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Nœuds, tresses et singularités. — Comptes rendus du Séminaire tenu aux Plans-sur-Bex (Suisse) en mars 1982. — Textes recueillis par C. Weber. — Monographie de L'Enseignement Mathématique n° 31. — Un vol. broché, 16 × 24, de 260 p. — Prix: FS 75.00. — L'Enseignement Mathématique, Université de Genève, 1983.

S. Akbulut and H. King : The topology of real algebraic sets. — *M. Boileau et C. Weber :* Le problème de J. Milnor sur le nombre gordien des nœuds algébriques. — *L. Rudolph :* Some knot theory of complex plane curves. — *A. H. Durfee :* Four characterizations of real rational double points. — *W. Ebeling :* Milnor lattices and geometric bases of some special singularities. — *D. Lines :* Cobordisme de nœuds classiques fibrés et de leurs monodromies. — *F. Michel :* Formes de Seifert et singularités isolées. — *M. Morales :* Calcul de quelques invariants des singularités de surface normale. — *H. R. Morton :* Fibred knots with a given Alexander polynomial. — *W. D. Neumann :* Invariants of plane curve singularities. — *L. Rudolph :* Constructions of quasipositive knots and links, I. — Problems.

Commutative algebra: Durham 1981. — Edited by R. Y. Sharp. — London mathematical society lecture note series, vol. 72. — Un vol. broché, 15 × 23, de XII, 250 p. — Prix: £13.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

THE LOCAL HOMOLOGICAL CONJECTURES, BIG COHEN-MACAULAY MODULES, AND RELATED TOPICS: 7 exposés par E. G. Evans and Phillip Griffith. — Hans-Bjørn Foxby. — Melvin Hochster. — G. Horrocks. — R. Y. Sharp and H. Zakeri. — L. Szpiro. — DETERMINANTAL IDEALS, FINITE FREE RESOLUTIONS, AND RELATED TOPICS: 4 exposés par Kaan Akin and David A. Buchsbaum. — Winfried Bruns. — Hans-Bjørn Foxby. — D. G. Northcott. — MULTIPLICITY THEORY, HILBERT AND POINCARE SERIES, ASSOCIATED GRADED RINGS, AND RELATED TOPICS: 6 exposés par Shiro Goto. — J. Herzog. — D. Rees. — Jan-Erik Roos. — Judith D. Sally.

C. GODBILLON. — **Dynamical systems on surfaces.** — Translation from the French by H. G. Helfenstein. — Universitext. — Un vol. broché, 17 × 25, de VII, 201 p. — Prix: DM 42.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Vector fields on manifolds. — The local behaviour of vector fields. — Planar vector fields. — Direction fields on the torus and homeomorphisms of the circle. — Vector fields on surfaces.

H. S. M. COXETER, P. DU VAL, H. T. FLATHER, J. F. PETRIE. — **The fifty-nine icosahedra.** — Reprint of the 1st edition by The University of Toronto press, Canada, 1938. — Un vol. broché, 16 × 24, de VII, 47 p. — Prix: DM 35.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

"The fifty-nine icosahedra" is a classical account, the first to give a complete enumeration of the stellations of the icosahedron. The booklet contains the mathematical explanation of the stellations and plates with pictures of all 59 variations (from models which are on exhibit in Cambridge, England) and a number of, in part very complicated, drawings explaining the transformations between these stellations.

Bernard DWORK. — **Lectures on p-adic differential equations.** — Grundlehren der mathematischen Wissenschaften, Bd. 253. — Un vol. relié, 17 × 24, de VIII, 310 p. — Prix: DM 118.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The space L (algebraic theory). — Dual theory (algebraic). — Transcendental theory. — Analytic dual theory. — Basic properties of ψ operator. — Calculation modulo p of the matrix. — Hasse invariants. — Normalized solution matrix. — Nilpotent second-order linear differential equations with Fuchsian singularities. — Second order linear differential equations modulo powers of p. — Dieudonné theory. — Canonical liftings. — Abelian differentials. — Super-singular disks. — The function τ on supersingular disks ($l=1$). — The defining relation for the canonical lifting ($l=1$). — Semi-simplicity. — Analytic factors of power series. — p-adic gamma functions. — p-adic beta functions. — Beta functions as residues. — Singular disks. — Singular disks, nonlogarithmic case and logarithmic case. — L-functions (appendix by A. Adolphson).

Hans PETERSSON. — **Modulfunktionen und quadratische Formen.** — Ergebnisse der Mathematik und ihrer Grenzgebiete, Bd. 100. — Un vol. relié, 17 × 25, de X, 307 p. — Prix: DM 168.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Theoretischer Teil: Die Modulgruppe. Modulformen. Einfache und binäre Thetareihen. Ansatz. Quadratsummen. Kongruenzgruppen. Eisensteinsche Reihen. Theta-multiplikatoren. — *Binäre quadratische Formen:* Binäre Thetareihen. Binäre Diagonalformen. Darstellungen durch binäre Diagonalformen mit ungeraden Werten der Variablen. — *Direkte Summen binärer Formen. Quaternäre Diagonal-formen:* Direkte Summen zweier Binärformen mit quadratfreien ungeraden Diskriminanten. Spezielle quadratische Formen in 2^r Variablen ($r \geqslant 3$). Quaternäre Diagonalformen. Binäre Diagonalformen in Verbindung mit Normenvorräten. Konkrete Formeln für einige Anzahlfunktionen. Darstellungen durch quaternäre Diagonalformen mit ungeraden Werten der Variablen. — *Anzahlfunktionen unter Auszeichnung der Primzahlen* 2, 3 *und* 5*:* Diagonalformen mit Kongruenzbedingungen: Aufstellung der Eisensteinschen Reihen. Ganze Spitzenformen. Explizite Resultformeln für $r = 2, 3$. Diagonalformen ohne Kongruenzbedingungen. Quadratsummen. Primformen der Gruppen. Basis-Konstruktionen für $q = 3, 5$. Quadratsummen mit Kongruenzbedingungen mod 2 und Vorzeichen-Faktoren. Darstellungen unter Auszeichnung der Primzahl 3. — *Quadratische Formen in ungeraden Anzahlen von Variablen:* Problemstellung. Zwei einfache Thetareihen. Ansatz. Fourier-Koeffizienten gewisser Eisensteinschen Reihen halbzahligen Grades. Ganze Spitzenformen; abschliessende Resultate; numerische Werte. — *Anhänge:* Einfache Thetareihen. Mehrfache Thetareihen. Das Verhalten bei Modulsubstitutionen. Beweis der Formen für die Multiplikatorwerte. Relationen zwischen einfachen Thetareihen. Grundlegende Sachverhalte verschiedener Art. Metrik und Eisenstein-Reihen.

Kenneth S. BROWN. — **Cohomology of groups.** — Graduate texts in mathematics, vol. 87. — Un vol. relié, 16 × 24, de x, 306 p. — Prix: DM 74.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Some homological algebra. — The homology of a group. — Homology and cohomology with coefficients. — Low dimensional cohomology and group extensions. — Products. — Cohomology theory of finite groups. — Equivariant homology and spectral sequences. — Finiteness conditions. — Euler characteristics. — Farrell cohomology theory.

Richard S. PIERCE. — **Associative algebras.** — Graduate texts in mathematics, vol. 88. — Un vol. relié, 16 × 24, de XII, 436 p. — Prix: DM 94.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The associative algebra. — Modules. — The structure of semisimple algebras. — The radical. — Indecomposable modules. — Projective modules over artinian algebras. — Finite representation type. — Representation of quivers. — Tensor products. — Separable algebras. — The cohomology of algebras. — Simple algebras. — Subfields of simple algebras. — Galois cohomology. — Cyclic division algebras. — Norms. — Division algebras over local fields. — Division algebras over number fields. — Division algebras over transcendental fields. — Varieties of algebras.

Serge LANG. — **Introduction to algebraic and abelian functions.** — 2nd edition. — Graduate texts in mathematics, vol. 89. — Un vol. relié, 16 × 24, de IX, 169 p. — Prix: DM 82.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The Riemann-Roch theorem. — The Fermat curve. — The Riemann surface. — The theorem of Abel-Jacobi. — Periods on the Fermat curve. — Linear theory of theta functions. — Homomorphisms and duality. — Riemann matrices and classical theta functions. — Involutions and abelian manifolds of quaternion type. — Theta functions and divisors.

Robert J. ELLIOTT. — **Stochastic calculus and applications.** — Applications of mathematics, vol. 18. — Un vol. relié, 16 × 24, de IX, 302 p. — Prix: DM 112.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Conditional expectation. Uniform integrability. — Filtrations, stopping times and stochastic processes. — Martingales: discrete time results and continuous time results. — Predictable and totally inaccessible stopping times. — The optional and predictable σ-fields. — Processes of bounded variation. — The Doob-Meyer decomposition. — The structure of square integrable martingales. — Quadratic variation processes. — Stochastic integration with respect to martingales and local martingales. — Semimartingales and the differentiation rule. — The exponential formula and Girsanov's theorem. — Strong solutions of stochastic differential equations. — Random measures. — The optimal control of a continuous process. — The optimal control of a jump process. — Filtering.

Vladimir VAPNIK. — **Estimation of dependences based on empirical data.** — Translated by Samuel Kotz. — Springer series in statistics. — Un vol. relié, 16 × 24, de XVI, 399 p. — Prix: DM 138.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The problem of estimating dependences from empirical data. — Methods for solving ill-posed problems. — Methods of expected-risk minimization. — Methods of parametric statistics for the pattern recognition problem, and for the problem of regression estimation. — Estimation of regression parameters. — A method of minimizing empirical risk for the problem of pattern recognition. — Theory of uniform convergence of frequencies to probabilities: sufficient conditions. — A method of minimizing empirical risk for the problem of regression estimation. — Theory of uniform convergence of means to their mathematical expectations: necessary and sufficient conditions. — The method of structural minimization of risk. — Solution of ill-posed problems. Interpretation of measurements using the method of structural risk minimization. — Statistical theory of regularization. — Estimation of functional values at given points. — Taxonomy problems. — Algorithms for pattern recognition. — Algorithms for estimating nonindicator functions.

H. HEYER. — **Theory of statistical experiments.** — Springer series in statistics. — Un vol. relié, 16 × 24, de X, 289 p. — Prix: DM 48.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Games and statistical decisions. — Sufficient σ-algebras and statistics. — Sufficiency under additional assumptions. — Testing experiments. — Testing experiments admitting an isotone likelihood quotient. — Estimation experiments. — Information and sufficiency. — Invariance and the comparison of experiments. — Comparison of finite experiments. — Comparison with extremely informative experiments.

Arch W. NAYLOR, George R. SELL. — **Linear operator theory in engineering and science.** — Reprint. — Applied mathematical sciences, vol. 40. — Un vol. relié, 16 × 24, de XV, 624 p. — Prix: DM 74.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Introduction. — Set-theoretic structure. — Topological structure. — Algebraic structure. — Combined topological and algebraic structure. — Analysis of linear operators (compact case). — Analysis of unbounded operators. — The Hölder, Schwarz and Minkowski inequalities. — Cardinality. — Zorn's lemma. — Integration and measure theory. — Probability spaces and stochastic processes.

Gerhard GIERZ. — **Bundles of topological vector spaces and their duality.** — Lecture notes in mathematics, vol. 955. — Un vol. broché, 16,5 × 24, de IV, 296 p. — Prix: DM 33.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Basic definitions. — Full bundles and bundles with completely regular base spaces. — Bundles with locally paracompact base spaces. — Stone-Weierstrass theorems for bundles. — An alternative description of spaces of sections: function modules. — Some algebraic aspects of Ω-spaces. — A third description of spaces of sections: $C(X)$-convex modules. — Quotients of bundles of $C(X)$-modules. — Morphisms between bundles. — Bundles of operators. — Excursion: continuous lattices, and bundles. — M-structure and bundles. — An adequate M-theory for Ω-spaces. — Duality. — The closure of the "unit ball" of a

bundle and separation axioms. — Locally trivial bundles: a definition. — Local linear independence. — Internal duality of $C(X)$-modules. — The dual space of a space of sections.

Jacques SESIANO. — **Books IV to VII of Diophantus' *Arithmetica* in the Arabic translation attributed to Quata ibn Luqa.** — Sources in the history of mathematics and physical sciences, vol. 3. — Un vol. relié, 16 × 24, de XII, 502 p. — Prix: DM 194.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Introduction: The four Arabic books and the *Arithmetica*. The extant Arabic text. Tentative reconstruction of the history of the *Arithmetica*. — *Translation*. — *Mathematical commentary*. — *Text*. — *Arabic index*. — *Appendix:* Conspectus of the problems of the *Arithmetica*. — Only recently discovered, this portion of Diophantus' *Arithmetica* had been missing from the Greek text, but survived in an Arabic translation. This English translation is the first printed edition of this important work by the "father of modern algebra". New suggestions are also made about the content of the still-missing parts of the *Arithmetica*.

P. J. FEDERICO. — **Descartes on polyhedra: a study of the *De Solidorum Elementis*.** — Sources in the history of mathematics and physical sciences, vol. 4. — Un vol. relié, 16 × 24, de IX, 145 p. — Prix: DM 98.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The manuscript: History of the manuscript. — Description of the Leibniz copy. Facsimile of the manuscript. Transcription of the manuscript. Date of the original Descartes manuscript. — *Solid geometry: the elements of solids:* Some geometric background. Translation and commentary. General comments. Note on the Euler papers of 1750 and 1751. Descartes and Euler. — *Number theory: polyhedral numbers:* The figurate numbers of the Greeks. Translation and commentary. General comments.

Gregory H. MOORE. — **Zermelo's axiom of choice: its origins, development, and influence.** — Studies in the history of mathematics and physical sciences, vol. 8. — Un vol. relié, 16 × 24, de XIV, 410 p. — Prix: DM 108.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The prehistory of the axiom of choice. — Zermelo and his critics (1904-1908). — Zermelo's axiom and axiomatization in transition (1908-1918). — The Warsaw school, widening applications, models of set theory (1918-1940). — After Gödel. — Five letters on set theory. — Deductive relations concerning the axiom of choice.

Bruce CHANDLER, Wilhelm MAGNUS. — **The history of combinatorial group theory: a case study in the history of ideas.** — Studies in the history of mathematics and physical sciences, vol. 9. — Un vol. relié, 16 × 24, de VIII, 234 p. — Prix: DM 128.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The beginning of combinatorial group theory: The foundations: Dyck's group-theoretical studies. The origin: the theory of discontinuous groups. Motivation: the fundamental groups of topological spaces. The graphical representation of groups. Precursors

of later developments. Summary. Modes of communication. Growth and distribution of research in group theory. Biographical notes. Notes on terminology and definitions. Sources. — *The emergence of combinatorial group theory as an independent field:* Free groups and their automorphisms. The Reidemeister-Schreier method. Free products and free products with amalgamations. One relator groups. Metabelian groups and related topics. Commutator calculus and the lower central series. Varieties of groups. Topological properties of groups and group extensions. Notes on special groups. The impact of mathematical logic. Modes of communication. Geographical distribution of research and effects of migration. Organization of knowledge.

E. FREITAG. — **Siegelsche Modulfunktionen.** — Grundlehren der mathematischen Wissenschaften, bd. 254. — Un vol. relié, 16 × 24, de x, 341 p. — Prix: DM 168.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Siegelsche Modulfunktionen ist die erste umfassende und systematische Darstellung eines zentralen Gebiets der Theorie mehrerer komplexer Veränderlicher. Neben der klassischen Theorie der Siegelschen Modulfunktionen sind wichtige Themen die Satakesche Kompaktifizierungstheorie mit ihren Anwendungen auf die Modulmannigfaltigkeiten Abelscher Varietäten und die Theorie der Heckeoperatoren mit ihren Anwendungen auf quadratische Formen. Der Autor führt die Beweise durchweg vollständig aus; einige der Ergebnisse und viele der Beweise erscheinen hier zum ersten Mal im Druck.

Bernard GELBAUM. — **Problems in analysis.** — Problem books in mathematics. — Un vol. relié, 16 × 24, de VII, 228 p. — Prix: DM 74.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

This book offers graduate and advanced undergraduate mathematics students 518 problems in modern real analysis. These are grouped in fifteen sections and are graded according to difficulty within each section. Solutions are given for all the problems. A glossary-index contains precise statements of the basic theorems and the definitions of all but the most well-known terms used in the book. A bibliography of background material is included.

Elmer G. REES. — **Notes on geometry.** — Universitext. — Un vol. broché, 17 × 25, de VIII, 109 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

This book offers a concrete and accessible treatment of Euclidean, projective, and hyperbolic geometry, with more stress on topological aspects than is found in most textbooks. The author's purpose is to introduce students to geometry on the basis of elementary concepts in linear algebra, group theory, and metric spaces, and to deepen their understanding of these topics in the process. A large number of exercices and problems is included, some of which introduce new topics.

Group actions and vector fields. — Proceedings of a Polish-North American seminar held at the University of British Columbia, January 15-February 15, 1981. — Edited by J. B. Carrell. — Lecture notes in mathematics, vol. 956. — Un vol. broché, 17 × 25, de v, 144 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

E. Akyildiz: Vector fields and cohomology of G/P. — *A. Bialynicki-Birula and J. Swiecicka:* Complete quotients by algebraic torus actions. — *J. B. Carrell and A. J. Sommese:*

A generalization of a theorem of Horrocks. — *J. B. Carrell and A. J. Sommese:* Almost homogeneous C^* actions on compact complex surfaces. — *I. Dolgachev:* Weighted projective varieties. — *J. Konarski:* A pathological example of an action of k^*. — *J. Konarski:* Properties of projective orbits of actions of affine algebraic groups. — *M. Koras:* Linearization of reductive group actions. — *D. I. Lieberman:* Holomorphic vector fields and rationality. — *A. J. Sommese:* Some examples of C^* actions. — *P. Wagreich:* The growth function of a discrete group.

