of quantile processes in weighted sup-norm metrics and further strong approximations. — On Bahadur's representation of sample quantiles and on Kiefer's theory of deviations between the sample quantile and empirical processes. — Quadratic forms of the quantile process, weighted spacings and testing for composite goodness-of-fit. — Strong approximations of the quantile process of the product-limit estimator. — An invariance principle for nearest neighbor empirical density functions. — A nearest-neighbor estimator for the score function.

K. M. S. HUMAK. — **Statistische Methoden der Modellbildung II.** — Nichtlineare Regression, robuste Verfahren in linearen Modellen, Modelle mit Fehlern in den Variablen. — Mathematische Lehrbücher und Monographien, II. Abteilung: Mathematische Monographien, Band 44. — Un vol. relié, 17,5 × 24, de 360 p. — Prix: DM 88.00. — Akademie-Verlag, Berlin, 1983.

Parameterschätzung und Hypothesenprüfung in nichtlinearen Modellen. — Robuste statistische Methoden in linearen Modellen. — Modelle mit Fehlern in den Variablen. — Anhänge.

Werner BLUM, Günter TOERNER. — **Didaktik der Analysis.** — Moderne Mathematik in elementarer Darstellung, Band 20. — Un vol. broché, 15,5 × 23 de xiv, 292 p. — Prix: DM 39.00. — Vandenhoeck & Ruprecht, Göttingen, 1983.

Zu einzelnen Stoffgebieten: Reelle Zahlen. Funktionen. Exponential-, Logarithmus- und Winkelfunktionen. — Folgen, Grenzwerte, Stetigkeit. Der Ableitungsbegriff. Ableitung der elementare Funktionen und Ableitungsregeln. Innermathematische Anwendungen und zentrale Sätze der Differentialrechnung. Integralrechnung. — *Zum curriculum:* Zur Geschichte des Schulstoffs Analysis. Vorkurse in Analysis. Grund- und Leistungskurse in Analysis. — *Zu allgemeinen Fragen:* Genetisches Prinzip. Darstellungsebenen. Spiralprinzip. Didaktische Prinzipien. Lokales Ordnen. Anwendungsorientierung. Logik.

A. C. ZAAANEN. — **Riesz spaces II.** — North-Holland mathematical library, vol. 30. — Un vol. relié, 16 × 23, de xi, 720 p. — Prix: Dfl. 160.00. — North-Holland Publishing Company, Amsterdam/New York/Oxford, 1983.

This is volume 2 of a detailed work on Riesz spaces (vector lattices). Volume 1, written jointly with W. A. J. Luxemburg, appeared in 1971. The considerable time interval between the appearances of these two volumes was caused mainly by the fact that important parts of the theory were put into an elegant and more or less final form only recently. While volume 1 is devoted mainly to the algebraic aspects of the theory, the present volume emphasizes the analytical theory of Riesz spaces and operators between these spaces. *Table of contents:* Prime ideal extension. — Order bounded operators. — Kernel operators. — Normed Riesz spaces. — Order continuous norms. — Embedding in biduals. — Abstract L_p -spaces. — Compact operators. — Orlicz spaces and irreducible operators. — Orthomorphisms and f -algebras.

Southeast Asian conference on logic. — Proceedings of the logic conference, Singapore, 1981. — Ed. by C. T. Chong and M. J. Wicks. — Studies in logic and the foundations of mathematics, vol. 111. — Un vol. relié, 15,5 × 24,5 de xiv, 210 p. — Prix: Dfl. 90.00. — North-Holland Publishing Company, Amsterdam/New York/Oxford, 1983.

C. J. Ash: Model-theoretic forms of the axiom of choice. — *J.-L. Bell*: Orthologic, forcing, and the manifestation of attributes. — *J. N. Crossley and J. B. Remmel*: Undecidability and recursive equivalence I. — *T. Kawai*: Nonstandard analysis by axiomatic method. — *M. Lerman*: The structures of recursion theory. — *Li Xiang*: Effective immune sets, program index sets and effectively simple sets: generalizations and applications of the recursion theorem. — *N. Motohashi*: Some remarks on Barwise approximation theorem on Henkin quantifiers. — *K. Namba*: Formal systems and Boolean valued combinatorics. — *A. Nerode and J. B. Remmel*: Recursion theory on matroids II. — *G. E. Sacks*: On the number of countable models. — *I. B. Tan*: Sequentially large cardinals.