Differential equations. — Proceedings of the 1st Latin American school of differential equations, held at Sao Paulo, Brazil, June 29-July 17, 1981. — Edited by D. G. de Figueiredo and C. S. Hönig. — Lecture notes in mathematics, vol. 957. — Un vol. broché, 17 × 25, de VIII, 301 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Alfonso Castro B.: Reduction methods via minimax. — *Alfonso Castro B. and J. V. A. Gonçalves:* On multiple solutions of nonlinear elliptic equations with odd nonlinearities. — *Djairo Guedes de Figueiredo:* Positive solutions of semilinear elliptic problems. — *Saul Hahn-Goldberg:* A regularity theorem for inverse bounded and accretive operators in abstract Hilbert space. — *Daniel B. Henry:* How to remember the Sobolev inequalities. — *Chaim Samuel Hönig:* The adjoint equation of a linear Volterra Stietjes-integral equation with a linear constraint. — *A. F. Izé:* On a fixed point index method for the analysis of the asymptotic behavior and boundary value problems of process and semidynamical systems. — *Jorge Ize:* Introduction to bifurcation theory. — *Jorge Lewowicz:* Sobre estabilidad topologica. — *P. S. Milojevic:* Solvability of operator equations involving nonlinear perturbations of Fredholm mappings of nonnegative index and applications. — *Gustavo Perla Menzala:* Some remarks on a wave equation with a nonlocal interaction. — *Paul H. Rabinowitz:* The mountain pass theorem: theme and variations. — *Larry L. Schumaker:* Optimal spline solutions of systems of ordinary differential equations. — *J. Sotomayor:* Structurally stable second order differential equations.

F. Rudolf Beyl, Jürgen Tappe. — **Group extensions, representations, and the Schur multiplicator.** — Lecture notes in mathematics, vol. 958. — Un vol. broché, 17 × 25, de IV, 278 p. — Prix: DM 33.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Group extensions with abelian kernel. — Schur's theory of projective representations. — Isoclinism. — Other group-theoretic applications of the Schur multiplicator.

Géométrie algébrique réelle et formes quadratiques. — Journées S.M.F., Université de Rennes 1, mai 1981. — Edité par J.-L. Colliot-Thélène, M. Coste, L. Mahé, et M.-F. Roy. — Lecture notes in mathematics, vol. 959. — Un vol. broché, 17 × 25, de X, 458 p. — Prix: DM 55.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

In recent years, there has been a number of different approaches to real algebraic geometry. The aim of the Rennes meeting was to bring these approaches together and to find a common language for the various topics covered: semi-algebraic geometry, positivstellensätze, real valuation rings, ordered fields and order of higher level, real holomorphy rings, real spectra, quadratic forms and signatures of varieties, Nash functions, topology and homology of real algebraic varieties.

Multigrid methods. — Proceedings of the conference held at Köln-Porz, November 23-27, 1981. — Edited by W. Hackbusch and U. Trottenberg. — Lecture notes in mathematics, vol. 960. — Un vol. broché, 17 × 25, de VII, 652 p. — Prix: DM 72.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Multigrid methods may be regarded as the most efficient methods for the numerical solution of a large class of partial differential equations and related problems. This volume reflects the growing interest in the combination of multigrid techniques with defect correction methods as well as in the solution of singularly perturbed and (indefinite) nonlinear problems. The first part of the volume is a systematic introduction to the multigrid area (three papers by A. Brandt, W. Hackbusch, K. Stüben and U. Trottenberg). The second part provides a survey of the current state of multigrid research and development in 17 papers dealing with the theory, applications and software development.

Category theory: applications to algebra, logic and topology. — Proceedings of the international conference held at Gummersbach, July 6-10, 1981. — Edited by K. H. Kamps, D. Pumplün, and W. Tholen. — Lecture notes in mathematics, vol. 962. — Un vol. broché, 17 × 25, de XV, 322 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

34 exposés par: H. L. Bentley.-R. Betti and R. F. C. Walters. — F. Borceux. — D. Bourn. — H. Brandenburg, M. Hušek. — R. Brown, P. J. Higgins. — Y. Diers. — A. Frei. — A. Frölicher. — J. W. Gray. — G. Greve. — P. J. Higgins, J. Taylor. — R.-E. Hoffmann. — M. Höppner. — M. Hušek. — S. Kaijser, W. Pelletier. — J. Lambek. — J. MacDonald, A. Stone. — J. MacDonald, W. Tholen. — L. Márki, R. Wiegandt. — A. Melton, G. E. Strecker. — A. Mysior. — L. D. Nel. — S. G. Niefield. — M. Pfender, R. Reiter, and M. Sartorius. — H.-E. Porst. — T. Porter. — A. Pultr. — G. Richter. — T. Spircu. — R. Street. — W. Sydow. — V. Trnková. — A. Wiweger.

Roel NOTTROT. — **Optimal processes on manifolds; an application of Stokes' theorem.** — Lecture notes in mathematics, vol. 963. — Un vol. broché, 17 × 25, de VI, 124 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Introduction. — Optimal processes on manifolds. — Processes, described by ordinary differential equations. — Processes, described by first order partial differential equations. — Processes, described by second order partial differential equations.

Topics in numerical analysis. — Proceedings of the S.E.R.C. summer school, Lancaster, July 19-August 21, 1981. — Edited by P. R. Turner. — Lecture notes in mathematics, vol. 965. — Un vol. broché, 17 × 25, de IX, 202 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

C. T. H. Baker: An introduction to the numerical treatment of Volterra and Abel-type integral equations. — *C. de Boor:* Topics in multivariate approximation theory. — *M. G. Cox:* Practical spline approximation. — *K. W. Morton:* Finite element methods for non-self-adjoint problems. — *M. J. Todd:* An introduction to piecewise-linear homotopy algorithms for solving systems of equations.

Numerical integration of differential equations and large linear systems. — Proceedings of two workshops held at the University of Bielefeld, Spring 1980. — Edited by Juergen Hinze. — Lecture notes in mathematics, vol. 968. — Un vol. broché, 17 × 25, de VI, 412 p. — Prix: DM 49.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

The present volume deals with numerical methods useful in atomic and molecular physics, in particular scattering calculations and the solution of the coupled differential equation in chemical kinetics. Thus it is concerned with the methods for the solution of large linear and non linear systems of coupled differential equations and, correspondingly, methods for the solution of the resulting large, sparse linear equations or eigenvalue problems.

Combinatorial theory. — Proceedings of a conference held at Schloss Rauischholzhausen, May 6-9, 1982. — Edited by D. Jungnickel and K. Vedder. — Lecture notes in mathematics, vol. 969. — Un vol. broché, 17 × 25, de V, 326 p. — DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

21 exposés par: J. Abrham, A. Kotzig. — T. Beth. — A. Beutelspacher, W. Brestovansky. — H. Brehm. — F. Buekenhout. — P. J. Cameron. — M. Clausen, F. Stötzer. — W. Deuber, H. J. Prömel, B. Voigt. — A. Dür, U. Oberst. — D. Foulser, G. Mason, M. Walker. — F. Hergert. — C. Hering, H.-J. Schaeffer. — A. Kerber, K.-J. Thürlings. — E. Köhler. — H. Lenz, H. Zeitler. — H. Lüneburg. — A. Neumaier. — W. Oberschelp. — J. Remlinger. — D. Tamari. — E. Triesch.

Twistor geometry and non-linear systems. — Review lectures given at the 4th Bulgarian summer school on mathematical problems of quantum field theory, held at Primorsko, Bulgaria, September 1980. — Edited by H. D. Doebner and T. D. Palev. — Lecture notes in mathematics, vol. 970. — Un vol. broché, 17 × 25, de V, 216 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

TWISTOR GEOMETRY: *S. G. Gindikin:* Integral geometry and twistors. — *Yu. I. Manin:* Gauge fields and cohomology of analytic sheaves. — *Z. Perjes:* Introduction to twistor particle theory. — *N. J. Hitchin:* Complex manifolds and Einstein's equations. — NON-LINEAR SYSTEMS: *A. A. Kirillov:* Infinite dimensional Lie groups: their orbits, invariants and representations. The geometry of moments. — *A. S. Schwarz:* A few remarks on the construction of solutions of non-linear equations. — *A. K. Pogrebkov and M. C. Polivanov:* Some topics in the theory of singular solutions of non-linear equations. — *V. K. Melnikov:* Symmetries and conservation laws of dynamical systems. — *M. A. Semenov-Tianshansky:* Group-theoretical aspects of completely integrable systems. — *A. V. Mikhailov:* Relativistically invariant models of the field theory integrable by the inverse scattering method. — *P. A. Nikolov and I. T. Todorov:* Space-time versus phase space approach to relativistic particle dynamics.

Saharon SHELAH. — **Proper forcing.** — Lecture notes in mathematics, vol. 940. — Un vol. broché, 17 × 25, de XXIX, 496 p. — Prix: DM 62.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

This research monograph opens with an introduction to forcing methods. Here knowledge of naive set theory is presupposed, and the axiomatic approach to forcing (earlier used by Baumgartner) is adopted. The main part contains many new independence

results, mostly concerning small uncountable cardinals. The main purpose of the papers contained in the monograph is to provide new tools for independence proofs. Most of the results and methods in the book are right up to date and lead directly to the forefronts of modern research.

Probability, statistics and analysis. — Edited by J. F. C. Kingman and G. E. H. Reuter. — London mathematical society lecture note series, vol. 79. — Un vol. broché, 15 × 23, de VIII, 286 p. — Prix: £16.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

D. Aldous and J. Pitman: The asymptotic speed and shape of a particle system. — *M. S. Bartlett:* On doubly stochastic population processes. — *N. H. Bingham and J. Hawkes:* On limit theorems for occupation times. — *M. Cranston, S. Orey, U. Rösler:* The Martin boundary of two dimensional Ornstein-Uhlenbeck processes. — *E. B. Dynkin:* Green's and Dirichlet spaces for a symmetric Markov transition function. — *G. K. Eagleson, R. F. Gundy:* On a theorem of Kabanov, Liptser and Širjaev. — *J. M. Hammersley:* Oxford commemoration ball. — *F. P. Kelly:* Invariant measures and the q-matrix. — *J. T. Kent:* The appearance of a multivariate exponential distribution in sojourn times for birth-death and diffusion processes. — *J. F. C. Kingman:* Three unsolved problems in discrete Markov theory. — *P. A. P. Moran:* The electrostatic capacity of an ellipsoid. — *F. Papangelou:* Stationary one-dimensional Markov random fields with a continuous state space. — *R. Pyke:* A uniform central limit theorem for partial-sum processes indexed by sets. — *B. D. Ripley:* Multi-dimensional randomness. — *B. W. Silverman:* Some properties of a test for multimodality based on kernel density estimates. — *R. L. Tweedie:* Criteria for rates of convergence of Markov chains, with application to queueing and storage theory. — *P. Whittle:* Competition and bottle-necks.

Alain ROBERT. — **Introduction to the representation theory of compact and locally compact groups.** — London mathematical society lecture note series, vol. 80. — Un vol. broché, 15 × 23, de X, 205 p. — Prix: £12.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

Representations of compact groups: Compact groups and Haar measures. Representations, general constructions. A geometrical application. Finite-dimensional representations of compact groups (Peter-Weyl theorem). Decomposition of the regular representation. Convolution, Plancherel formula and Fourier inversion. Characters and group algebras. Induced representations and Frobenius-Weil reciprocity. Tannaka duality. Representations of the rotation group. — *Representations of locally compact groups:* Groups with few finite-dimensional representations. Invariant measures on locally compact groups and homogeneous spaces. Continuity properties of representations. Representations of G and of $L^1(G)$. Schur's lemma: unbounded version. Discrete series of locally compact groups. The discrete series of $Sl_2(R)$. The principal series of $Sl_2(R)$. Decomposition along a commutative subgroup. Note on Hilbertian integrals. Type I groups. Getting near an abstract Plancherel formula. — Exercices à la fin de chaque chapitre.

D. COOKE, A. H. CRAVEN, G. M. CLARKE. — **Basic statistical computing.** — Un vol. broché, 18 × 25, de XII, 156 p. — Prix: £5.95. — Edward Arnold Publishers Ltd, Maidenhead, Berks, 1982.

Introduction. — Some general principles. — Sorting and ranking. — Inspection and summary of data using tables. — Inspection and summary of data using graphical

methods. — Computation of variance and correlation coefficient. — Simulation. — Probability functions of random variables. — Generation of random samples from non-uniform distributions. — Significance tests and confidence intervals. — Regression. — Analysis of variance. — Appendices.

Robert M. McLeod. — **The generalized Riemann integral.** — The Carus mathematical monographs, vol. 20. — Un vol. relié, 13 × 20, de xiii, 275 p. — Prix: £12.95. — Mathematical association of America, Washington, distributed by John Wiley and Sons, 1980.

Definition of the generalized Riemann integral. — Basic properties of the integral. — Absolute integrability and convergence theorems. — Integration on subsets of intervals. — Measurable functions. — Multiple and iterated integrals. — Integrals of Stieltjes type. — Comparison of integrals.

Vladimir M. Tichomirov. — **Grundprinzipien der Theorie der Extremalaufgaben.** — Teubner-Texte zur Mathematik, Bd. 30. — Un vol. broché, 15 × 21, de 152 p. — Prix: DM 16.00. — B. G. Teubner Verlagsgesellschaft, 1982.

Einleitung. Vorbereitende Betrachtungen. — Das Lagrangesche Prinzip für Aufgaben mit Nebenbedingungen. — Das Dualitätsprinzip in der konvexen Analysis und konvexen Optimierung. — Das Prinzip der Erweiterung von Variationsproblemen. — Das Prinzip des vollständigen Beseitigens der Nebenbedingungen.

Herbert Kurke. — **Vorlesungen über algebraische Flächen.** — Teubner-Texte zur Mathematik, Bd. 43. — Un vol. broché, 15 × 21, de 204 p. — Prix: M. 19.00. — B. G. Teubner Verlagsgesellschaft, Leipzig, 1982.

Kurze Übersicht über Grundbegriffe der algebraischen Geometrie. — Eigentliche Morphismen, Endlichkeitssatz, Satz über formale Funktionen. — Bertinis Satz und allgemeine Projektionen. — Dualitätssatz, Satz von Riemann-Roch für Kurven und einige Anwendungen. — Schnittprodukt und Anwendungen. — Existenz singularitätenfreier Modelle. — Der Satz von Riemann-Roch für Vektorbündel auf Flächen. — Bemerkungen zum komplex-analytischen Fall. — Klassifizierungstheorie. — Bemerkungen zu einigen verwendeten Grundbegriffen.

Recent trends in mathematics, Reinhardsbrunn, 1982. — Conference in Reinharsbrunn, October 11-13, 1982. — Edited by Herbert Kurke, Joseph Mecke, Hans Triebel and Rüdiger Thiele. — Teubner-Texte zur Mathematik, Bd. 50. — Un vol. broché, 15 × 21, de 336 p. — Prix: M. 30.00. — B. G. Teubner Verlagsgesellschaft, Leipzig, 1983.

31 exposés par: R. Ambartzumian. — L. Badescu. — M. Berger. — S. V. Bochkariev. — Z. Ciesielski. — M. Costabel, E. Stephan, W. L. Wendland. — W. Dickmeis, R. J. Nessel. — H. Dinges. — K.-H. Elster, A. Göpfert. — H. G. Feichtinger. — G. Gasper, W. Trebels. — J. Grandell. — K. P. Hadeler. — W. S. Hatcher. — V. Huber-Dyson. — L. D. Kudryavtsev. — P. Möbius. — V. Mustonen. — J. Necas. — W. Nöbauer, W. Timischl. — G. Pickert. — C. Preston. — C. Procesi. — S. Prössdorf. — S. Schwabik. — C. G. Simader. — K. Ueno. — J. Vesely. — W. v. Wahl. — H. Wallin. — T. F. Banchoff.

Enumerative geometry and classical algebraic geometry. — Edited by Patrick Le Barz, Yves Hervier. — Progress in mathematics, vol. 24. — Un vol. relié, 16 × 24, de x, 252 p. — Prix: FS 48.00. — Birkhäuser, Boston/Basel/Stuttgart, 1982.

L. Gruson, C. Peskine : Courbes de l'espace projectif: variétés de sécantes. — *L. Gruson, C. Peskine :* Section plane d'une courbe gauche: postulation. — *R. Piene :* Degenerations of complete twisted cubics. — *F. Catanese :* Pluricanonical-Gorenstein-curves. — *W. Fulton, R. Lazarsfeld :* Positivity and excess intersection. — *D. Laksov :* Notes on the evolution of complete correlations. — *A. Beauville :* Diviseurs spéciaux et intersection de cycles dans la jacobienne d'une courbe algébrique. — *A. Hirschowitz, M. S. Narasimhan :* Fibrés de 't Hooft spéciaux et applications. — *P. Le Barz :* Formules multisécantes pour les courbes gauches quelconques. — *I. Vainsencher :* Schubert calculus for complete quadrics. — *S. L. Kleiman :* Multiple point formulas for maps.

Phillip A. Griffiths. — **Exterior differential systems and the calculus of variations.** — Progress in mathematics, vol. 25. — Un vol. relié, 16 × 24, de viii, 335 p. — Prix: SF 68.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Preliminaries. — Euler-Lagrange equations for differential systems with one independent variable. — First integrals of the Euler-Lagrange system: Noether's theorem and examples. — Euler equations for variational problems in homogeneous spaces. — Endpoint conditions; Jacobi equations and the 2nd variation; conjugate points; fields and the Hamilton-Jacobi equation; the Lagrange problem. — Miscellaneous remarks and examples.

Number theory related to Fermat's last theorem. — Proceedings of the conference sponsored by the Vaughn Foundation. — Edited by Neal Koblitz. — Progress in mathematics, vol. 26. — Un vol. relié, 16 × 24, de x, 362 p. — Prix: SF 68.00. — Birkhäuser, Boston/Basel/Stuttgart, 1982.