Algebraic varieties and analytic varieties. — Proceedings of a symposium held in Tokyo from July 13, 1981 until July 24, 1981. — Ed. by S. Iitaka. — Advanced studies in pure mathematics, vol. 1. — Un vol. relié, 16 × 24 de 384 p. — Prix: Dfl. 175.00. — North-Holland Publishing Company, Amsterdam/New York/Oxford, 1983.

M. Maruyama: Moduli of stable sheaves. — *T. Oda*: Introduction to algebraic analysis on complex manifolds. — *M. Kashiwara*: Holonomic systems of linear differential equations with regular singularities and related topics in topology. — *T. Shioda*: What is known about the Hodge conjecture? — *M. Miyanishi*: Algebraic methods in the theory of algebraic threefolds. — *S. Mori and S. Mukai*: On Fano 3-folds. — *M. Reid*: Minimal models of canonical 3-folds. — *Y. Namikawa*: Higher residues associated with an isolated hypersurface singularity. — *K. Saito*: The zeroes of characteristic function for the exponents of a hypersurface isolated singular point. — *K. Ueno*: Introduction to the theory of compact complex spaces. — *A. Fujiki*: On the structure of compact complex manifolds. — *S. Iitaka*: Basic structures of algebraic varieties. — *Y. Kawamata*: Hodge theory and Kodaira dimension. — *E. Viehweg*: Weak positivity and the additivity of the Kodaira dimension for certain fibre spaces. — *C. S. Seshadri*: Standard monomial theory and the work of Demazure.

F. VAN OYSTAEYEN, A. VERSCHOREN. — **Relative invariants of rings: the commutative theory.** — Monographs and textbooks in pure and applied mathematics, vol. 79. — Un vol. relié, 16 × 23,5 de x, 252 p. — Prix: FS 116.00. — Marcel Dekker, New York/Basel, 1983.

Generalities. — The relative Picard group. — The relative Brauer group. — Application to sheaves, ringed spaces and schemes. — Applications to integrally closed domains, reflexive modules, etc. — Invariants of graded rings. — Applications in algebraic geometry. — Exercises.

Operator algebras and group representations, vol. 2. — Proceedings of the international conference held in Neptun (Romania), September 1-13, 1980. — Ed. for INCREST by Gr. Arsene, S. Stratila, A. Verona and D. Voiculescu. — Monographs and studies in

mathematics, vol. 18. — Un vol. relié, 16×24 , de xx, 250 p. — Prix: £32.00. — Pitman Advanced Publishing Program, Boston/London/Melbourne, 1984.

23 exposés par: R. V. Kadison. — S. V. Kerov and A. M. Vershik. — M. B. Landstad. — H. Leptin. — L. Magnin. — L. Maté. — D. Poguntke. — N. Riedel. — F. Rodier. — J. Rosenberg. — S. Sakai. W. Schmid and J. A. Wolf. — M. Schröder and W. Timmermann. — B. G. Seifert. — A. M. Stepin. — A. Strasburger. — I. Szczyrba. — W. Szymanski. — M. Takesaki. — E. Thoma. — M. Vergne. — N. R. Wallach. — G. Wittstock.

Contributions to lattice theory. — Edited by A. P. Huhn and E. T. Schmidt. — *Colloquia mathematica societatis Janos Bolyai*, vol. 33. — Un vol. relié, $17,5 \times 24$, de 782 p. — Prix: Dfl. 240.00. — North-Holland publishing company, Amsterdam/Oxford/New York, 1983.

This volume contains the proceedings of the colloquium on lattice theory held in Szeged, August 1980. Most of the 33 papers are detailed research articles, but there are also surveys on topics of general interest by experts on certain areas. The scope of this volume covers modular lattices, distributive lattices, orthomodular lattices, Stone-duality, amalgamation property, free objects and products of lattice varieties. — 33 contributions by: M. E. Adams, J. Sichler. — F. M. Brown, S. Rudeanu. — G. Czédli, A. P. Huhn, L. Szabo. — B. A. Davey, H. Werner. — A. Day. — D. Dorninger. — J. Dudek. — J. Dudek, A. Romanowska. — G. Eigenthaler. — N. D. Filippov. — I. Fleischer. — T. S. Fofanova. — E. Gedeonova. — P. Goralcik, V. Koubek. — E. Graczyńska. — G. Grätzer, D. Kelly. — C. Herrmann. — V. I. Igosin. — L. Iturrioz. — G. Kalmbach. — T. Katrinak. — L. Kohl, M. Stern. — I. Korec. — J. Lihova. — S. Maeda. — R. A. Melter, S. Rudeanu. — W. Poguntke. — B. Pondelicek. — J. Schmid. — D. Schweigert, M. Szymanska. — V. Slavik. — J. Tuma. — J. C. Varlet.