The 350-year-old Fermat's last theorem is still a source of inspiration, touching on many branches of contemporary mathematics. The conference concerned several areas of research in which recent work associated with Fermat's last theorem has led to progress, not necessarily towards a solution to the theorem itself, but in new directions in number theory and algebraic geometry. The main themes of the conference were: geometry of Fermat varieties, Iwasawa theory of cyclotomic fields, Grössenscharakter and special values of L-functions, history.

I. S. Iohvidov. — **Hankel and Toeplitz matrices and forms; algebraic theory.** — Translated from Russian by G. Philip A. Thijsse. — Un vol. relié, 16 × 24, de xiii, 231 p. — Prix: SF 58.00. — Birkhäuser, Boston/Basel/Stuttgart, 1982.

Some information from the general theory of matrices and forms. — Hankel matrices and forms. — Toeplitz matrices and forms. — Transformations of Toeplitz and Hankel matrices and forms. — The theorems of Borhardt-Jacobi and of Herglotz-M. Krein on the roots of real and Hermitian-symmetric polynomials. — The functionals S and C and some of their applications.

B. BANK, J. GUDDAT, D. KLATTE, B. KUMMER and K. TAMMER. — **Non-linear parametric optimization.** — Un vol. relié, 18 × 25, de 226 p. — Prix: FS 58.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Basic concepts and definitions. — Point-to-set mappings with given structure. — Stability considerations. — Properties of characteristic parameter sets for special classes of optimization problems. — On procedures for analysing parametric optimization problems.

Michel METIVIER. — **Semimartingales: a course on stochastic processes.** — De Gruyter studies in mathematics, vol. 2. — Un vol. relié, 18 × 25, de XI, 287 p. — Prix: DM 88.00. — Walter de Gruyter, Berlin/New York, 1982.

Martingales, quasimartingales, semimartingales: Basic notions on stochastic processes. Martingales and quasimartingales, basic inequalities and convergence theorem, application to stochastic algorithms. Quasimartingales from class [*L. D*], predictable and dual predictable projection of processes. Square integrable martingales and semimartingales. — *Stochastic calculus:* Stochastic integral with respect to semimartingales and the transformation formula. First applications of the transformation theorem. Random measures and local characteristics of a semimartingale. Stochastic differential equations. — Exercices, notes historiques et bibliographiques à la fin de chaque chapitre.

William PARRY and Selim TUNCEL.. — **Classification problems in ergodic theory.** — London mathematical society lecture note series, vol. 67. — Un vol. broché, 16 × 23, de VI, 101 p. — Prix: £7.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Introduction: Motivation. Basic definitions and conventions. Processes. Markov chains. Reduced processes and topological Markov chains. Information and entropy. Types of classification. — *The information cocycle:* Regular isomorphisms. Unitary operators and cocycles. Information variance. The variational principle for topological Markov chains. A group invariant. Quasi-regular isomorphisms and bounded codes. Central limiting distributions as invariants — *Finitary isomorphisms:* The marker method. Finite expected code-lengths. — *Block-codes:* Continuity and block-codes. Bounded-to-one codes. Suspensions and winding numbers. Computation of the first cohomology group. — *Classifications of topological Markov chains:* Finite equivalence. Almost topological conjugacy and the road problem. Topological conjugacy of topological Markov chains. Invariants and reversibility. Flow equivalence. — *Shannon's work on maximal measures.*

Journées arithmétiques 1980. — Edited by J. V. Armitage. — London mathematical society lecture note series, vol. 56. — Un vol. broché, 16 × 23, de XIV, 392 p. — Prix: £15.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

For a number of years, French mathematicians have run regular number theory conferences to which they have invited number theorists from many countries. To repay their hospitality, the London mathematical society arranged for the 1980 "Journées" to be held in Exeter. The papers published here are either based on the main invited lectures

or on selected research talks. They cover all branches of the subject: combinatorial and elementary methods, analytic number theory, transcendence theory, Galois module theory and algebraic number theory in general, elliptic curves and modular functions, local fields, additive number theory, Diophantine geometry and uniform distribution.

E. B. DYNKIN. — **Markov processes and related problems of analysis: selected papers.** — London mathematical society lecture note series, vol. 54. — Un vol. broché, 16 × 23, de VI, 312 p. — Prix: £14.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Professor Dynkin has made many profound contributions to this subject and in this volume are collected several of his most important expository and survey articles. The content of these articles has not been covered in any monograph as yet.

Most of the papers compiled in this volume have been published in *Uspekhi Matematicheskikh Nauk* and translated into English in the *Russian mathematical surveys.*

P. MALLIAVIN. — **Intégration et probabilités, analyse de Fourier et analyse spectrale.** — Collection "Maîtrise de mathématiques pures". — Un vol. broché, 17 × 24, de 200 p. — Masson, Paris/New York/Barcelone/Milan/Mexico/Rio de Janeiro, 1982.

Ce livre présente un exposé d'ensemble, avec des démonstrations complètes, de la théorie de Lebesgue et de tous ces prolongements: espaces mesurables et fonctions intégrables, mesure boréliennes et mesures de Radon, analyse de Fourier, méthodes hilbertiennes et théorèmes limites en calcul des probabilités, analyse spectrale hilbertienne.

A. R. G. HEESTERMAN. — **Matrices and simplex algorithms: a textbook in mathematical programming and its associated mathematical topics.** — Un vol. relié, 17 × 25, de X, 790 p. — Prix: Dfl 220.00. — D. Reidel publishing company, Dordrecht/Boston/London, 1983.

Matrices, block-equations, and determinants: Equations-systems and tableaux. Matrix notation. Block-equations and matrix inversion. Some operators and their use. Determinants and rank. — *Graphs and linear programming:* Vectors and coordinate-spaces. Some basic linear programming concepts. Outline of the simplex algorithm. The search for a feasible solution. Mixed systems, upper and lower bounds. Duality. Linear programming on the computer. Parametric variation of the *L. P.* problem. — *Some general mathematical programming notions and related matrix algebra:* Topology of feasible space areas and its relation to definiteness. Optimality conditions. — *Quadratic programming:* Quadratic programming with linear restrictions. Parametric methods in quadratic programming. General quadratic programming. — *Integer programming:* Integer programming and some of its applications. Branching methods. The use of cuts.

Proceedings of the international mathematical conference, Singapore 1981. — Edited by Louis H. Y. Chen, Tze Beng Ng and M. J. Wicks. — North-Holland mathematics studies, vol. 74. — Un vol. broché, 17 × 24, de XVIII, 204 p. — Prix: Dfl 90.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

M. Nagata: Applications of the theory of valuation rings. — *J. W. S. Cassels:* Rational quadratic forms. — *N. Iwahori:* Some topics on Coxeter groups and Weyl

groups. — *H. Nagao :* Some correspondences in the representation theory of finite groups. — *T. Hida :* White noise analysis and its applications. — *B. Hartley :* Powers of the augmentation ideal. — *P. Erdös :* Some of my favourite problems which recently have been solved. — *H. Matsumura :* Recent developments in the theory of excellent rings. — *E. C. Milner :* On the decomposition of partially ordered sets into directed sets. — *H. Matsumura :* Homological methods in commutative algebra. — *M. Nagata :* Commutative algebra and algebraic geometry. — *T. Hida :* Calculus of Brownian functionals. — *M. Fukushima :* Markov processes and functional analysis.

Joao B. PROLLA. — **Topics in functional analysis over valued division rings.** — North-Holland mathematics studies, vol. 77. — Notas de matematica, vol. 89. — Un vol. broché, de XVI, 302 p. — Prix: Dfl 100.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

Valued division rings. — Topological vector spaces. — Non-archimedean topological vector spaces. — The Hahn-Banach theorem. — Stone-Weierstrass theorem. — Normed spaces. — Topological rings and algebras of continuous functions. — Ultra-normal and ultraparacompact spaces. — Best approximation.

Walter FEIT. — **The representation theory of finite groups.** — North-Holland mathematical library, vol. 25. — Un vol. relié, 16 × 23, de VIII, 645 p. — Prix: Dfl 140.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

This volume presents a comprehensive treatment of the theory of modular and p-adic representations of finite groups. This includes the statements and proofs of the three main theorems of block theory, the theory of vertices, and applications such as the Z^*-theorem. In particular, the book contains an exhaustive treatment of blocks with cyclic defect groups over certain p-adic fields with arbitrary residue class fields. The work contains most of what is known about representations of finite groups in general. A great deal of the material has never before appeared in print.

David MUMFORD. — **Tata lectures on theta, vol. I: containing introduction and motivation: theta functions in one variable, basic results on theta functions in several variables.** — Progress in mathematics, vol. 28. — Un vol. relié, 16 × 24, de XIII, 235 p. — Prix: SF 54.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

The first of a series of three volumes surveying the theory of theta functions and its significance in the fields of representation theory, and algebraic geometry, this volume deals with the basic theory of theta functions in one and several variables, and some of its number theoretic applications. Requiring no background in advanced algebraic geometry, this text serves as a modern introduction to the subject.

Kentaro YANO, Masahiro KON. — **CR submanifolds of Kaehlerian and Sasakian manifolds.** — Progress in mathematics, vol. 30. — Un vol. relié, 16 × 24, de x, 208 p. — Prix: SF 44.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

This volume presents an introduction and survey of the latest results pertaining to the study of CR submanifolds of Kaehlerian and Sasakian manifolds, a relatively new

field of differential geometry. Contents: structures on Riemannian manifolds, submanifolds, contact *CR* submanifolds, *CR* submanifolds, submanifolds and Riemannian fibre bundles, hypersurfaces.

Daniel H. GREENE, Donald E. KNUTH. — **Mathematics for the analysis of algorithms.** — Second edition. — Progress in computer science, vol. 1. — Un vol. relié, 16 × 24, de VI, 123 p. — Prix: SF 24.00. — Birkhäuser, Boston/Basel/Stuttgart, 1982.

Now in an expanded, updated edition, this title builds on the fundamentals of complex variable theory and combinatorial analysis, presenting many of the major problems used in the precise analysis of algorithms. With coverage of binomial identities, recurrence relations, operator methods, asymptotic analysis, this book presents information in a useful format: terse enough for easy reference, yet detailed enough for those with little background.

Claude DELLACHERIE and Paul-André MEYER. — **Probabilities and potential B: theory of martingales.** — Translated and prepared by J. P. Wilson. — North-Holland mathematics studies, vol. 72. — Un vol. broché, 17 × 24, de XVII, 464 p. — Prix: Dfl 125.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

Generalities and the discrete case: Definitions and general properties. Doob's stopping theorem. Fundamental inequalities. Convergence and decomposition theorems. Some applications of the convergence theorems. — *Continuous parameter martingales:* Right continuous supermartingales. Projections and dual projections. Increasing processes and potentials. — *Decomposition of supermartingales, applications:* The decomposition theorem. Definition and first properties of semimartingales. *HP* spaces of martingales and semimartingales. — *Stochastic integrals, structure of martingales:* Stochastic integral of locally bounded predictable processes. Structure of martingales and local martingales. Two extensions of the notion of a stochastic integral. A characterization of semi-martingales. — Strong supermartingales. — Complements on quasimartingales.

Functional analysis, holomorphy and approximation theory. — Proceedings of the Seminario de analise functional, holomorfia e teoria da aproximaçao, Universidade federal do Rio de Janeiro, August 4-8, 1980. — Edited by Jorge Alberto Barroso. — North-Holland mathematics studies, vol. 71. — Notas de matematica, vol. 88. — Un vol. broché, 16 × 24, de VIII, 486 p. — Prix: Dfl 150.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

This book intends to present the state of affairs in several branches of analysis, such as convolution equations in infinite dimensions, the approximation property and the existence of bases in nuclear-Fréchet spaces, semi-martingales and measure theory, Köthe sequence spaces, holomorphic and differentiable mappings of uniform bounded type, the Stone-Weierstrass theorem for modules over non-Archimedean valued fields. New developments of such topics are examined with great care and consideration in this volume.

P. K. DRAXL. — **Skew fields.** — London mathematical society lecture note series, vol. 81. — Un vol. broché, 15 × 23, de VIII, 182 p. — Prix: £10.95. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

The book is written in three parts. Part I consists of preparatory work on algebras, needed in parts II and III. This material is presented in a classical, though unusual, way. Part II consists of a modern description of the theory of Brauer groups over fields (from as elementary a point of view as possible). Part III covers some new developments in the theory which, until now, have not been available except in journals. The principal topic discussed in this section is reduced K_1-theory.

Perspectives in medical statistics. — Proceedings of the European symposium on medical statistics, Rome, 1980. — Edited by J. F. Bithell, R. Coppi. — Un vol. relié, 16 × 24, de XVIII, 330 p. — Prix: £23.20. — Academic press, London/New York/Toronto/Sydney/San Francisco, 1981.

EPIDEMIOLOGY: *J. Wahrendorf:* Approaches to the detection of interactive effects. — *P. Lazar:* Geographical correlations between disease and environmental exposure. — *P. G. Smith and N. E. Day:* Matching and confounding in the design and analysis of epidemiological case-control studies. — *K. Dietz:* Mathematical models for infectious diseases, evaluation of measures for prevention and control. — CLINICAL AND EXPERIMENTAL MEDECINE: *P. N. Lee:* Statistical analysis of animal carcinogenesis experiments. — *D. J. Spiegelhalter and A. F. M. Smith:* Decision analysis and clinical decisions. — *J. P. Nakache:* Some methods of discriminant analysis on binary variables. — *M. J. R. Healy:* Some problems of repeated measurements. — CLINICAL TRIALS: *K. K. Ueberla:* Practical problems in long term clinical trials. — *S. J. Pocock:* Interim analyses and stopping rules for clinical trials. — *H. Sancho-Garnier:* Strategies for clinical trials. — *I. Sutherland:* Use of prognostic information in clinical trials. — HEALTH MONITORING AND PLANNING: *J. A. C. Weatherall:* Methods for monitoring diseases in populations. — *A. S. Härö:* Role of statistics in resource allocation problems. — *E. G. Knox:* Research and development in health services: interaction between tasks, methods and working relationships.

J. SERRA. — **Image analysis and mathematical morphology.** — Un vol. relié, 16 × 24, de XVIII, 610 p. — Prix: £48.40. — Academic press, London/New York/Paris/San Diego/San Francisco/Sao Paulo/Sydney/Tokyo/Toronto, 1982.

Principles, criteria, models. — The hit or miss transformation, erosion and opening. — Hit or miss topology. — The convex set model. — Morphological parameters and set models. — Digital morphology. — Digitalization. — Random sampling. — The covariance. — Size criteria. — Connectivity criteria. — Morphology for grey-tone functions. — Random closed sets. — Modelling.

Differential geometry and mathematical physics. — Lectures given at the meetings of the Belgian contact group on differential geometry held at Liège, May 2-3, 1980 and at Leuven, February 6-8, 1981. — Edited by M. Cahen, M. de Wilde, L. Lemaire and L. Vanhecke. — Mathematical physics studies, vol. 3. — Un vol. broché, 16 × 24, de VII, 188 p. — Prix: Dfl 65.00. — D. Reidel publishing company, Dordrecht/Boston/London, 1983.

D. Arnal: Simultaneous deformations of a Lie algebra and its modules. — *E. Combet:* How to connect exponential integrals to optimal process? — *S. Gutt:* Invariance of

Maxwell's equations. — *G. Hector :* On the classification of manifolds foliated by the action of a nilpotent Lie group. — *P. Iglesias, J. M. Souriau :* Heat, cold and geometry. — *A. Lichnerowicz :* Deformations of algebras associated with a symplectic manifold. — *G. Patissier :* Differential deformations with constant coefficients. — *P. Baird :* Some aspects of theoretical physics relating to harmonic maps. — *J. P. Bourguignon :* Stability and self-duality of Yang-Mills fields. — *H. Chaltin :* Embedded 2-spheres in R^3. — *M. de Wilde :* Local Chevalley cohomologies of the dynamical Lie algebra of a symplectic manifold. — *C. Duval :* The spin polarizer. — *J. Eells :* Variational theory in fibre bundles: examples. — *L. Gheysens :* Curvatures of tubes about submanifolds. — *E. A. Ruh :* Almost symmetric spaces. — *B. Smyth :* Minimal surfaces and Weyl groups. — *J. C. Wood :* Some aspects of harmonic maps from a surface to complex projective space.

Peter T. JOHNSTONE. — **Stone spaces.** — Cambridge studies in advanced mathematics, vol. 3. — Un vol. relié, 16 × 24, de XXI, 370 p. — Prix: £32.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Preliminaries : Lattices. Ideals and filters. Some categorical concepts. Free lattices. — *Introduction to locales :* Frames and locales. Sublocales and sites. Coherent locales. Stone spaces. — *Compact Hausdorff spaces :* Compact regular locales. Manes' theorem. Gleason's theorem. Vietoris locales. — *Continuous real-valued functions :* Complete regularity and Urysohn's lemma. The Stone-Cech compactification. $C(X)$ and $C^*(X)$. Gelfand duality. — *Representations of rings :* A crash course in sheaf theory. The Pierce spectrum. The Zariski spectrum. Ordered rings and real rings. — *Profiniteness and duality :* Ind-objects and pro-objects. Profinite sets and algebras. Stone-type dualities. General concrete dualities. — *Continuous lattices :* Compact topological (semi) lattices. Continuous posets and lattices. Lawson semilattices. Locally compact locales.

Ian STEWART, David TALL. — **Complex analysis: the hitchhiker's guide to the plane.** — Un vol. broché, 15 × 23, de VIII, 290 p. — Prix: £8.95 (relié: £22.50). — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

Most texts on complex analysis develop the subject in such a way that it appears a good deal more complicated than real analysis. Yet in many ways, it is simpler. The authors have tried to exhibit this simplicity and to do this have utilized two organizing principles: first, many concepts and results are direct generalizations from the more familiar real analysis, second, where such generalizations fail, the reason is invariably that the complex plane has a richer geometry than the real line. Thus geometric insight can be used to provide an intuitive basis for rigorous argument. The authors are at pains to link the geometry and rigour by introducing some simple topological ideas (though they assume no previous knowledge of topology). An opening chapter provides a brief history of complex analysis and a discussion of the approach adopted.

Finite geometries. — Proceedings of a conference in honor of T. G. Ostrom. — Edited by Norman L. Johnson, Michael J. Kallaher and Calvin T. Long. — Lecture notes in pure and applied mathematics, vol. 82. — Un vol. broché, 16 × 25, de XII, 454 p. — Marcel Dekker, Inc., New York/Basel, 1983.

This outstanding volume provides the first, up-to-date, in depth examination of finite geometries, all in a convenient, unified reference. In comprehensive, authoritative papers,

leading international experts explore a wide range of topics of contemporary interest, including recent advances in the study of projective and affine planes, block designs, and generalized quadrangles, connections of finite geometries to other areas of mathematics, unsolved problems in the field, and a historical review of areas of continuing research.

Commutative algebra. — Proceedings of the Trento conference, 1981. — Edited by Silvio Greco, Giuseppe Valla. — Lecture notes in pure and applied mathematics, vol 84. — Un vol. broché, 18 × 26, de VIII, 351 p. — Prix: SF 142.00. — Marcel Dekker, Inc., New York/Basel, 1983.

Focusing on the relationship of commutative algebra with algebraic geometry, this new volume offers studies of such topics as algebraic theory of blow-up, structure of tangent cones, algebraic properties of singularities, henselian schemes, structure of complexes, and overrings. This critical book provides a contemporary overview of the state of the art in this demanding field.

Some recent advances in statistics. — Edited by J. Tiago de Oliveira and Benjamin Epstein. — Un vol. relié, 16 × 24, de IX, 248 p. — Prix: £24.00. — Academic press, London/New York/Paris/San Diego/San Francisco/Sao Paulo/Sydney/Tokyo/Toronto, 1982.

Herbert Solomon: Measurement and burden of evidence. — *Emanuel Parzen:* Data modeling using quantile and density-quantile functions. — *J. Gani:* Stochastic processes in the theory of epidemics. — *Dennis V. Lindley:* The Bayesian approach to statistics. — *H. A. David:* Concomitants of order statistics: theory and applications. — *J. Tiago de Oliveira:* Decision and modelling for extremes. — *Colin L. Mallows and John W. Tukey:* An overview of techniques of data analysis, emphasizing its exploratory aspects. — *Bradley Efron:* Computer intensive methods in statistics. — *Peter J. Huber:* Current issues in robust stastistics. — *Richard E. Barlow and Alexander S. Wu:* Bayesian evaluation of life test sampling plans. — *Benjamin Epstein:* The stastistical analysis of incomplete life length data.

Differential geometric control theory. — Proceedings of the conference held at Michigan technological university, June 28-July 2, 1982. — Edited by Roger W. Brockett, Richard S. Millman, Hector J. Sussmann. — Progress in mathematics, vol. 27. — Un vol. relié, 16 × 24, de VII, 340 p. — Prix: SF 62.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Hector J. Sussmann: Lie brackets, real analyticity and geometric control. — *Robert B. Gardner:* Differential geometric methods interfacing control theory. — *Roger W. Brockett:* Asymptotic stability and feedback stabilization. — *Christoper Byrnes:* Control theory, inverse spectral problems, and real algebraic geometry. — *Christopher I. Byrnes and Arthur J. Krener:* On the existance of globally (f, g)-invariant distributions. — *Michel Fleiss:* On the relationship between the local realization of nonlinear systems, filtered, transitive Lie algebras and noncommutative indeterminates. — *Peter B. Gilkey:* Secondary characteristic classes of locally flat bundles over lens spaces in dimension 3. — *Robert M. Hardt:* Some analytic bounds for subanalytic sets. — *L. R. Hunt, Renjeng Su, and G. Meyer:* Design for multi-input nonlinear systems. — *V. Jurdjevic and G. Sallet:* Controllability of affine systems. — *I. Kupka:* Generic properties of extremals in optimal control problems. — *Renjeng Su, George Meyer and L. R. Hunt:* Robustness in nonlinear control.

The birational geometry of degenerations. — Summer algebraic geometry seminar held from June 11-July 29, 1981 at Harvard university. — Edited by Robert Friedman and David R. Morrison. — Progress in mathematics, vol. 29. — Un vol. relié, 16 × 24, de XI, 386 p. — Prix: SF 70.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Robert Friedman and David R. Morrison: The birational geometry of degenerations: an overview. — *Robert Friedman:* On the classification of surfaces with Kodaira number zero. — *N. I. Shepherd-Barron:* Degenerations with numerically effective canonical divisor. — *Rick Miranda:* Smooth models for elliptic threefolds. — *N. I. Shepherd-Barron:* Extending polarizations on families of K^3 surfaces. — *Robert Friedman:* Linear systems on anti-canonical pairs. — *Rick Miranda and David R. Morrison:* The minus one theorem. — *Robert Friedman and N. I. Shepherd-Barron:* Degenerations of Kodaira surfaces. — *Robert Friedman:* Base change, automorphisms, and stable reduction for type III K^3 surfaces. — *Bruce Crauder:* Threefold birational morphisms and degenerations without triple points. — *Bruce Crauder and David R. Morrison:* Triple-point-free degenerations of surfaces with Kodaira number zero.

Alfred RENYI. — **Tagebuch über die Informationstheorie.** — Wissenschaft und Kultur, Bd. 34. — Un vol. relié, 15 × 21, de 173 p. — Prix: SF 32.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1982.

Über den Begriff der Information in der Mathematik. — Gedanken zum Lehren der Wahrscheinlichkeitsrechnung. — Glücksspiele und Wahrscheinlichkeitsrechnung. — Variationen über ein Thema von Fibonacci. — Über die mathematische Theorie der Bäume.

Functional analysis, holomorphy, and approximation theory. — Proceedings of an international seminar, held at the Instituto de matematica, Universidade federal do Rio de Janeiro, from August 6-10, 1979. — Edited by Guido I. Zapata. — Lecture notes in pure and applied mathematics, vol. 83. — Un vol. broché, 18 × 26, de VIII, 458 p. — Prix: SF 156.00. — Marcel Dekker, Inc., New York/Basel, 1983.

20 exposés par: Bruno Brosowski. — Jeffery Cooper. — J. F. Colombeau and B. Perrot. — M. Cotlar. — J. B. Diaz and Ram Bachan Ram. — Jean Dieudonné. — Milos A. Dostal. — Ed Dubisnky. — H. O. Flösser. — Günther Hämmerlin. — Mário C. Matos. — Reinhard Mennicken. — P. L. Milojevic. — Jorge Mujica. — Leopoldo Nachbin. — Domingos Pisanelli. — João B. Prolla. — Dietmar Vogt. — S. Zaidman.

Norman E. HURT. — **Geometric quantization in action: applications of harmonic analysis in quantum statistical mechanics and quantum field theory.** — Mathematics and its applications, vol. 8. — Un vol. relié, 16 × 23, de XIV, 336 p. — Prix: Dfl 120.00. — D. Reidel publishing company, Dordrecht/Boston/London, 1983.

Survey of results. — Representation theory. — Euclidean group. — Geometry of symplectic manifolds. — Geometry of contact manifolds. — The Dirac problem. — Geometry of polarizations. — Geometry of orbits. — Fock space. — Borel-Weil theory. — Geometry of C-spaces and R-spaces. — Geometric quantization. — Principal series representations. — Geometry of De Sitter spaces. — Discrete series representations. —

Representations and automorphic forms. — Thermodynamics of homogeneous spaces. — Quantum statistical mechanics. — Selberg trace theory. — Quantum field theory. — Coherent states and automorphic forms.

Florian-Horia VASILESCU. — **Analytic functional calculus and spectral decompositions.** — Mathematics and its applications (East European series), vol. 1. — Un vol. relié, 16 × 23, de XIV, 378 p. — Prix: Dfl 180.00. — Editura academiei, Bucuresti, D. Reidel publishing company, Dordrecht/Boston/London, 1982.

Introduction. — Analytic vector-valued functions. — Fredholm theory, joint spectrum and analytic functional calculus. — Spectral decompositions. — Miscellaneous applications and examples.

Helmut WERNER. — **Praktische Mathematik I: Methoden der linearen Algebra.** — Dritte Auflage. — Hochschultext. — Un vol. broché, 17 × 24, de x, 285 p. — Prix: DM 32.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Praktische Mathematik I ist eine Einführung in die wichtigsten Methoden der modernen numerischen linearen Algebra. In verständlicher und übersichtlicher Weise werden die theoretischen Grundlagen und ihre Umsetzung in anwendbare Algorithmen dargestellt. So wird das Buch Studenten und Praktikern ein gutes Fundament für die weitere Beschäftigung mit diesem zentralen Gebiet und seinen Anwendungen vermitteln.

Roy BILLINTON, Ronald N. ALLAN. — **Reliability evaluation of engineering systems: concepts and techniques.** — Un vol. relié, 16 × 24, de x, 349 p. — Prix: $42.50. — Plenum press, New York/London, 1983.

Introduction. — Basic probability theory. — Application of the binomial distribution. — Network modelling and evaluation of simple systems. — Network modelling and evaluation of complex systems. — Probability distributions in reliability evaluation. — System reliability evaluation using probability distributions. — Discrete Markov chains. — Continuous Markov processes. — Frequency and duration techniques. — Approximate system reliability evaluation. — Systems with non-exponential distributions. — Epilogue.

J. P. NOUGIER. — **Méthodes de calcul numérique.** — Un vol. broché, 16 × 24, de 317 p. — Prix: FF 125.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Résolution d'un système d'équations, inversion de matrices. — Calcul des dérivées: différences finies. — Interpolation et extrapolation. — Racines d'équations. — Valeurs propres et vecteurs propres de matrices carrées. — Lissage de courbes, méthode des moindres carrés. — Méthodes numériques d'intégration. — Résolution d'équations différentielles. — Equations aux dérivées partielles. — Méthode des éléments finis. — Méthodes de Monte Carlo.

Jean de LAGARDE. — **Initiation à l'analyse des données.** — Un vol. broché, 15,5 × 24, de x, 158 p. — Prix: FF 68.00. — Dunod, Paris, 1983.

Qu'est-ce que l'analyse des données? — Notions mathématiques et statistiques indispensables. — La corrélation ou régression multiple. — L'étude des tableaux croisés. —

Tableaux de Burt et tableaux de contingence. — L'analyse factorielle des correspondances (exposé et explications sur un exemple). — Propriétés et interprétation de l'AFC. — Exemples d'analyse factorielle des correspondances. — L'analyse en composantes principales ACP. — L'analyse discriminante. — Pratique de l'analyse discriminante. — Deux exemples commentés d'analyse discriminante. — L'analyse de variance. — L'analyse des proximités. — Autres méthodes d'analyse. — Tables. — Programmes BASIC..

Erich HECKE. — **Lectures on Dirichlet series, modular functions and quadratic forms.** — Edited by Bruno Schoeneberg in collaboration with Wilhelm Maak. — Un vol. broché, 16,5 × 24, de 98 p. — Vandenhoeck und Ruprecht, Göttingen, 1983.

Introduction. — The first main theorem. — The case $\lambda > 2$. — The case $\lambda < 2$. — The case $\lambda = 2$. — The Euler product. — The connection with quadratic forms. — Generalisation to systems of Dirichlet series.

Ya. G. SINAI. — **Theory of phase transitions: rigorous results.** — International series in natural philosophy, vol. 108. — Un vol. relié, 17 × 24, de VIII, 153 p. — Prix: $ 27.00. — Pergamon press, Oxford/New York/Toronto/Sydney/Paris/Frankfurt, 1982.

Limit Gibbs distributions. — Phase diagrams for classical lattice systems. — Peierls's method of contours. — Lattice systems with continuous symmetry. — Phase transitions of the second kind and the renormalization group method.

Mathematical programming with data perturbations II. — Second symposium for mathematical programming with data perturbations, held at the George Washington University in May 1980. — Ed. by Anthony V. Fiacco. — Lecture notes in pure and applied mathematics, vol. 85. — Un vol. broché, 18 × 25,5, de VI, 155 p. — Prix: FS 104.00. — Marcel Dekker, New York/Basel, 1983.

A. Auslender: Theorem of constant rank for Lipschitzian maps. — *Walter Alt:* Lipschitzian perturbations of infinite optimization problems. — *Bruno Brosowski:* On the continuity of the optimum set in parametric semiinfinite programming. — *Henry Wolkowicz:* Optimality conditions and shadow prices. — *Anthony V. Fiaccio:* Optimal value continuity and differential stability bounds under the Mangasarian-Fromovitz constraint qualification. — *Caulton L. Irwin and Chin W. Yang:* Iteration and sensitivity for a nonlinear spatial equilibrium problem. — *John J. Dinkel, Gary A. Kochenberger, and Danny S. Wong:* A sensitivity analysis approach to iteration skipping in the harmonic mean algorithm. — *Aivars Celmins:* Least squares optimization with implicit model equations.

Morris KLINE. — **Mathematics: the loss of certainty.** — Un vol. relié, 16 × 23,5, de X, 366 p. — Prix: £ 12.50. — Oxford university press, New York/Oxford, 1980.

Most intelligent people today still believe that mathematics is a body of unshakable truths about the physical world and that mathematical reasonning is exact and infallible. This book refutes that myth. Morris Kline points out that today there is not one universally accepted concept of mathematics; in fact, there are many conflicting ones. This book traces the history of mathematics's fall from its lofty pedestal and explores the

reasons for its mysterious effectiveness. Kline explains in nontechnical language the drastic changes that have taken place in our understanding of "pure" as well as "applied" math, and the implications for science and for human reason generally.

Wilhelm KECS. — **The convolution product and some applications.** — Translated from Romanian by Victor Giurgiutiu. — Mathematics and its applications: east European series, vol. 2. — Un vol. relié, 16 × 23, de XVII, 332 p. — Prix: Dfl 160.00. — Editura academiei, Bucuresti and D. Reidel publishing company, Dordrecht/Boston/London, 1982.

Topological vector spaces: Remarkable sets in vector spaces. Normed vector spaces. Metric spaces. Topological vector spaces. Functional spaces. The distribution space. — *The convolution product:* The convolution product for functions. The convolution product of distributions. — *Integral transforms and periodic distributions:* The Fourier transform of functions. The Laplace transform. Periodic distributions. — *Convolution equations:* Convolution algebras and equations. General properties. Convolution equations in $K'+$. Partial differential equations. Fundamental solutions and solution of the Cauchy initial value problem. The fundamental solution and the Cauchy initial value problem for the wave equation, non-distortional network equation and heat equation. — *Application of the convolution product:* Applications in electrical engineering, in mechanical engineering. The viscoelastic solid.

K. R. W. BREWER, Muhammad HANIF. — **Sampling with unequal probabilities.** — Lecture notes in statistics, vol. 15. — Un vol. broché, 16 × 24, de IX, 164 p. — Prix: DM 32.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

An introduction to sampling with unequal probabilities. — Descriptions of procedures for sampling with unequal probabilities without replacement. — Unequal probability sampling procedures and the Horvitz-Thompson estimator. — Selection procedures using special estimators. — Multistage sampling. — An optimal sampling strategy for large unistage samples. — Appendices.

Specifying statistical models: from parametric to non-parametric, using Bayesian or non-Bayesian approaches. — Proceedings of the 2nd Franco-Belgian meeting of statisticians, held in Louvain-la-Neuve (Belgium), October 15-16, 1981. — Edited by J. P. Florens, M. Mouchart, J. P. Raoult, L. Simar, and A. F. M. Smith. — Lecture notes in statistics, vol. 16. — Un vol. broché, 16 × 24, de XII, 204 p. — Prix: DM 38.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

L. Simar: Protecting against gross errors: the aids of Bayesian methods. — *A. F. M. Smith:* Bayesian approaches to outliers and robustness. — *J. P. Raoult, D. Criticou and D. Terzakis:* The probability integral transformation for non-necessary absolutely continuous distribution functions, and its application to goodness-of-fit tests. — *P. Doukhan:* Simulation in the general first order autoregressive process (unidimensional normal case). — *D. Bosq:* Non parametric prediction in stationary processes. — *J. P. Florens:* Approximate reductions of Bayesian experiments. — *M. Mouchart, L. Simar:* Theory and applications of least squares approximation in Bayesian analysis. — *J.-P. Rolin:* Non parametric Bayesian statistics: a stochastic process approach. — *L. Birge:* Robust testing for independent non-identically distributed variables and Markov chains. — *A. Hillion:* On the use of some variation distance inequalities to estimate the difference

between sample and perturbed sample. — *J. Benasseni :* A contribution to robust principal component analysis. — *G. Collomb :* From non-parametric regression to non-parametric prediction: survey of the mean square error and original results on the predictogram.

Lothar SACHS. — **Applied statistics: a handbook of techniques.** — Translated by Zenon Reynarowych. — Springer series in statistics. — Un vol. relié, 17 × 24, de XXVIII, 706 p. — Prix: DM 118.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

"Applied statistics" is a sourcebook of statistical methods for scientists and engineers. The coverage of basic statistics, including a wide variety of techniques, tables, and computational aids, is notably thorough and complete. The book stands out from other elementary statistics books in its emphasis on medicine and the biological sciences, and by its comprehensive review of the literature on such aspects as statistical tests and experiment design. Contents: Preliminaries, statistical decision techniques, statistical methods in medicine and technology, the comparison of independent data samples, further test procedures, measures of association: correlation and regression, the analysis of $k \times 2$ and other two way tables, analysis of variance techniques, exercices and solutions.

Richard L. FABER. — **Foundations of Euclidean and non-Euclidean geometry.** — Monographs and textbooks in pure and applied mathematics, vol. 73. — Un vol. relié, 16 × 24, de XI, 329 p. — Prix: SF 148.00. — Marcel Dekker, Inc., New York/Basel, 1983.