Wray BRITTON. — **Conjugate duality and the exponential Fourier spectrum.** — *Lecture notes in statistics*, vol. 18. — Un vol. broché, $15,5 \times 23,5$ de VIII, 226 p. — Prix: DM 38.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

This book deals with spectral density estimation, comparing a standard estimator with a proposed estimator and utilizing modern functional analysis and convexity analysis to unify the presentation. The author uses a variational approach to his problem and can give the first proof of the fact that a feasible numerical solution exists in the case of the continuous case variational problem.

Ishwar V. BASAWA, David John SCOTT. — **Asymptotic optimal inference for non-ergodic models.** — *Lecture notes in statistics*, vol. 17. — Un vol. broché, $15,5 \times 23,5$ de XIII, 170 p. — Prix: DM 36.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

This book presents a unified treatment of the theory of optimal inference for so-called nonergodic models. Examples of such models include mixture experiments, branching processes, autoregressive processes, and diffusion processes. *Contents*: An over-view. — A general model and its local approximation. — Efficiency of estimation. — Optimal asymptotic tests. — Mixture experiments and conditional inference. — Non-local results. — Appendices.

Jean SCHMETS. — **Spaces of vector-valued continuous functions.** — Lecture notes in mathematics, vol. 1003. — Un vol. broché, 16,5 × 24 de vi, 117 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

The predecessor of this volume by J. Schmets was vol. 519 of the "Lecture notes in mathematics" which dealt primarily with the locally convex properties of the spaces of scalar-valued continuous functions. The new volume 1003 is a survey as well as a research monograph, presenting new results in relation to ultrabornological, bornological, barrelled, quasi-barrelled, (DF), ... spaces. The proofs are complete and detailed; a certain knowledge of the locally convex spaces and of general topology is assumed.

Geometric dynamics. — Proceedings of the international symposium held at the Instituto de matematica pura e aplicada, Rio de Janeiro, Brasil, July-August 1981. — Edited by J. Palis, Jr. — Lecture notes in mathematics, vol. 1007. — Un vol. broché, 16,5 × 24, de ix, 827 p. — Prix: DM 84.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This proceedings volume contains 40 research papers covering several of the main lines of investigation in dynamical systems, such as: structural stability of vector fields and transformations, entropy, random perturbations and attractors, Lyapunov exponents and stable manifolds, infinite dimensional dynamical systems, holomorphic and conformal dynamics, small divisors, differentiable conjugacies and invariant curves, foliations, statistical properties, and smoothing. A paper of a more general nature by R. Thom is included, as are 3 special contributions by S. S. Chern, A. Haefliger and Li Banghe, M. Shub and S. Smale.

Algebraic geometry. — Proceedings of the Japan-France conference held at Tokyo and Kyoto, October 5-14, 1982. — Edited by M. Raynaud and T. Shioda. — Lecture notes in mathematics, vol. 1016. — Un vol. broché, 16,5 × 24, de viii, 528 p. — Prix: DM 62.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

p-adic methods in algebraic geometry and arithmetic: 5 exposés par: M. Raynaud, L. Illusie, N. Suwa, J.-M. Fontaine, K. Kato. — *Vanishing cycle sheaves and \mathcal{D} -modules*: 4 exposés par: J.-L. Verdier, M. Kashiwara, G. Laumon. — *Algebraic cycles and transcendental cycles*: 3 exposés par A. Beauville, T. Oda, T. Shioda. — *Desingularization*: 2 exposés par T. Oda, J. Giraud. — *Curves, surfaces, threefolds...*: 8 exposés par: S. Mori and S. Mukai, Y. Miyaoka, M. Maruyama, M.-N. Ishida, S. Iitaka, M. Miyanishi, S. Mukai and H. Umemura, T. Fujita.

Equadiff 82. — Proceedings of the international conference held in Würzburg, FRG, August 23-28, 1982. — Edited by H. W. Knobloch and K. Schmitt. — Lecture notes in mathematics, vol. 1017. — Un vol. broché, 16,5 × 24, de xxiii, 666 p. — Prix: DM 68.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This conference was the 4th of the West European equadiff series (Marseille 1970, Brussels 1973, Florence 1978). It focussed on the topics of ordinary, functional and stochastic differential equations, partial differential equations of evolution type, and difference equations. Particular emphasis was given to functional analytic methods, perturbation and bifurcation, invariant manifolds, geometric theory, and Hamiltonian

systems. Special sections dealt with numerical methods and applications in physics, engineering and biology. — From the contents: *C. Dafermos*: Stabilizing effects of dissipation. — *A. Narain, D. D. Joseph*: Linearized dynamics of shearing deformation perturbing rest in viscoelastic materials. — *K. Kirchgässner*: Homoclinic bifurcation of perturbed reversible systems. — *A. Lasota*: Statistical stability of deterministic systems. — *G. R. Sell*: Vector fields in the vicinity of a compact invariant manifold.

Graph theory. — Proceedings of a conference held in Lagow, Poland, February 10-13, 1981. — Edited by M. Borowiecki, J. W. Kennedy and M. M. Syslo. — Lecture notes in mathematics, vol. 1018. — Un vol. broché, 16,5 × 24, de x, 289 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This conference commemorated the Polish mathematician Kasimierz Kuratowski, whose single theorem on planarity of graphs is the most frequently referenced paper in the graph-theoretical literature. Over 40 papers are included in these proceedings, covering a wide selection of topics, such as planarity, chromatic number, cycles in graphs, random graphs, games on graphs, and computational algorithms, linked in one way or another to Kuratowski's theorem. In addition, several papers deal with the applications of these topics in chemistry, physics, biology and linguistics.

Cabal seminar 79-81. — Proceedings, Caltech-UCLA logic seminar 1979-81. — Edited by A. S. Kechris, D. A. Martin and Y. N. Moschovakis. — Lecture notes in mathematics, vol. 1019. — Un vol. broché, 16,5 × 24, de v, 284 p. — Prix: DM 33.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

M. Foreman: More saturated ideals. — *A. Louveau*: Some results in the Wadge hierarchy of Borel sets. — *S. Jackson, D. A. Martin*: Pointclasses and well-ordered unions. — *W. H. Woodin*: AD and the uniqueness of the supercompact measures. — *J. R. Steel*: Scales on Σ_1^1 sets. — *Y. N. Moschovakis*: Scales on coinductive sets. — *D. A. Martin and J. R. Steel*: The extent of scales in $L(\mathbf{R})$. — *D. A. Martin*: The largest countable this, that, and the other. — *J. R. Steel*: Scales in $L(\mathbf{R})$. — *D. A. Martin*: The real game quantifier propagates scales. — *W. H. Woodin*: Some consistency results in ZFC using AD. — *A. S. Kechris, D. A. Martin and R. M. Solovay*: Introduction to Q -theory. — *Appendix*: Progress report on the Victoria Delfino problems.

Non commutative harmonic analysis and Lie groups. — Proceedings of the international conference held in Marseille Luminy, 21-26 June, 1982. — Edited by J. Carmona and M. Vergne. — Lecture notes in mathematics, vol. 1020. — Un vol. broché, 16,5 × 24, de v, 187 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Silva M. W. Baldoni: L^2 index and unitary representations. — *Jacques Carmona*: Sur la classification des modules admissibles irréductibles. — *Alain Guillemonat*: Représentations sphériques singulières. — *Rebecca Herb*: The Plancherel theorem for semi-simple Lie groups without compact Cartan subgroups. — *Anthony Joseph*: Completion functors in the Q -category. — *Anthony W. Knap*: Minimal K -type formula. — *A. W. Knap and B. Speh*: The role of basic cases in classification: theorems about unitary representations applicable to $SU(N, 2)$. — *Ronald L. Lipsman*: On the existence of a generalized Weil representation. — *Floyd L. Williams*: Solution of a conjecture of Langlands.