This wide-ranging text presents geometry as a continuous evolutionary sequence, influencing and influenced by our concept of the physical universe. Featuring a unique blend of history and mathematics, and striking a balance between computational exercises and theoretical problems, this one-of-a-kind book offers a solid foundation for geometry, and explains where non-Euclidean geometry fits within the mainstream of mathematics, provides abundant exercices for work with new ideas, including easy-to-follow proofs and explanations, discusses proof of the consistency of Lobachevskian geometry by means of the Weierstrass model, and presents invaluable material on both Euclid's and Hilbert's postulates, and requisite facts of vector geometry and hyperbolic functions. A solutions manual is available upon request from the publisher.

Richard S. PALAIS. — **Real algebraic differential topology, part I.** — Mathematics lecture series, vol. 10. — Un vol. relié, 19 × 26, de V, 192 p. — Prix: SF 28.00. — Publish or Perish, Inc., Wilmington, D. E., U.S.A., distributed by Birkhäuser Verlag, Basel, 1981.

Preliminaries : Representations of algebras as function algebras. Strict semi-simplicity. Z-closed sets and strict radical ideas. The Z-topology. Ringed spaces. Ringed space categories. The irreducible components of a space. Noetherian spaces. Tangent and cotangent spaces. The local ring of a point. Equivalence relations. — *Affine algebraic geometry :* Conventions, definitions, and notations. Generating points. Review of some commutative algebra. Dimension. Simple points and non-singular spaces.

Time series analysis: theory and practice 2. — Proceedings of the international conference held in Dublin, Ireland, March 1982. — Edited by O. D. Anderson. — Un vol. relié, 16 × 23, de VIII, 250 p. — Prix: Dfl 110.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

19 exposés par: O. D. Anderson. — E. Damsleth. — E. Khabie-Zeitoune. — S. Y. Barham and F. D. J. Dunstan. — M. Deistler, W. Ploberger and B. M. Pötscher. —

G. Nicklesburg. — F. H. Koster. — C. W. K. Keng. — S. L. Husted and T. E. Kollintzas. — J. Lillestöl. — H. Lutkepöhl. — C. R. Muirhead. — A. W. Nelson and M. M. Whiteside. — S. S. Sengupta and S. K. Sengupta. — A. E. Raftery, J. Haslett and E. McColl. — S. Bittanti and R. Scattolini. — H. J. Steudel. — G. Trevino.

Handbook of statistics, vol. 2: Classification, pattern recognition and reduction of dimensionality. — Edited by P. R. Krishnaiah and L. N. Kanal. — Un vol. relié, 18 × 25, de XXII, 903 p. — Prix: Dfl 275.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

The second volume in the series, this book is concerned with classification decision theory, discriminant analysis, clustering, pattern recognition, including dimensionality reduction, multidimensional scaling and related topics and applications. Approximately half of the handbook is allocated to pattern recognition including pattern analysis, feature selection, dimensionality reduction, multidimensional scaling, intrinsic dimensionality, error estimation, applications. While half of the book emphasizes applied topics, the other half focuses on theory. This work brings together in one place survey and tutorial articles, by statisticians, electrical engineers and computer scientists, on important theoretical and practical statistical aspects of pattern classification, dimensionality reduction, and their applications in areas such as chemistry, optical character recognition waveform and speech recognition, and image modeling.

Haïm BREZIS. — **Analyse fonctionnelle: théorie et applications.** — Collection « Mathématiques appliquées pour la maîtrise ». — Un vol. broché, 16 × 24, de XIV, 233 p. — Prix: FF 125.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Les théorèmes de Hahn-Banach. Introduction à la théorie des fonctions convexes conjuguées. — Les théorèmes de Banach-Steinhaus et du graphe fermé. Relations d'orthogonalité. Opérateurs non-bornés. Notion d'adjoint. Caractérisation des opérateurs surjectifs. — Topologies faibles. Espaces réflexifs. Espaces séparables. Espaces uniformément convexes. — Les espaces L^P. — Les espaces de Hilbert. — Opérateurs compacts. Décomposition spectrale des opérateurs autoadjoints compacts. — Le théorème de Hille-Yosida. — Espaces de Sobolev et formulation variationnelle de problèmes aux limites en dimension *un*, et en dimension *N*. — Problèmes d'évolution: l'équation de la chaleur et l'équation des ondes.

John DAUNS. — **A concrete approach to division rings.** — Research and education in mathematics, vol. 2. — Un vol. broché, 17 × 24, de XX, 417 p. — Prix: DM 78.00. — Heldermann Verlag, Berlin, 1982.

Quaternions. — Generalized quaternion algebras. — Centrally finite division algebras. — Skew polynomials and division rings. — Algebraic extensions of skew fields. — Nilpotent derivations. — Semigroup power series rings. — Division rings containing generalized quaternion algebras. — Quartic cyclic fields. — Nonassociative division rings. — Factorization in domains and non-commutative polynomials.

Lothar BUTZ. — **Connectivity in multi-factor designs: a combinatorial approach.** — Research and education in mathematics, vol. 3. — Un vol. broché, 17 × 24, de VII, 190 p. — Prix: DM 32.00. — Heldermann Verlag, Berlin, 1982.

Preliminaries, problem formulation and survey of known results: The linear model. Graphs. State of the art. — *Characterizations of connected designs by means of digraphs*

with labeled cycles : Prerequisities. Row-column designs. Designs for two-way elimination of heterogeneity. Four-factor designs. Multi-factor designs. — *Invariance properties, reduction methods, algorithms.*

General topology and its relations to modern analysis and algebra V. — Proceedings of the 5th Prague topological symposium, 1981. — Edited by J. Novak. — Sigma series in pure mathematics, vol. 3. — Un vol. broché, 17 × 24, de VIII, 728 p. — Prix: DM 88.00. — Heldermann Verlag, Berlin, 1983.

The Prague topological symposium, held every five years, has become one of the most important international meeting of topologists. This book presents the best articles submitted to the organizers of the 5th symposium which took place from August 24 to 28, 1981. The subjects concerned range over all fields of topology which are currently of interest. The selection of articles in its entirety can be considered an up-to-date state-of-the-art of topology.

Algebraic geometry. — Proceedings of the international conference on algebraic geometry, held at La Rabida, Spain, January 7-15, 1981. — Edited by J. M. Aroca, R. Buchweitz, M. Giusti, and M. Merle. — Lecture notes in mathematics, vol. 961. — Un vol. broche, 16,5 × 24,5, de x, 500 p. — Prix: DM 62.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

J. L. Brylinski : Modules holonomes à singularités régulières et filtration de Hodge. — *A. Campillo and J. Castellanos :* On projections of space algebroid curves. — *E. Casas :* Moduli of algebroid plane curves. — *A. Galligo :* Invariants topologiques de germes d'applications stables et finies. — *M. Giusti et M. Merle :* Singularités isolées et sections planes de variétés déterminantielles. — M. *Goreski and R. MacPherson :* On the topology of complex algebraic maps. — *J. M. Granger :* Singularités des schémas de Hilbert ponctuels. — *G. M. Greuel :* On deformation of curves and a formula of Deligne. — *R. Hartshorne et A. Hirschowitz :* Droites en position générale dans l'espace projectif. — *J. P. G. Henry et M. Merle :* Limites d'espaces tangents et transversalité de variétés polaires. — *M. Herrmann and U. Orbanz :* Between equimultiplicity and normal flatness. — *M. Lejeune-Jalabert :* Liaison et résidu. — *M. Maruyama :* Elementary transformations in the theory of algebraic vector bundles. — *F. Puerta Sales :* Déformations semiuniverselles et germes d'espaces analytiques $\mathbf{C}^*$-équivariantes. — *J. B. Sancho de Salas :* A vanishing theorem for birational morphisms. — *P. Slodowy :* Chevalley groups over $\mathbf{C}((t))$ and deformations of simply elliptic singularities. — *J. Steenbrink :* On the Picard group of certain smooth surfaces in weighted projective spaces. — *B. Teissier :* Vari.tés polaires II. Multiplicités polaires, sections planes et conditions de Whitney. — *D. Trotman :* Regular stratifications and sufficiency of jets.

Ordinary and partial differential equations. — Proceedings of the seventh conference held at Dundee, Scotland, March 29-April 2, 1982. — Edited by W. N. Everitt and B. D. Sleeman. — Lecture notes in mathematics, vol. 964. — Un vol. broché, 16,5 × 24,5, de XVIII, 726 p. — Prix: DM 76.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

60 exposés par: F. V. Atkinson. — F. V. Atkinson and C. T. Fulton. — F. V. Atkinson, J. R. Haddock and O. J. Staffans. — D. L. Barrow and P. W. Bates. — H. Behncke. — V. Benci, A. Capozzi and D. Fortunato. — P. J. Browne. — R. C. Brown. — J. A. Burns

and E. M. Cliff and J. M. Amillo Gil. — P. A. Clarkson and J. B. McLeod. — D. Colton. — J. Dubois and P. Morales. — N. X. Dung. — M. S. P. Eastham. — Á. Elbert. — D. E. Edmunds. — P. C. Fife and B. Nicolaenko. — J. Fleckinger. — I. M. Gali. — V. V. Goyal and P. W. Schaefer. — R. C. Grimmer and W. Schappacher. — D. B. Hinton and J. K. Shaw. — F. A. Howes. — H. G. Kaper, C. Gerrit Lekkerkerker and A. Zettl. — R. M. Kauffman. — H. W. Knobloch. — I. W. Knoles. — M. A. Kon and L. A. Raphael. — K. Kreith. — R. T. Lewis. — L. L. Littlejohn and A. M. Krall. — S. O. Londén. — J. Mawhin. — R. C. MacCamy and E. Stephan. — A. C. McBride. — P. A. McCoy. — J. R. McLaughlin. — A. B. Mingarelli. — S. E. A. Mohammed. — M. Nakao. — F. Neuman. — D. Pascali. — D. Race. — R. Rautmann. — T. T. Read. — H. Röh. — D. A. Sánchez. — R. Saxton. — K. Seitz. — J. K. Shaw and D. B. Hinton. — K. Soni. — R. L. Sternberg, M. J. Goldstein and D. Drinkard. — A. Z.-A. M. Tazali. — Tung Chin-Chu. — L. Turyn. — A. Vanderbauwhede. — J. Walter. — A. D. Wood and R. B. Paris. — S. D. Wray. — E. M. E. Zayed.

Algebraic K-theory. — Proceedings of a conference held at Oberwolfach, June 1980, Part I and II. — Edited by R. Keith Dennis. — Lecture notes in mathematics, vol. 966 and 967. — Deux vol. brochés, 16,5 × 24,5, de VIII, 407 p. (part I) et de VIII, 409 p. (part II). — Prix: DM 49.00, pour chacun des deux vol. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

This conference focused primarily on lower algebraic K-theory and some aspects of higher K-theory. These two volumes of proceedings contain many papers of interest to K-theorists as well as those interested in applications of K-theory. There are some often referred to but heretofore unpublished results, the most notable of which are the results of Quillen on finite generation of K-groups for curves over finite fields. There are two survey papers: one links algebraic K-theory with affine Lie groups; the other is concerned with the congruence subgroup problem. The other papers contain current research with many new and important results for example, those of Suslin on stabilization as well as his results, on the relationship between Milnor and Quillen K-theories on fields.

Kleinian groups and related topics. — Proceedings of the workshop held at Oaxtepec, Mexico, August 10-14, 1981. — Edited by D. M. Gallo and R. M. Porter. — Lecture notes in mathematics, vol. 971. — Un vol. broché, 16,5 × 24,5, de V, 117 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

W. Abikoff, K. Appel, and P. Schupp: Lifting surface groups to $SL(2,\mathbf{C})$. — *E. Bujalance:* NEC groups and Klein surfaces. — *H. Cohn:* Remarks on the cyclotomic Fricke groups. — *M. Engber:* On the Noether gap theorem. — *D. M. Gallo:* A three-dimensional hyperbolic collar lemma. — *D. M. Gallo, R. M. Porter:* Projective structures on open surfaces. — *F. P. Gardiner:* The Teichmüller-Kobayashi metric for infinite dimensional Teichmüller spaces. — *G. R. Kempf:* The elementary theory of correspondences. — *B. Maskit:* Panelled web groups. — *R. M. Porter:* Prescribed monodromy on noncompact surfaces.

Søren ASMUSSEN, Heinrich HERING. — **Branching processes.** — Progress in probability and statistics, vol. 3. — Un vol. relié, 16 × 24, de X, 461 p. — Prix: FS 82.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Introduction: Branching phenomena and models. — *Simple branching processes:* The Galton-Watson process: probabilistic methods and analytic methods. Continuous

time Markov branching processes. — *Multigroup branching diffusions on bounded domains :* Foundations. Limit theory for subcritical and critical processes. Basic limit theory for supercritical processes. More on the limiting behaviour of linear functionals. — *Related models :* Unbounded domains. Generalized age-dependence and random characteristics. Two-sex models. — *Appendix.*

Harry KESTEN. — **Percolation theory for mathematicians.** — Progress in probability and statistics, vol. 2. — Un vol. relié, 16 × 24, de 422 p. — Prix: FS 68.00. — Birkhäuser, Boston/Basel/Stuttgart, 1982.

This book gives a rigorous and unified treatment of Bernoulli percolation (independent percolation). It exactly determines the percolative region for a number of two-dimensional graphs, giving power estimates near the critical point for a number of singular functions as well as for the resistance of a random electrical network. It includes a proof that going over to a sublattice strictly increases the critical probability in many cases. Although the book contains a list of unsolved problems, the emphasis is on the rigorous treatment of results.

Lars Valerian AHLFORS. — **Collected papers, vol. 1: 1929-1955, vol. 2: 1954-1979.** — Assistant editor: Rae Michael Shortt. — Contemporary mathematicians. — Deux vol. reliés, 19 × 26, de XIX, 520 p. (vol. 1) et de XIX, 515 p. (vol. 2). — Prix: FS 288.00 pour l'ensemble des deux vol. — Birkhäuser, Boston/Basel/Stuttgart, 1982.

With the publication of Lars Valerian Ahlfors collected papers, Birkhäuser makes available the collected works of one of this century's greatest masters of complex analysis and recipient of the 1981 Wolf Prize for mathematics. This two-volume set contains Ahlfors' papers, commentaries, and an autobiographical preface, all culled from diverse sources and brought together for the first time in this convenient format. Documenting his early years in Europe, the preface describes Ahlfors' associations with Lindelöf and Nevanlinna, recounts the dramatic story of his family's escape from war-torn Finland, and outlines the subsequent development and fruition of his mathematical research in the United States. Ahlfors' commentaries on the papers both illuminate the most important theoretical currents of complex analysis and describe the circumstances and mathematical influences under which the papers were written. These collected papers, will be of interest to both researchers in the field of complex analysis and mathematics professionals in other areas alike, particularly those involved with conformal mappings, quasiconformal mappings, Riemann surfaces, and Kleinian groups.

Differential-difference equations: applications and numerical problems. — Workshop in Oberwolfach, June 6-12, 1982. — Edited by L. Collatz, G. Meinardus, W. Wetterling. — International series of numerical mathematics, vol. 62. — Un vol. relié, 17 × 24, de 196 p. — Prix: FS 42.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

This conference was the first in Oberwolfach to be devoted to this subject matter and drew participants from ten countries. The numerous applications of difference-differential equations-including models of regulation theory, and mathematical biology and medicine, as well as questions concerning solution methodology and delay equations-attest to their increasing importance. It was the aim of the present conference to elucidate the various, seemingly heterogeneous aspects of this field and to explore through discussions and lectures their common points.

S. FENYÖ, H. W. STOLLE. — **Theorie und Praxis der linearen Integralgleichungen, Bd. 2.** — Lehrbücher und Monographien aus dem Gebiete der exakten Wissenschaften: mathematische Reihe, Bd. 75. — Un vol. relié, 17 × 24, de 376 p. — Prix: FS 86.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Auflösung von linearen Integralgleichungen zweiter Art. — Theorie der Fredholmschen Determinanten. — Der lösende Operator in der Umgebung eines Poles. — Eigenwerte und Eigenfunktionen. Reihenentwicklungen nach Eigenfunktionen bei symmetrischen Integraloperatoren. — Theorie der nichtsymmetrischen Integraloperatoren.

S. KOBAYASHI and H. WU. — **Complex differential geometry.** — With the collaboration of C. Horst. — DMV Seminar, Bd. 3. — Un vol. broché, 17 × 24, de 159 p. — Prix: FS 26.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Shoshichi Kobayashi and Camilla Horst: Topics in complex differential geometry. — *Hung-Hsi-Wu:* Function theory on noncompact Kähler manifolds.

Nonlinear filtering and stochastic control. — Proceedings of the 3rd 1981 session of the Centro internazionale matematico estivo (C.I.M.E.), held at Cortona, July 1-10, 1981. — Edited by S. K. Mitter and A. Moro. — Lecture notes in mathematics, vol. 972. — Un vol. broché, 16,5 × 24, de VIII, 297 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

A. Bensoussan: Lectures on stochastic control. — *B. Grigelionis:* Stochastic non linear filtering equations and semimartingales. — *H. Kunita:* Stochastic partial differential equations connected with nonlinear filtering. — *S. K. Mitter:* Lectures on nonlinear filtering and stochastic control. — *E. Pardoux:* Equations of nonlinear filtering, and applications to stochastic control with partial observation. — *G. B. Di Masi, W. J. Runggaldier:* On approximation methods for nonlinear filtering. — *B. Grigelionis, R. Mikulievicius:* On weak convergence to random processes with boundary conditions. — *D. Talay:* How to discretize stochastic differential equations.

Matrix pencils. — Proceedings of a conference, held at Pite Havsbad, Sweden, March 22-24, 1982. — Edited by B. Kågström and A. Ruhe. — Lecture notes in mathematics, vol. 973. — Un vol. broché, 16,5 × 24, de XI, 293 p. — Prix: DM 39.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

The main theme of this conference was numerical treatment of the matrix pencil problem $Ax = \lambda Bx$. 18 papers presented at the conference are included reflecting recent results on mathematical perturbation theory, algorithms for numerical computation, as well as applications to finite element computations and data analysis. The proceedings are divided into the following sections: general pencils, canonical reductions, aspects from differential equations and algorithms; symmetric pencils and applications; generalized singular values and data analysis.

André DRAUX. — **Polynômes orthogonaux formels: applications.** — Lecture notes in mathematics, vol. 974. — Un vol. broché, 16,5 × 24, de VI, 625 p. — Prix: DM 79.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Formal orthogonal polynomials are polynomials orthogonal to an absolutely arbitrary linear function and this arbitrariness constitutes the originality of the results presented in this research monograph. The considerable gap which had existed till now in this area is thus filled. Table des matières: Polynômes orthogonaux, systèmes adjacents de polynômes orthogonaux, fonctionnelles linéaires particulières, relations tous azimuts, quadratures de Gauss, approximants de Padé en deux points, approximants des séries de fonctions, conclusion, problèmes ouverts.

Radical Banach algebras and automatic continuity. — Proceedings of a conference held at California State University, Long Beach, July 17-31, 1981. — Edited by J. M. Bachar, W. G. Bade, P. C. Curtis Jr., H. G. Dales, and M. P. Thomas. — Lecture notes in mathematics, vol. 975. — Un vol. broché, 16,5 × 24, de VIII, 470 p. — Prix: DM 55.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

The themes of this conference were radical Banach algebras and automatic continuity of linear operators. Recent developments in these two areas as well as their interconnections were presented. These proceedings contain expanded versions of conference talks together with solutions of various problems presented and discussed, grouped into five sections as follows: general theory of radical Banach algebras, examples of radical Banach algebras, automatic continuity for homomorphisms and derivations, continuity of linear functionals, open questions.

X. FERNIQUE, P. W. MILLAR, D. W. STROOCK, M. WEBER. — **Ecole d'été de probabilités de Saint-Flour XI, 1981.** — Edité par P. L. Hennequin. — Lecture notes in mathematics, vol. 976. — Un vol. broché, 16,5 × 24, de XI, 465 p. — Prix: DM 55.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

X. Fernique: Régularité de fonctions aléatoires non gaussiennes. — *P. W. Millar:* The minimax principle in asymptotic statistical theory. — *D. W. Stroock:* Some applications of stochastic calculus to partial differential equations. — *M. Weber:* Analyse infinitésimale de fonctions aléatoires.

T. PARTHASARATHY. — **On global univalence theorems.** — Lecture notes in mathematics, vol. 977. — Un vol. broché, 16,5 × 24, de VIII, 106 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Preliminaries and statement of the problem. — *P*-matrices and *N*-matrices. — Fundamental global univalence results of Gale-Nikaido-Inada. — Global homeomorphisms between finite dimensional spaces. — Scarf's conjecture and its validity. — Global univalent results in R^2 and R^3. — On the global stability of an autonomous system on the plane. — Univalence for mappings with Leontief type Jacobians. — Assorted applications of univalence mapping results. — Further generalizations and remarks.

Thierry AUBIN. — **Nonlinear analysis on manifolds. Monge-Ampère equations.** — Grundlehren der mathematischen Wissenschaften, Bd. 252. — Un vol. relié, 16 × 24, de XII, 204 p. — Prix: DM 79.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

The present volume is designed as a practical reference tool and as a basic introduction to research, enabling mathematicians and physicists (especially analysts) to master nonlinear problems which arise in Riemannian geometry. Contents: Riemannian geometry, Sobolev spaces, background material, the Green function, the methods, the scalar curvature, complex Monge-Ampère equation on compact Kähler manifolds, Monge-Ampère equations.

Arne BRØNDSTED. — **An introduction to convex polytopes.** — Graduate texts in mathematics, vol. 90. — Un vol. relié, 16 × 24, de VIII, 160 p. — Prix: DM 69.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Convex sets. — Convex polytopes. — Combinatorial theory of convex polytopes. — Graphs. — Combinatorial identities.

Emanuel FISCHER. — **Intermediate real analysis.** — Undergraduate texts in mathematics. — Un vol. relié, 16 × 24, de XIV, 770 p. — Prix: DM 86.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Functions. — Real sequences and their limits. — Infinite series of real numbers. — Limits of functions. — Continuous functions. — Derivatives. — Convex functions. — L'Hôpital's rule. — Taylor's theorem. — The complex numbers. Trigonometric sums. Infinite products. — More on series: sequences and series of functions. — Sequences and series of functions II. — The Riemann integral I and II. — Improper integrals. Elliptic integrals and functions.

P. R. HALMOS. — **Selecta research contributions.** — Edited by Donald E. Sarason and Nathaniel A. Friedman. — Un vol. relié, 17 × 25, de XXVIII, 458 p. — Prix: DM 88.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

The present volume consists of research publications plus two papers which, although of a more expository nature, were deemed primarily of interest to the specialist ("Ten problems in Hilbert space" (1970d), and "Ten years in Hilbert space" (1979b)). The papers are arranged chronologically. As it happens, that arrangement also groups the papers according to subject matter: those published before 1950 deal with probability and measure theory, those after 1950 with operator theory. This volume contains two introductory essays, one by Nathaniel Friedman on Halmos's work in ergodic theory, one by Donald Sarason on Halmos's work in operator theory.

Constance REID. — **Neyman — from life.** — Un vol. relié, 17 × 25, de VI, 298 p. — Prix: DM 49.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

This book describes the fascinating life of Jerzy Neyman and his work and interaction with other scientists, administrators and politicians. Jerzy Neyman was one of the 20th century's greatest and most influential statisticians. Much of modern mathematical

statistics is based on his work or inspired by his ideas although his influence ranges beyond the sphere of academic research and scientific papers. Written in a non-technical language, the book is easily accessible to the layman but of particular interest to the statistician. The author offers a portrait of the man through his own word and actions, a non-technical sketch of his scientific importance and his singular influence as a teacher, organizer and activist.

H. RADEMACHER. — **Higher mathematics from an elementary point of view.** — Edited by D. Goldfeld. — Notes by G. Crane. — Un vol. relié, 16 × 24, de VI, 138 p. — Prix: FS 58.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

This book is a lively account of lectures given by H. Rademacher at Stanford University in 1947; contents: prime numbers, decomposition of numbers into prime factors, common fractions, order of fractions, decimal fractions, a theorem of formal logic, on the approximation of irrational numbers by rational numbers, the Ford circles, on linear transformations, the modular group, functions belonging to groups, linkages.

Theodore S. MOTZKIN. — **Selected papers.** — Edited by David Cantor, Basil Gordon, Bruce Rothschild. — Contemporary mathematicians. — Un vol. relié, 18,5 × 26, de XXVI, 530 p. — Prix: FS 158.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

One of this century's most erudite, versatile, and ingenious mathematicians, Theodore S. Motzkin possessed broad ranging talent and interests. His work included important contributions to the theory of linear inequalities and programming, approximation theory, convexity, combinatorics, algebraic geometry, number theory, algebra, function theory, and numerical analysis. The many areas in which he worked were unified by the thread of his own characteristic style and approach. Beginning with Motzkin's first published work (Mathematische Annalen, 1934), this volume brings together many papers not readily available elsewhere, revealing the underlying themes of Motzkin's work and illuminating the unique scientific personality and style of this important mathematician.

E. T. JAYNES. — **Papers on probability, statistics and statistical physics.** — Edited by R. D. Rosenkrantz. — Synthese library, vol. 158. — Un vol. relié, 16 × 23, de XXIV, 434 p. — Prix: Dfl 114.00. — D. Reidel publishing company, Dordrecht/London/Boston, 1983.

The opening papers of this collection develop the modern "information theoretical" formulation of statistical mechanics initiated by the author in 1957. The approach is to adopt the distribution of maximum entropy (one that is maximally non-committal with regard to missing information) among all those which satisfy experimentally given constraints. There is then no need to invoke ergodic hypotheses, and the simpler theory that results applies equally well to reversible and irreversible processes. The author goes on to examine the conceptual basis of entropy maximization in a wider context and to consider other related methods for generating prior probabilities. Just as the opening papers stress the surprisingly wide scope of inference in statistical physics, those which follow demonstrate the central importance of consistency in statistical inference.

A. AVEZ. — **Calcul différentiel.** — Collection « Maîtrise de mathématiques pures ». — Un vol. broché, 16 × 24, de 152 p. — Prix: FF 118.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Notion de différentielle. — Théorèmes de la moyenne. — Notion de difféomorphisme. Résolution d'équations. — Différentielles d'ordre supérieur. — Fonction exponentielle. Equations différentielles linéaires à coefficients constants. — Produit intégral. Equations différentielles linéaires. — Champs de vecteurs. Equations différentielles. — Conjugaison et coordonnées locales. — Sous-variétés différentiables. — Calcul des variations. — Espaces de Banach et applications multilinéaires. — Théorème du point fixe de Banach. — La méthode de Newton. — Théorèmes d'inversion globale. — Réductions des endomorphismes linéaires. — Equations différentielles linéaires à coefficients périodiques. — Le théorème d'existence et de dépendance par rapport aux conditions initiales des solutions des équations différentielles. — Simplicité de $SO(3)$.

A. BELAGE, J. CHASTENET DE GERY, J. ROUVRE, R. THEODOR. — **Exercices résolus d'algèbre linéaire, C.N.A.M. niveau B.** — Un vol. broché, 15,5 × 22, de IV, 209 p. — Masson, Paris/New York/Barcelone/Milan/Mexico/Sao Paulo, 1983.

Espaces vectoriels. — Dimension. — Applications linéaires. — Représentation matricielle. — Changement de base. — Formes bilinéaires. — Déterminants. — Equations linéaires. — Valeurs propres. — Espaces euclidiens. — Espaces hermitiens.

Homotopy methods and global convergence. — Proceedings of a NATO advanced research institute, held June 3-6, 1981, in Porto Cervo, Sardinia. — Edited by B. Curtis Eaves, Floyd J. Gould, Heinz-Otto Peitgen and Michael J. Todd. — NATO conference series, ser. II: systems science, vol. 13. — Un vol. relié, 18 × 26, de VIII, 318 p. — Prix: $45.00. — Plenum press, New York/London, 1983.

This book presents recent research in a field of rapidly growing importance: the application of modern homotopy techniques to solving highly nonlinear systems of equations. Specific topics explored include global convergence, piecewise linear and piecewise smooth problems, global versus classical methods, large-scale applications, path-following (simplicial and differential) techniques, rates of convergence, relations to linear complementarity, and applications to problems in economics, operations research, and engineering. A final and rare feature of this volume is a list of some computer codes currently in use for implementing the homotopy method. Descriptions of these codes are provided by their originators.

Modules in applied mathematics, vol. 1: differential equation models. — Edited by Martin Braun, Courtney S. Coleman and Donald A. Drew. — Reprint (originally published by the Mathematical association of America, 1978). — Un vol. relié, 16 × 24, de XIX, 380 p. — Prix: DM 69.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Differential equations, models, and what to do with them. — Growth and decay models: first-order differential equations. — Higher order linear models. — Traffic models. — Interacting species: steady states of nonlinear systems. — Models leading to partial differential equations.

Modules in applied mathematics, vol. 2: political and related models. — Edited by Steven J. Brams, William F. Lucas, and Philip D. Straffin, Jr. — Reprint (originally published by the Mathematical association of America, 1978). — Un vol. relié, 16 × 24, de xx, 396 p. — Prix: DM 72.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

The process of applied mathematics. — Proportional representation. — Comparison voting. — Modeling coalitional values. — Urban wastewater management planning. — An everyday approach to matrix operations. — Sources of applications of mathematics in ecological and environmental subject areas, suitable for classroom use. — How to ask sensitive questions without getting punched in the nose. — Measuring power in weighted voting systems. — To the (minimal winning) victors go the (equally divided) spoils: a new power index for simple n-person games. — Power indices in politics. — Committee decision making. — Stochastic difference equations with sociological applications. — The apportionment problem.

Karl PETERSEN. — **Ergodic theory.** — Cambridge studies in advanced mathematics, vol. 2. — Un vol. relié, 15,5 × 23,5, de xi, 329 p. — Prix: £22.50. — Cambridge University press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

At the introductory level, the book provides clear and complete discussions of the standard examples, the mean and pointwise ergodic theorems, recurrence, ergodicity, weak mixing, strong mixing, and the fundamentals of entropy. Among the advanced topics are a thorough treatment of maximal functions and their usefulness in ergodic theory, analysis, and probability, an introduction to almost-periodic functions and topological dynamics, a proof of the Jewett-Krieger theorem, an introduction to multiple recurrence and the Szemeredi-Furstenberg theorem, and the Keane-Smorodinsky proof of Ornstein's isomorphism theorem for Bernoulli shifts.

Proceedings of the 1980 Beijing symposium on differential geometry and differential equations. — Chief editors: S. S. Chern, Wu Wen-tsün. — 3 vol. reliés, 17 × 24, de 1743 p. pour l'ensemble des 3 vol. — Prix: $325.00 (les 3 vol.). — Science press, Beijing, and Gordon and Breach, Science publishers, Inc., New York, 1982.

The Beijing symposium on differential geometry and differential equations was held from August 18 to September 21, 1980. It was jointly sponsored by the Academy of sciences of the People's Republic of China and the Committee on scholarly communications with People's Republic of China of the United States of America. Those participating in the symposium were mathematicians from China, U.S.A., Britain, France, West Germany, Sweden, Japan, Canada, Brazil, Italy, etc... Besides 3 leading mathematicians of China, Hua Loo-keng, Wu Wen-tsün and Gu Chao-hao, 17 first rate mathematicians of foreign countries, S. S. Chern, P. Lax, R. Bott, J. Kohn, I. Singer, F. Browder, M. Atiyah, L. Nirenberg, L. Gårding, E. Bombieri and S. T. Yau, M. Berger, S. Hildebrandt, F. Treves, etc..., gave invited reports surveying the results of the latest research, such as "Morse theory: new and old" by R. Bott, "Gauge theory and algebraic geometry", by M. Atiyah, "Exterior differential systems" by S. S. Chern and "Topological variational and other methods in nonlinear problems" by L. Nirenberg. In addition, 71 mathematicians from China and 8 from other countries delivered special reports introducing their latest findings. 80 reports are compiled in the present proceedings. Volumes I and II consist of comprehensive reports, volume III comprises special reports. Included in these proceedings are many of the latest results of researches and new conceptions and methods of well-known mathematicians.

Daniel SEGAL. — **Polycyclic groups.** — Cambridge tracts in mathematics, vol. 82. — Un vol. relié, 15 × 23, de XIV, 289 p. — Prix: £25.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

The theory of polycyclic groups is a branch of infinite group theory. This book is a comprehensive account of the present state of this theory. As well as providing a connected and self-contained account of the group-theoretical background, it explains in detail how deep methods of number theory and algebraic group theory have been used to achieve some very recent and rather spectacular advances in the subject. Up to now, most of this material has only been available in scattered journals, and some of it is new.

J. H. CARRUTH, J. A. HILDEBRANT and R. J. KOCH. — **The theory of topological semigroups.** — Pure and applied mathematics, vol. 75. — Un vol. relié, 16 × 24, de VI, 244 p. — Prix: FS 93.00. — Marcel Dekker, Inc., New York/Basel, 1983.

Uniting widely scattered information, this definitive, clearly written text serves as a pedagogical introduction to topological semigroups. In making this important aspect of mathematics accessible to the graduate student, the volume addresses key background material, internal structure, products, quotients, and semigroups with special algebraic of topological properties. The work features a bibliography that is much more than a reference source... it is one of the most complete guides to the literature in this field.

Moshe CARMELI. — **Statistical theory and random matrices.** — Pure and applied mathematics, vol. 74. — Un vol. relié, 16 × 24, de IX, 203 p. — Prix: FS 93.00. — Marcel Dekker, Inc., New York/Basel, 1983.

Although standard methods can provide impressive accuracy in interpreting low-lying excited states of complex systems, it appears unlikely that energy level assignments can ever be extended to highly excited states. This book offers a very different approach, assuming no structure for the system and that no quantum numbers other than spin and parity remain good, to develop a statistical theory of energy levels. With this innovative approach, the book permits description of the general appearance and degree of irregularity in complex systems.

Robert HOOKE. — **How to tell the liars from the statisticians.** — Popular statistics series, vol. 1. — Un vol. relié, 16 × 24, de XV, 173 p. — Prix: FS 50.00. — Marcel Dekker, Inc., New York/Basel, 1983.

If you have trouble uncovering the real meanings of statistics, you need this book. In clear, easy-to-read, short essays, this book illustrates proper statistical reasoning, demonstrates methods for detecting poorly applied statistics, and indicates the effects of statistical reasoning and its misuse on our lives.

Ching Chun LI. — **Analysis of unbalanced data: a pre-program introduction.** — Un vol. relié, 17 × 24, de X, 145 p. — Prix: £12.95. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

In the biological, medical and social sciences, it is most often the case that experimental data consist of unequal numbers of observations in the cells of a two-way (rows and

columns) classification table. The author has provided here a step-by-step introduction to the analysis of such "unbalanced data" which will be accessible to anyone familiar with elementary statistical methods. This is possible through the author's choice of well-chosen numerical examples followed by exercices at the end of each chapter.

David FREEDMAN. — **Markov chains.** — Reprint. — Originally published by Holden-Day, Inc., San Francisco, 1971. — Un vol. relié, 16 × 25, de XIV, 382 p. — Prix: DM 82.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

The presentation of this work is constructive throughout, without using the notion of separability for stochastic processes and in general avoiding the axiom of choice. "Markov chains" contains discussions of topics that are not usually found in textbooks, such as invariance principles for functions of Markov chains, Kolmogorov's inequality on the concentration function, and the construction of a variety of continuous time chains from their jump processes and holding times.