Graziano GENTILI, Simon SALAMON, Jean-Pierre VIGUE. — **Geometry seminar « Luigi Bianchi »: lectures given at the Scuola Normale Superiore, 1982.** — Edited by E. Vesentini. — Lecture notes in mathematics, vol. 1022. — Un vol. broché, $16,5 \times 24$, de vi, 177 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Graziano Gentili: Distances on convex cones. — *Simon Salamon*: Topics in four-dimensional Riemannian geometry. — *Jean-Pierre Viqué*: Domaines bornés symétriques.

Stephen McADAM. — **Asymptotic prime divisors.** — Lecture notes in mathematics, vol. 1023. — Un vol. broché, $16,5 \times 24$ de ix, 118 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

It has long been known that in a commutative Noetherian ring R , large powers of an ideal I tend to become well behaved. Recently, interest has focused on $\text{Ass}(R/I^n)$, n large, and the aim of this monograph is to present, in detail, the major results of that interest.

Lie group representations I. — Proceedings of the Special year held at the University of Maryland, College Park, 1982-1983. — Edited by R. Herb, R. Lipsman and J. Rosenberg. — Lecture notes in mathematics, vol. 1024. — Un vol. broché, $16,5 \times 24$ de ix, 369 p. — Prix DM 44.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

This is the first of a projected 3-volume set of proceedings of the Special year in Lie group representations held during 1982-83 at the University of Maryland. Lecture series on current topics of research within this area were presented. The main topics and themes of the papers in the first volume are: algebraic aspects of the representation theory of semisimple Lie groups; primitive ideals in the enveloping algebra of a semi-simple Lie algebra; the Selberg trace formula; classification of the unitary dual; and asymptotic expansions of matrix entries.

Daniel TANRE. — **Homotopie rationnelle: modèles de Chen, Quillen, Sullivan.** — Lecture notes in mathematics, vol. 1025. — Un vol. broché, $16,5 \times 24$ de x, 211 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

The minimal model of a topological space (as introduced by D. Sullivan) is an invariant which may be calculated and which describes the type of rational homotopy. This monograph surveys three models (Chen, Quillen, Sullivan) and places its accent on models in Lie algebras which have received less attention in recent literature. An underlying theme is choosing that presentation (via commutative algebra or Lie algebras) best suited to the problem.

Wilhelm PLESKEN. — **Group rings of finite groups over p-adic integers.** — Lecture notes in mathematics, vol. 1026. — Un vol. broché, $16,5 \times 24$, de v, 151 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Graduated and graduable orders. — The conductor formula for graduated hulls of selfdual orders. — Selfdual orders with decomposition numbers 0 and 1. — Blocks of multiplicity 1. — Examples of group rings. — The principal 2-block of $SL_2(q)$ for odd prime powers q . — Blocks with cyclic defect groups.

Morisuke HASUMI. — **Hardy classes on infinitely connected Riemann surfaces.** — Lecture notes in mathematics, vol. 1027. — Un vol. broché, 16,5 × 24, de XII, 280 p. — Prix: DM 33.50. — Springer-Verlag, 1983.

Theory of Riemann surfaces: a quick review: Topology of Riemann surfaces. Classical potential theory. Differentials. — *Multiplicative analytic functions*: Lattice structure of harmonic functions. — *Martin compactification*: Compactification. Fine limits. Covering maps. — *Hardy classes*: Hardy classes on the unit disk and on hyperbolic Riemann surfaces. — *Riemann surfaces of Parreau-Widom type*: Definitions and fundamental properties. Proof of Widom's theorem. — *Green lines*: The Dirichlet problem on the space of Green lines. The space of Green lines on a surface of Parreau-Widom type. The Green lines and the Martin boundary. — *Cauchy theorems*: The inverse and the direct Cauchy theorem. Applications. — *Shift-invariant subspaces*: Preliminary observations. Invariant subspaces. — *Characterization of surfaces of Parreau-Widom type*: The inverse Cauchy theorem and surfaces of Parreau-Widom type. Conditions equivalent to the direct Cauchy theorem. — *Examples of surfaces of Parreau-Widom type*: PWS of infinite genus for which (DCT) holds. Plane regions of Parreau-Widom type for which (DCT) fails. Further properties of PWS. The Corona problem for PWS. — *Classification of plane regions*: Hardy-Orlicz classes. Null sets. Classification of plane regions. — *Appendices*: The classical Fatou theorem. Kolmogorov's theorem on conjugate functions. The F. and M. Riesz theorem.