David FREEDMAN. — **Brownian motion and diffusion.** — Reprint. — Originally published by Holden-Day, Inc., San Francisco, 1971. — Un vol. relié, 16 × 25, de XII, 231 p. — Prix: DM 68.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

The emphasis of this volume is on the direct computation of probability numbers and on topics which are not usually covered in textbooks, such as square variation, the reflection principle, and the invariance principle.

David FREEDMAN. — **Approximating countable Markov chains.** — Reprint. — Originally published by Holden-Day, Inc., San Francisco, 1972. — Un vol. relié, 16 × 25, de x, 140 p. — Prix: DM 55.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

The flavor of this volume is constructive and set-theoretic, with many concrete examples. Contents: restricting the range, restricting the range: applications, constructing the general Markov chain.

H. HALBERSTAM, K. F. ROTH. — **Sequences.** — 2nd printing. — Originally published by Oxford university press, 1966. — Un vol. relié, 16 × 25, de XVIII, 293 p. — Prix: DM 77.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Reflecting changes due to recent work, this 2nd printing of "Sequences", is an investigation of the general principles governing the arithmetical properties of particuler integer sequences. Among these properties are the nature of the distribution of the sequence of primes among congruence classes and the additive properties of the sequence of squares. All the techniques employed are developed from first principles.

Albrecht FRÖHLICH. — **Galois module structure of algebraic integers.** — Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge, Bd. 1. — Un vol. relié, 18 × 25, de x, 262 p. — Prix: DM 88.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Survey of results. — Classgroups and determinants. — Resolvents, Galois Gauss sums, root numbers, conductors. — Congruences and logarithmic values. — Root number values. — Relative structure.

P. R. HALMOS. — **Selecta: expository writing.** — Edited by Donald E. Sarason, Leonard Gillman. — Un vol. relié, 17 × 25, de XIX, 304 p. — Prix: DM 54.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Measurable transformations. — Entropy in ergodic theory. — Recent progress in ergodic theory. — What does the spectral theorem say? — A glimpse into Hilbert space. — Finite-dimensional Hilbert spaces. — The foundations of probability. — American mathematics from 1940 to the day before yesterday. — Bernoulli shifts. Fourier series. — Arithmetic progressions. — Invariant subspaces. — Schauder bases. — The Serre conjecture. — The work of F. Riesz. — How to write mathematics. — How to talk mathematics. — What to publish. — The teaching of problem solving. — Logic from *A* to *G*. — The heart of mathematics. — Does mathematics have elements? — The thrills of abstraction. — Nicolas Bourbaki. — Mathematics as a creative art. — The legend of John von Neumann. — Applied mathematics is bad mathematics. — Paul Halmos: a maverick mathologist by Donald J. Albers (script of an interview).

Loo-Keng HUA. — **Selected papers.** — Edited by H. Halberstam. — Un vol. relié, 17 × 25, de XIV, 889 p. — Prix: DM 128.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Hua Loo-Keng is one of the world's most important contemporary mathematicians, best known through his research in number theory. Hua has, however, also made important contributions to other areas of mathematics, most notably complex analysis and partial differential equations. These voluminous "Selected papers" reflect Hua's wide perspective and contain many little known papers, in part original translations from the Chinese and published in the West for the first time in this edition. The very energetic approach of Hua Loo-Keng to problems and his strong interest in computational questions makes the publication of these selected papers particularly timely.

The future of college mathematics. — Proceedings of a conference/workshop on the first two years of college mathematics. — Edited by Anthony Ralston, Gail S. Young. — Un vol. relié, 16 × 24, de IX, 278 p. — Prix: DM 44.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

This book is the result of a four day conference (Williamstown, 1981) dedicated to the question of the role of discrete mathematics during the first two years of the college curriculum. Topics covered include the importance of algorithms; the effect on the curriculum of symbolic manipulation systems for computers; the mathematical needs of the physical sciences, engineering, the social sciences, business and management, and computer science; and the importance of statistics. The book is of particular interest to teachers, students, and administrators because it addresses a number of important problems such as the future of calculus in the curriculum, the impact of computer science, and the difficulties of familiarizing with mathematics courses innovative topics and methods.

Modules in applied mathematics, volume 3: discrete and system models. — Edited by William F. Lucas, Fred S. Roberts, Robert M. Thrall. — Reprint. — Originally published by the Mathematical Association of America, 1976. — Un vol. relié, 16 × 24, de XX, 353 p. — Prix: DM 72.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

This book contains carefully worked-out models from operations research, systems theory, equilibrium theory and related areas. This volume is of particular interest to

students of economics, but should also give mathematics majors a good insight into unconventional uses of mathematics and mathematical approaches. The models are preceded by an extensive methodological chapter, in which many of the questions which will face a teacher during the exposition of the subject are handled.

Serge LANG, Gene MURROW. — **Geometry: a high school course.** — Un vol. broché, 16 × 24, de XXIII, 470 p. — Prix: DM 72.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Distance and angles. — Coordinates. — Area and the Pythagoras theorem. — The distance formula. — Some applications of right triangles. — Polygons. — Congruent triangles. — Dilations and similarities. — Volumes. — Vectors and dot product. — Transformations. — Isometries.

Pao-Lu HSU. — **Collected papers.** — Edited by Kai Lai Chung with the cooperation of Ching-Shui Cheng and Tse-Pei Chiang. — Un vol. relié, 18 × 25, de XII, 589 p. — Prix: DM 128.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Hsu Pao-Lu (1910-1970) was one of the 20th century's most profound and original statisticians. His papers are devoted primarily to inference in univariate and multivariate linear models and its associated distribution theory, both exact and asymptotic. This volume, a complete collection of Hsu's works, contains several papers which were published only in Chinese journals and have so far been unavailable in the West. In addition, papers originally published in Chinese only were translated especially for this edition.

Joel SMOLLER. — **Shock waves and reaction-diffusion equations.** — Grundlehren der mathematischen Wissenschaften, Bd. 258. — Un vol. relié, 17 × 25, de XXI, 581 p. — Prix: DM 128.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Basic linear theory: Ill-posed problems. Characteristics and initial-value problems, The one-dimensional wave equation. Uniqueness and energy integrals. Holmgren's uniqueness theorem. An initial-value problem for a hyperbolic equation. Distribution theory. Second-order linear elliptic equations. Second-order linear parabolic equations. — *Reaction-diffusion equations:* Comparison theorems and monotonicity methods. Linearization. Topological methods. Bifurcation theory. Systems of reaction-diffusion equations. — *The theory of shock waves:* Discontinuous solutions of conservation laws. The single conservation law. The Rieman problem for systems of conservation laws. Applications to gas dynamics. The glimm difference scheme. Riemann invariants, entropy and uniqueness. Quasi-linear parabolic systems. — *The Conley index:* The Conley index. Index pairs and the continuation theorem. Travelling waves.

E. ENGELER. — **Metamathematik der Elementarmathematik.** — Hochschultext. — Un vol. broché, 17 × 25, de VII, 132 p. — Prix: DM 46.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1983.

Das Kontinuum: Was sind die reelen Zahlen? Sprache als ein Teil der Mathematik. Elementare Theorie der reelen Zahlen. Non-standard Analysis. Auswahlaxiom und Kontinuumhypothese. — *Geometrie:* Raum und Mathematik. Axiomatisierung durch

Koordinatisierung. Wissenschaftstheoretische Fragen und Methoden der Elementargeometrie. Geometrische Konstruktionen. — *Algorithmik :* Was ist eine Rechenvorschrift. Die Existenz kombinatorischer Algebren: kombinatorische Logik. Konkrete kombinatorische Algebren. Lambda-Kalkül. Berechenbarkeit und Kombinatoren.

T. M. CHARLTON. — **A history of theory of structures in the nineteenth century.** — Un vol. relié, 16 × 24, de VIII, 194 p. — Prix: £22.00. — Cambridge university press Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Beam systems. — Theory of the arch and suspension bridge. — Elementary theory of frameworks: graphical statics. — Theory of statically-indeterminate frameworks: the reciprocal theorem. — Levy's theory of frameworks and bridge girders. — Early developments of energy principles relating to theory of structures. — The later development and use of energy principles. — Applications of the least work principle: elastic theory of suspension bridges. — Aspects of the further development of theory of structures. — Secondary effects in structures. — A note on C. L. M. H. Navier. — A note on Carl Culmann. — A note on John Robison.

Jane GROSSMAN, Michael GROSSMAN, Robert KATZ. — **Averages: a new approach.** — Un vol. broché, 15 × 23, de VI, 61 p. — Prix: $3.00. — Archimedes Foundation, Rockport, Mass., 1983.

Arithmetic averages. — Geometric averages. — Systems of arithmetic. — General theory of averages of functions. — Heuristic principles of application. — Means of two positive numbers.

Michael GROSSMAN. — **Bigeometric calculus: a system with a scale-free derivative.** — Un vol. broché, 15 × 23, de VII, 100 p. — Prix: $3.00. — Archimedes Foundation, Rockport, Mass., 1983.

The classical calculus. — The bigeometric calculus. — Geometric arithmetic. — Graphical interpretations. — Heuristic principles of application. — A non-Cartesian geometry. — Bigeometric vectors and centroids. — The bigeometric method of least squares. — Related matters.

Martin GARDNER. — **Logic machines and diagrams.** — With a foreword by Donald Michie. — Second edition. — Un vol. broché, 14 × 22, de XIV, 165 p. — Prix: $7.80 (relié: $21.00.) — The University of Chicago press, Chicago, 1982.

The Ars Magna of Ramon Lull. — Logic diagrams. — A network diagram for the propositional calculus. — The Stanhope demonstrator. — Jevons's logic machine. — Marquand's machine and others. — Window cards. — Early electrical machines. — Machine intelligence.

Free boundary problems: theory and applications, vol. I and II. — Proceedings of an interdisciplinary symposium, held in Montecatini, Italy, from June 17 to June 26, 1981. — Edited by A. Fasano and M. Primicerio. — Research notes in mathematics, vol. 78

and 79. — Deux volumes brochés, 17 × 25, de 711 p. pour l'ensemble des deux volumes. — Prix: £12.95 pour chacun des deux volumes. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

The conference at which these papers were delivered aimed to stimulate interaction between people working on purely mathematical aspects or on numerical methods and people from the area of the applied research. The papers are grouped into sections, in order to give the whole work a clear and unified structure. Volume I covers fluid mechanics, the dam problem, the porous media equation and percolation, soil freezing, generalised phase-change problems. Volume II covers Stefan-like problems, inverse problems and control, electrochemical machining and flame fronts, mechanics of solids, numerical methods, miscellaneous problems.

Symplectic geometry. — 4e Journées Fermat, 5, 6, et 7 mars 1981, Faculté des sciences, Université de Toulouse. — Edited by A. Crumeyrolle and J. Grifone. — Research notes in mathematics, vol. 80. — Un vol. broché, 17 × 25, de XII, 250 p. — Prix: £10.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

S. Benenti: Linear symplectic relations. — *M. Cahen:* Invariant *-products. — *E. Combet:* Geometric asymptotics of exponential integrals. — *P. Dazord:* Variations sur la classe de Maslov-Arnold. — *M. Francaviglia:* Constrained Hamiltonian systems and applications to general relativity. — *J.-L. Koszul:* Differential forms and near points on graded manifolds. — *E. A. Lacomba:* Quotients of invariant submanifolds of the energy-momentum mapping. — *J. Leray:* The use of Lagrangian analysis: a structure based on symplectic geometry. — *P. Libermann:* Sous-variétés et feuilletages symplectiquement réguliers. — *A. Lichnerowicz:* Differential geometry and deformations. — *L. Losco:* Symplectic structures and stability in celestial mechanics. — *C.-M. Marle:* Lie group actions on a canonical manifold. — *J.-M. Morvan:* On Lagrangian immersions. — *R. Ouzilou:* Hamiltonian actions on Poisson manifolds. — *S. N. Pnevmatikos:* Singularités en géométrie symplectique. — *L. Cid and A. Pérez-Rendón:* The Yang-Mills trick and gravitational interaction. — *Pham Mau Quan:* On symmetry groups of the Kepler problem. — *J. F. Pommaret:* Differential Galois theory and symplectic geometry. — *C. R. Roger:* Foliations with a symplectic or contact transverse structure.

D. M. Lucantoni. — **An algorithmic analysis of a communication model with retransmission of flawed messages.** — Research notes in mathematics, vol. 81. — Un vol. broché, 17 × 25, de VIII, 169 p. — Prix: £8.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Description of the problem. — The mathematical model. — Busy period characteristics. — Stationary queue length distributions. — Moments of the queue length distributions. — Higher moments of the busy period characteristics. — Selection of block size. — Implementation of the algorithm. — Variations of the model. — Numerical examples.

W. H. Ruckle. — **Geometric games and their applications.** — Research notes in mathematics, vol. 82. — Un vol. broché, 17 × 25, de VIII, 187 p. — Prix: £9.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Introduction. — Finite games. — Games of line and space. — Continuous games of search and ambush. — Search and pursuit games on a cyclic graph.

S. FEIGELSTOCK. — **Additive groups of rings.** — Research notes in mathematics, vol. 83. — Un vol. broché, 17 × 25, de VIII, 113 p. — Prix: £7.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Preliminaries. — Nil and quasi-nil groups. — Additive groups of nilpotent and generalized nilpotent rings. — Other ring properties. — Torsion free rings.

Nonlinear partial differential equations and their applications, Collège de France Seminar, volume IV. — Edited by H. Brezis and J. L. Lions. — Coordinated by D. Cioranescu. — Research notes in mathematics, vol. 84. — Un vol. broché, 17 × 25, de VIII, 379 p. — Prix: £12.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

J. P. Aubin: Comportement lipschitzien des solutions de problèmes de minimisation convexes. — *L. Boccardo, F. Murat, J. P. Puel:* Existence de solutions faibles pour des équations elliptiques quasi-linéaires à croissance quadratique. — *C. Foias, J. C. Saut:* Asymptotic behavior, as $t \to \infty$, of solutions of the Navier-Stokes equations. — *J. Frehse:* Existence and perturbation theorems for nonlinear elliptic systems. — *W. Greenlee:* Singular perturbations of multiple eigenvalues of non-self-adjoint operators II. — *A. Haraux:* Some new results on nonlinear wave equations in a bounded domain. — *P. Marcellini:* Some remarks on uniqueness in the calculus of variations. — *A. Pazy:* Initial value problems for nonlinear differential equations in Banach spaces. — *P. A. Raviart:* On the numerical analysis of particle simulations in plasma physics. — *C. Sbordone:* Lower semicontinuity and regularities of minima of variational functionals. — *J. Simon:* On a result due to L. A. Caffarelli and A. Friedman concerning the asymptotic behavior of a plasma. — *V. A. Solonnikov:* Stokes and Navier-Stokes equations in domains with noncompact boundaries. — *L. Tartar:* Compacité par compensation: résultats et perspectives.

T. HUSAIN. — **Multiplicative functionals on topological algebras.** — Research notes in mathematics, vol. 85. — Un vol. broché, 17 × 25, de VIII, 147 p. — Prix: £8.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Preliminaries. — Continuity of algebra homomorphisms. — Recent results on the continuity of multiplicative functionals. — Some other statements equivalent to Michael's problem. — Continuity of positive functionals.

V. BARBU and G. DA PRATO. — **Hamilton-Jacobi equations in Hilbert spaces.** — Research notes in mathematics, vol. 86. — Un vol. broché, 17 × 25, de VI, 172 p. — Prix: £8.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1983.

Preliminaries. — Existence in the class of convex functions. — Existence theory in nonconvex classes. — The dynamic programming equation for stochastic optimal control.

Christopher CHATFIELD. — **Statistics for technology: a course in applied statistics.** — 3rd edition. — Science paperbacks, vol. 114. — Un vol. broché, 15 × 21, de 380 p. — Prix: £5.95. — Chapman and Hall, London/New York, 1983.

Outline of statistics. — Simple ways of summarizing data. — The concept of probability. — Discrete distributions. — Continuous distributions. — Estimation. — Signifi-

cance tests. — Regression and correlation. — Planning the experiment. — The design and analysis of experiments: comparative and factorial experiments. — Quality control. — Life testing. — Appendices.

F. TRICERRI, L. VANHECKE. — **Homogeneous structures on Riemannian manifolds.** — London mathematical society lecture notes series, vol. 83. — Un vol. broché, 16 × 23, de VI, 125 p. — Prix: £9.95. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

The theorem of Ambrose and Singer. — Homogeneous Riemannian structures. — The eight classes of homogeneous structures. — Homogeneous structures on surfaces. — Homogeneous structures of type $\mathcal{T}_1$. — Naturally reductive homogeneous spaces and homogeneous structures of type $\mathcal{T}_2$. — The Heisenberg group. — Examples and the inclusion relations. — Generalized Heisenberg groups. — Self-dual and anti-self-dual homogeneous structures.

Differential geometry. — Edited by Gy. Soos and J. Szenthe. — Colloquia mathematica societatis Janos Bolyai, vol. 31. — Un vol. relié, 18 × 24, de 830 p. — Prix: Dfl 320.00. — North-Holland publishing company, Amsterdam/Oxford/New York, 1982.

This volume contains the detailed versions of talks delivered at the colloquium on differential geometry, held in Budapest, 3-7 September, 1979. The scope of these lectures covers several branches of differential geometry with applications such as Riemannian and Finsler geometry, theory of connections, fibre bundles, Lie groups, generalized spaces, applications in various fields of theoretical physics.

V. I. ARNOLD. — **Geometrical methods in the theory of ordinary differential equations.** — Translated by Joseph Szücs. — English translation edited by Mark Levi. — Grundlehren der mathematischen Wissenschaften, vol. 250. — Un vol. relié, 16 × 25, de XI, 334 p. — Prix: DM 94.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1983.