Arithmetic and geometry. — Papers dedicated to I. R. Shafarevich on the occasion of his 60th birthday, vol. I: Arithmetic and vol. II: Geometry. — Edited by Michael Artin and John Tate. — Progress in mathematics, vol. 35 and 36. — Deux volumes reliés, 15,5 × 23,5, de VIII, 359 p. (vol. I) et VIII, 481 p. (vol. II). — Prix: FS 118.00 pour l'ensemble des deux vol. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

VOL. I: ARITHMETIC: *N. Aoki and T. Shioda*: Generators of the Néron-Severi group of a Fermat surface. — *S. Bloch*: p -adic étale cohomology. — *J. W. S. Cassels*: The Mordell-Weil group of curves of genus 2. — *G. V. Chudnovsky*: Number theoretic applications of polynomials with rational coefficients defined by extremality conditions. — *J. Coates*: Infinite descent on elliptic curves with complex multiplication. — *N. M. Katz*: On the ubiquity of pathology in products. — *S. Lang*: Conjectured diophantine estimates on elliptic curves. — *S. Lichtenbaum*: Zeta-functions of varieties over finite fields at $s = 1$. — *B. Mazur and J. Tate*: Canonical height pairings via biextensions. — *J. S. Milne*: The action of an automorphism of C on a Shimura variety and its special points. — *N. O. Nygaard*: The Torelli theorem for ordinary K3 surfaces over finite fields. — *A. P. Ogg*: Real points on Shimura curves. — *I. I. Piatetski-Shapiro*: Special automorphic forms on PGSp_4 . — *M. Raynaud*: Courbes sur une variété abélienne et points de torsion. *A. Weil*: Euler and the Jacobians of elliptic curves. — VOL. II: GEOMETRY: *V. I. Arnold*: Some algebro-geometrical aspects of the Newton attraction theory. — *M. Artin and J. Denef*: Smoothing of a ring homomorphism along a section. — *M. F. Atiyah and A. N. Pressley*: Convexity and loop groups. — *H. Bass*: The Jacobian conjecture and inverse degrees. — *R. Bryant and P. Griffiths*: Some observations on the infinitesimal period relations for regular threefolds with trivial canonical bundle. — *H. Hironaka*: On Nash blowing-up. — *F. Hirzebruch*: Arrangements of lines and algebraic surfaces. — *V. G. Kac and D. H. Peterson*: Regular functions on certain infinite-dimensional groups. — *W. E. Lang*: Examples of surfaces of general type with vector fields. — *Yu I. Manin*: Flag superspaces and supersymmetric Yang-Mills equations. — *B. Moishezon*: Algebraic surfaces and the arithmetic of braids, I. — *D. Mumford*: Towards an enumerative geo-

metry of the moduli space of curves. — *C. Musili and C. S. Seshadri*: Schubert varieties and the variety of complexes. — *A. Ogus*: A crystalline Torelli theorem for supersingular K3 surfaces. — *M. Reid*: Decomposition of toric morphisms. — *M. Spivakovsky*: A solution to Hironaka's polyhedra game. — *A. N. Tjurin*: On the superpositions of mathematical instantons. — *A. N. Todorov*: How many Kähler metrics has a K3 surface? — *O. Zariski*: On the problem of irreducibility of the algebraic system of irreducible plane curves of a given order and having a given number of nodes.

Manabu HARADA. — **Factor categories with applications to direct decomposition of modules.** — Lecture notes in pure and applied mathematics, vol. 88. — Un vol. broché, 18 × 25, de ix, 328 p. — Prix: FS 163.00. — Marcel Dekker, Inc., New York/Basel, 1983.

Completely self contained, this volume provides an innovative study of ring theory. By applying category theory specifically to problems relating to the Krull-Remak-Schmidt-Azumaya theorem, the book develops a series of new results concerning direct sums of completely indecomposable modules, generalizations of the lifting of idempotents modulo the Jacobson radical, etc. — *Contents*: Preliminaries. Categories. — General modules and rings. — Special modules and rings. — Morita contexts. — Categories of indecomposable modules. — Applications: Krull-Remak-Schmidt-Azumaya theorem, exchange property. — Lifting property and extending property. — Lifting property for injectives and extending property for projectives.

P. A. RAVIART, J. M. THOMAS. — **Introduction à l'analyse numérique des équations aux dérivées partielles.** — Collection « Mathématiques appliquées pour la maîtrise ». — Un vol. broché, 16 × 24, de 224 p. — Prix: FS 33.70. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983. (Distribué en Suisse par Crispa S.A., Fribourg.)

Espaces de Sobolev. — Problèmes aux limites elliptiques. — Approximation variationnelle de problèmes aux limites elliptiques: premiers exemples. — Interpolation de Lagrange dans R^n . — Analyse de la méthode des éléments finis. — Théorie spectrale des problèmes aux limites. — Problèmes paraboliques. — Problèmes d'évolution d'ordre deux en temps.

Seminar on stochastic processes, 1982. — Edited by E. Cinlar, K. L. Chung, R. K. Gettoor. — Progress in probability and statistics, vol. 5. — Un vol. relié, 15,5 × 23,5, de iv, 302 p. — Prix: FS 64.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

B. W. Atkinson: Germ fields and a converse to the strong Markov property. — *B. W. Atkinson and J. B. Mitro*: Applications of Revuz and Palm type measures for additive functionals in weak duality. — *R. F. Bass*: Occupation times of d -dimensional semimartingales. — *K. Bichteler and D. Fonken*: A simple version of the Malliavin calculus in dimension N . — *K. L. Chung*: An inequality for boundary value problems. — *E. Cinlar and H. Kaspi*: Regenerative systems and Markov additive processes. — *R. K. Gettoor*: Excursions and forward times. — *J. Glover*: Identifying Markov processes up to time change. — *J. Glover*: Topics in energy and potential theory. — *D. Monrad*: On the p -variation of Gaussian random fields with separable increments. — *J. W. Pitman*: Remarks on the convex minorant of Brownian motion. — *Z. R. Pop-Stojanovic and K. M. Rao*: Remarks on energy. — *J. B. Walsh*: Stochastic integration with respect to local time.

P. LANDROCK. — **Finite group algebras and their modules.** — London mathematical society lecture note series, vol. 84. — Un vol. broché, 15 × 23, de x, 274 p. — Prix: £14.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

The principal object of this book is to discuss in detail the structure of finite group rings over fields of characteristic p , P -adic rings, and in some cases, just principal ideal domains, as well as modules of such group rings. This book, which in part follows very recent research papers, not only presents the classical results of Brauer, Green and others, in an often much smoother way than has so far been the case, but also includes a number of very new important contributions to the theory. — Contents: The structure of group algebras. — Indecomposable modules and relative projectivity. — Block theory.

J. D. BUCKMASTER and G. S. S. LUDFORD. — **Lectures on mathematical combustion.** — CBMS-NSF regional conference series in applied mathematics, vol. 43. — Un vol. broché, 17,5 × 25, de VIII, 126 p. — Prix: £10.00. — Society for industrial and applied mathematics, Philadelphia, Penns., distributed by John Wiley and Sons, Chichester, 1983.

Pre-asymptotic combustion revisited. — Governing equations, asymptotics, and deflagrations. — General deflagrations. — SVFs and NEFs. — Stability of the plane deflagration wave. — Cellular flames. — Pulsating flames. — Counterflow diffusion flames. — Spherical diffusion flames. — Free-boundary problems.

Armand BOREL. — **Œuvres-collected papers, vol. 1: 1948-1958, vol. 2: 1959-1968, vol. 3: 1969-1982.** — 3 vol. reliés, 17,5 × 25 de XVI, 2226 p. — Prix: DM 348.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

These three volumes contain almost all scientific papers of Armand Borel, including those publications with coauthors, from 1948 until the end of 1982, as well as two previously unpublished papers. Several papers have been wholly reset. Where appropriate, corrections have been carried out directly in the text. Some lengthier revisions have been included together with further comments at the end of each volume: these provide, additionally, references to later results complementing or generalizing the assertion of the text or answering questions raised there. A few open problems are also mentioned. A complete listing of all Borel's publications is included in each volume. The significance of Armand Borel's contributions to many areas of mathematics such as algebraic topology, algebraic groups, Lie groups, automorphic forms, will make these volumes of lasting interest. In particular the many painstakingly written expository and survey articles which have been published in the Séminaire Bourbaki or in the Lecture notes in mathematics, for instance, will provide all who have long been familiar with his work, as well as the younger generation, with considerable stimulus and motivation for research in various fields.

M. I. FREIDLIN, A. D. WENTZELL. — **Random perturbations of dynamical systems.** — Translated by Joseph Szücs. — Grundlehren der mathematischen Wissenschaften, vol. 260. — Un vol. relié, 16 × 24, de VIII, 326 p. — Prix: DM 168.00. — Springer-Verlag, New York/Berlin/Heidelberg/Tokyo, 1984.

Introduction. — Random perturbations. — Small random perturbations on a finite time interval. — Action functional. — Gaussian perturbations of dynamical systems.

Neighborhood of an equilibrium point. — Perturbations leading to Markov processes. — Markov perturbations on large time intervals. — The averaging principle. Fluctuations in dynamical systems with averaging. — Stability under random perturbations. — Sharpenings and generalizations.

V. I. ARNOLD. — **Catastrophe theory**. — Translated from the Russian by R. K. Thomas. — Un vol. broché, 13,5 × 20,5, de IX, 79 p. — Prix: DM 16.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1984.

While Newtonian theory only considers smooth, continuous processes, catastrophe theory provides a universal method for the study of jump transitions, discontinuities, and sudden quantitative changes. This little book clearly explains what catastrophe theory is and why it has aroused considerable fervor among defenders and detractors. The book also contains uncontroversial results from the mathematical theories of singularities and bifurcation. The book includes a series of remarkable figures, which form an integral part of the text.

Vasek CHVATAL. — **Linear programming**. — A series of books in the mathematical sciences. — Un vol. broché, 16,5 × 23,5, de XIII, 478 p. — Prix: £21.50 (relié: £46.50). — W. H. Freeman and company, New York/San Francisco, 1983.

Basic theory: How the simplex method works. Pitfalls and how to avoid them. How fast is the simplex method? The duality theorem. Gaussian elimination and matrices. The revised simplex method. General *LP* problems: solutions by the simplex method, theorems on duality and infeasibility. Sensitivity analysis. — *Selected applications*: Efficient allocation of scarce resources. Scheduling production and inventory. The cutting-stock problem. Approximating data by linear functions. Matrix games. Systems of linear inequalities. Connections with geometry. Finding all vertices of a polyhedron. — *Network flow problems*: The network simplex method. Applications. Upper-bounded transshipment problems. Maximum flows through networks. The primal-dual method. — *Advanced techniques*: Updating a triangular factorization of the basis. Generalized upper bounding. The Dantzig-Wolfe decomposition principle. — *Appendix*: The ellipsoid method.

Encyclopedia of statistical sciences, volume 4: Icing the tails to Limit theorems. — Editorial board: M. H. DeGroot, R. Ferber, M. R. Frankel, E. Seneta, G. S. Watson. Editors-in-chief: S. Kotz, N. L. Johnson. Associate editor: C. B. Read. — Un vol. relié, 19 × 26, de IX, 657 p. — Prix: £75.50. — John Wiley & Sons, New York/Chichester/Brisbane/Toronto/Singapore, 1983.

Extrait de la liste des auteurs des articles: *G. A. Barnard*: Likelihood. — *O. Barndorff-Nielsen*: Koopman-Darmois-Pitman family of distributions. — *A. P. Basu*: Identifiability. — *H. T. Bhattacharyya*: Kruskal-Wallis test. — *P. R. Cox*: Life tables. — *D. Dugué*: Lévy, Paul-Pierre. — *D. B. Duncan*: *k*-ratio, *t*-tests, *t*-intervals and point estimates for multiple comparisons. — *C. Eisenhart*: Law of error I, II and III. — *D. A. S. Fraser*: Inference, statistical II. — *G. H. Freeman*: Incomplete block designs. — *N. C. Giri*: Invariance concepts in statistics. — *D. V. Hinkley*: Jackknife methods. — *P. J. Huber*: Kinematic displays. — *S. Kullback*: Kullback information. — *N. R. Mann*: Life testing. — *G. P. Patil*: International statistical ecology program. — *R. F. Potthoff*:

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