Special equations. — First-order partial differential equations. — Structural stability. — Perturbation theory. — Normal forms. — Local bifurcation theory.

Julian ŁAWRYNOWICZ, Jan KRZYZ. — **Quasiconformal mappings in the plane: parametrical methods.** — Lecture notes in mathematics, vol. 978. — Un vol. broché, 17 × 25, de VI, 177 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Basic concepts and theorems in the analytic theory of quasiconformal mappings. — The parametrical methods. — A review of variational methods and basic applications in electrical engineering.

Mathematical theories of optimization. — Proceedings of the international conference held in S. Margherita Ligure (Genova), November 30-December 4, 1981. — Edited by J. P. Cecconi and T. Zolezzi. — Lecture notes in mathematics, vol. 979. — Un vol.

broché, 17 × 25, de v, 268 p. — Prix: DM 33.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

The papers included in this proceedings volume deal with results on compactness of minimizing sequences and on uniqueness of minima for integrals of the calculus of variations, and also include contributions to the theory of optimal control. A number of papers consider non-smooth analysis and its application to the theory of optimization.

Lawrence BREEN. — **Fonctions thêta et théorème du cube.** — Lecture notes in mathematics, vol. 980. — Un vol. broché, 17 × 25, de XIII, 115 p. — Prix: DM 19.80. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Biextensions symétriques. — Structure du cube: définitions, propriétés d'additivité et de descente. — Fonctions thêta algébriques. — Σ-structures. — Fonctions thêta canoniques. — Champs de Picard associés à une biextension symétrique. — Interprétation homotopique. — Théorème du coefficient universel.

Value distribution theory. — Proceedings of the Nordic summer school in mathematics held at Joensuu, Finland, June 1-12, 1981. — Edited by I. Laine and S. Rickman. — Lecture notes in mathematics, vol. 981. — Un vol. broché, 17 × 25, de VIII, 245 p. — Prix: DM 33.50. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Sakari Toppila: An introduction to Nevanlinna theory. — *W. K. Hayman:* Value distribution of functions regular in the unit disk. — *Bernard Shiffman:* Introduction to the Carlson-Griffiths equidistribution theory. — *E. R. Molzon:* Some examples in value distribution theory. — *Wilhelm Stoll:* The Ahlfors-Weyl theory of meromorphic maps on parabolic manifolds. — *Seppo Rickman:* Value distribution of quasiregular mappings.

Stability problems for stochastic models. — Proceedings of the 6th international seminar held in Moscow, USSR, April 1982. — Edited by V. V. Kalashnikov and V. M. Zolotarev. — Lecture notes in mathematics, vol. 982. — Un vol. broché, 17 × 25, de XVII, 295 p. — Prix: DM 39.00. — Springer-Verlag/Berlin/Heidelberg/New York/Tokyo, 1983.

The common approach to different stability problems, via the theory of probabilistic metrics was the unifying factor between the diverse interests of the participants. A discussion of the problems arising and the methods employed is to be found in the foreword. All of the papers included are research level.

Nonstandard analysis: recent developments. — Edited by A. E. Hurd. — Lecture notes in mathematics, vol. 983. — Un vol. broché, 17 × 25, de v, 213 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

M. Berger and A. Sloan: Explicit solutions of partial differential equations. — *L. L. Helms:* Hyperfinite spin models. — *C. W. Henson, L. Moore:* Nonstandard analysis and the theory of Banach spaces. — *S. A. Kosciuk:* Stochastic solutions to partial differential equations. — *D. Laugwitz:* Ω-calculus as a generalization of field extension:

an alternative approach to nonstandard analysis. — *T. L. Lindstrøm:* Stochastic integration in hyperfinite dimensional linear spaces. — *E. Perkins:* Stochastic processes and nonstandard analysis. — *M. M. Richter, M. E. Szabo:* Towards a nonstandard analysis of programs. — *K. D. Stroyan:* Infinitesimal analysis of l^∞ in its Mackey topology.

Antonio Bove, Jeff E. Lewis, Cesare Parenti. — **Propagation of singularities for Fuchsian operators.** — Lecture notes in mathematics, vol. 984. — Un vol. broché, 17 × 25, de iv, 161 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Preliminaries and review of results of N. Hanges. — General Fuchsian systems. — Applications to Fuchsian hyperbolic P. D. E. — Operators with multiple non-involutive characteristics.

Asymptotic analysis II: surveys and new trends. — Edited by F. Verhulst. — Lecture notes in mathematics, vol. 985. — Un vol. broché, 17 × 25, de vi, 497 p. — Prix: DM 62.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Most papers on perturbation methods and asymptotic analysis are spread throughout the mathematical literature and the publications of the various applied fields. In this book, 15 authors from all over the world present survey papers on the asymptotics of stochastic excitation, parabolic equations, mathematical biology, Hamiltonian systems, and the relation between singular perturbation theory and numerical analysis. Apart from the surveys, there are 6 papers in which new trends such as the relation between non-standard analysis and the clasical theory of asymptotics in relaxation oscillations are discussed.

Colin J. Bushnell, Albrecht Frölich. — **Gauss sums and p-adic division algebras.** — Lecture notes in mathematics, vol. 987. — Un vol. broché, 17 × 25, de xi, 187 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Arithmetic of local division algebras. — Introduction to Gauss sums. — Functional equation. — One-dimensional representations. — The basic correspondence. — The basic inductive step. — The general inductive process. — Representations of certain group extensions. — Trace computations. — Induction constants for Galois Gauss sums. — Synthesis of results. — Modified correspondences.

Joachim Schwermer. — **Kohomologie arithmetisch definierter Gruppen und Eisensteinreihen.** — Lecture notes in mathematics, vol. 988. — Un vol. broché, 17 × 25, de iii, 170 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York/Tokyo, 1983.

Im Mittelpunkt dieser Arbeit steht das Studium der Kohomologie arithmetisch definierter Gruppen und des Zusammenhangs dieser Kohomologie-Räume mit der Theorie der automorphen Formen. Der im Vordergrund stehende Aspekt ist der Versuch, mit Hilfe der Theorie der Eisensteinreihen Kohomologieklassen zu konstruieren und die Kohomologie von einer arithmetisch definierten Gruppe "im Unendlichen" zu beschreiben.

Patras logic symposion. — Proceedings of the logic symposion held at Patras, Greece, August 18-22, 1980. — Edited by George Metakides. — Studies in logic and the foundations of mathematics, vol. 109. — Un vol. relié, 16 × 23, de x, 394 p. — Prix: Dfl 140.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1982.

This proceedings volume includes a representative collection of papers from most areas of mathematical logic, rather than focussing on a particular aspect. Topics range from algorithmic troubles to the morasses of set theory. 20 papers by S. C. Kleene, A. Nerode and J. Remmel, J. T. Baldwin, I. Kalantari, E. Eisenberg and J. Remmel, M. Lerman and J. Rosenstein, D. Normann, S. D. Friedman, V. Huber-Dyson, S. Feferman, H. Friedman and K. McAloon with S. G. Simpson, L. Hay and D. E. Miller, J. Stern, V. Weispfenning, R. Laver, J. Burgess, C. T. Chong, A. Kanamori, J. Vaananen, N. Motohashi.

Z. A. MELZAK. — **Invitation to geometry.** — Pure and applied mathematics. — Un vol. relié, 17 × 24, de XII, 225 p. — Prix: £26.65. — John Wiley and Sons, New York/Chichester/Brisbane/Toronto/Singapore, 1983.

Heron's formula and related ones. — Triangle transversals. — Rotation and rolling. — Oblique sections of certain solids. — Conic sections and Pascal's theorem. — Examples of geometrical extrema. — Simple geometry and trigonometry on the sphere. — Introduction to graphs. — Elements of convexity. — Curves in space and curves on surfaces.

Ian HUNTLEY, R. M. JOHNSON. — **Linear and nonlinear differential equations.** — Ellis Horwood series in mathematics and its applications. — Un vol. relié, 16 × 24, de 190 p. — Prix: £18.50. — Ellis Horwood Ltd, Chichester, distributed by John Wiley and Sons, 1983.

Systems of linear differential equations: Vector language. Method of solution of $\dot{x} = Ax$. Geometrical considerations. Extensions to higher order. — *Nonlinear differential equations: graphical methods:* Features of nonlinear differential equations. Graphical methods of solution. Phase-plane analysis. Linearisation techniques. — *Nonlinear differential equations: asymptotic methods:* The methods of Poincaré and Lindstedt. The multiple timescales method. The method of Krylov and Bogoliubov. Harmonic linearisation. — *Oscillations in certain practical situations:* Self-excited oscillations. Large nonlinearities.

Leonhard Euler: 1707-1783: Beiträge zu Leben und Werk: Gedenkband des Kantons Basel-Stadt. — Buchkonzept und Realisation: Marcel Jenni. — Un vol. relié, 18 × 24, de 555 p. — Prix: FS 58.00. — Birkhäuser Verlag, Basel, 1983.

Die in diesem festlichen Gedenkband vereinigten Beiträge, verfasst von dreissig namhaften Gelehrten aus zehn Nationen und vier Kontinenten, geben einen Überblick über Leonhard Eulers Leben; sie vermitteln eine Gesamtschau seiner breitgefächerten Aktivitäten nicht nur auf dem Gebiet der Mathematik, sondern in fast allen damaligen Naturwissenschaften und zeigen die nachhaltige Wirkung seines Schaffens auf die heutige Zeit auf. Einem werkbiographischen Längsschnitt-Essay, der einen weiteren Leserkreis ansprechen soll, folgen in klarer Gliederung eindrückliche Darstellungen von Eulers Leistungen in der Zahlentheorie, Algebra und Analysis, Physik, Astronomie und Philo-

sophie. Eulers Beziehungen zu Akademien und markanten Zeitgenossen sowie biographischen Aspekten sind insgesamt acht Abhandlungen gewidmet, und zwei Beiträge zur Editionsgeschichte von Eulers "Opera omnia" bilden mit einem etwa 700 Titel umfassenden Verzeichnis der Literatur über Leonhard Euler den Schluss dieses reich illustrierten Buches.

M. G. KREIN. — **Topics in differential and integral equations and operator theory.** — Edited by I. Gohberg. — Translated from the Russian by A. Iacob. — Operator theory: advances and applications, vol. 7. — Un vol. relié, 17 × 24, de IX, 302 p. — Prix: FS 62.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

M. G. Krein: The basic propositions of the theory of λ-zones of stability of a canonical system of linear differential equations with periodic coefficients. — *M. G. Krein:* On certain new studies in the perturbation theory for selfadjoint operators. — *M. G. Krein:* On nonlinear integral equations which play a role in the theory of Wiener-Hopf equations. — *I. C. Gohberg and M. G. Krein:* On a pair integral equation and its transpose. — *I. C. Gohberg and M. G. Krein:* New inequalities for the characteristic numbers of integral equations with smooth kernels. — *M. G. Krein and F. E. Melik-Adamyan:* A contribution to the theory of *S*-matrices of canonical differential equations with summable potential.

I. GOHBERG, P. LANCASTER and L. RODMAN. — **Matrices and indefinite scalar products.** — Operator theory: advances and applications, vol. 8. — Un vol. relié, 17 × 24, de XVII, 374 p. — Prix: FS 70.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Basic theory: Indefinite scalar products. Classes of linear transformations. Canonical forms of *H*-selfadjoint matrices. Canonical forms for *H*-unitary matrices. Real matrices. Functions of *H*-selfadjoint and *H*-unitary matrices. — *First applications:* Hamiltonian and selfadjoint differential equations with periodic coefficients. Hermitian matrix polynomials. Hermitian rational matrix functions. Rational matrix functions. The algebraic Riccati equation. — *Perturbations and stability:* General perturbations. Stability of diagonable matrices. Applications to differential and difference equations. Positive perturbations of invariant maximal neutral subspaces. Perturbations which preserve Jordan structure. Subspaces in finite dimensional complex space. — *Connected components of differential equations:* Connected components of stably diagonable matrices. Differential and difference equations with constant coefficients. Connected components of Hamiltonian equations.

Numerical treatment of inverse problems in differential and integral equations. — Proceedings of an international workshop, Heidelberg, Fed. Rep. of Germany, August 30-September 3, 1982. — Edited by P. Deuflhard and E. Hairer. — Progress in scientific computing, vol. 2. — Un vol. relié, 16 × 24, de XIII, 357 p. — Prix: FS 70.00. — Birkhäuser, Boston/Basel/Stuttgart, 1983.

Many scientific and engineering applications require the solution of inverse problems. This volume deals with the numerical treatment of such problems in chemistry, molecular biology, physics, geophysics, astronomy, reservoir stimulation, electrocardiology, and control systems design. Mathematical topics include parameter identification in ordinary differential equations and Fredholm integral equations of the first kind. Recent software developments are also discussed.

Alexander OSTROWSKI. — **Collected mathematical papers: vol. 1:** determinants. linear algebra, algebraic equations. — Un vol. relié, 18 × 24, de 904 p. — Prix: FS 129.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1983.

Professor Ostrowski is one of the last great mathematicians to command a comprehensive knowledge of mathematical science while also having worked and published in virtually all of its branches. One owes to him fundamental results not only in pure mathematics, particularly in algebra, number theory, function theory, real analysis, and linear algebra, but also in applied mathematics, especially numerical analysis. Of particular interest to numerical analysts are his investigations on the iterative solution of equations and systems of equations. Computer scientists are indebted to Ostrowski for the impetus he gave to a new branch of mathematics-complexity theory—as well as for establishing foundations of symbolic integration. United in six volumes, these collected papers will be of inestimable importance to contemporary researchers.

Benno ARTMANN. — **Der Zahlbegriff.** — Moderne Mathematik in elementarer Darstellung, vol. 19. — Un vol. broché, 16 × 24, de VIII, 265 p. — Vandenhoeck & Ruprecht, Göttingen, 1983.

Der vollständige angeordnete Körper **R**. — Konstruktionen von **R**. — Irrationalzahlen. — Die komplexen Zahlen. — Die Quaternionen. — Mengen und Zahlen. — Non-standard-Zahlen. — Die topologische Kennzeichnung von **R**, **C** und **H** nach Pontrjagin.

Combinatorics '81, in honour of Beniamino Segre. — Proceedings of the international conference on combinatorial geometrics and their applications, Rome, June 7-12, 1981. — Edited by A. Barlotti, P. V. Ceccherini, G. Tallini. — Annals of discrete mathematics, vol. 18. — North-Holland mathematics studies, vol. 78. — Un vol. broché, 17 × 24, de XII, 823 p. — Prix: Dfl 210.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1983.

This work contains 76 articles, devoted to recent progress in the following topics: finite geometries (arcs, caps and special varieties in a Galois space, generalized quadrangles, Benz planes, foundation of geometry), design theory, finite groups, coding theory and graph theory in its geometric and design aspects.

Richard L. FABER. — **Differential geometry and relativity theory: an introduction.** — Pure and applied mathematics, vol. 76. — Un vol. relié, 16 × 24, de X, 255 p. — Prix: FS 79.00. — Marcel Dekker, Inc., New York and Basel, 1983.

Surfaces and the concept of curvature : Curves. Gauss curvature (informal treatment). Surfaces in E^3. The first fundamental form. The second fundamental form. The Gauss curvature in detail. Geodesics. The curvature tensor and the "Theorema Egregium". Manifolds. — *Special relativity (the geometry of flat spacetime) :* inertial frames of reference. The Michelson-Morley experiment. The postulates of relativity. Relativity of simultaneity. Coordinates. Invariance of the interval. The Lorentz transformation. Spacetime diagrams. Lorentz geometry. The twin paradox. Temporal order and causality. — *General relativity (the geometry of curved spacetime) :* The principle of equivalence.

Gravity as spacetime curvature. The consequences of Einstein's theory. The universal law of gravitation. Orbits in Newton's theory. Geodesics. The Field equations. The Schwarzschild solution. Orbits in general relativity. The bending of light. — *Appendix A, B:* Vector geometry and analysis. Hyperbolic functions.

J. W. COHEN, O. J. BOXMA. — **Boundary value problems in queueing system analysis.** — North-Holland mathematics, studies, vol. 79. — Un vol. broché, 17 × 24, de XII, 405 p. — Prix: Dfl 100.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1983.

Introduction to boundary value problems: Singular integrals. The Riemann boundary value problem. The Riemann-Hilbert boundary value problem. Conformal mapping. — *Analysis of two-dimensional random walk:* The random walk. The symmetric random walk. The general random walk. Random walk with Poisson kernel. — *Analysis of various queueing models:* Two queues in parallel. The alternating service discipline. A coupled processor model. The $M/G/2$ queueing model. — *Aspects of numerical analysis:* The alternating service discipline. The alternating service discipline: a random walk approach.

Harold EXTON. — **q-hypergeometric functions and applications.** — Ellis Horwood series in mathematics and its applications. — Un vol. relié, 16 × 24, de 347 p. — Prix: £22.50. — Ellis Horwood Limited, Chichester, distributed by John Wiley and Sons, 1983.

The resurgence of interest in q-functions has arisen recently in connection with number theory and applications in mathematics and the physical sciences: this has undoubtedly been influenced by the universal prevalence of small efficient computer which have conquered many of the difficulties associated with q-hypergeometric functions. This book is devoted to the theoretical background of basic hypergeometric functions, as well as their occurrence in number theory and various other fields. These include mechanical engineering, solid state theory in physical chemistry, linear algebra, Lie theory, elliptic functions, conduction of heat, statistics, Fourier analysis, difference equations, operational calculus, transient behaviour in electrical cables, high-energy particle physics, quantum theory and cosmology.

P. G. DRAZIN. — **Solitons.** — London mathematical society lecture note series, vol. 85. — Un vol. broché, 15 × 25, de VIII, 136 p. — Prix: £7.95. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1983.

A "soliton" is a localized nonlinear wave of permanent form which may interact strongly with other solitons so that when they separate after the interaction they regain their original forms. This textbook is an account of the recently discovered theory of solitons and of the diverse applications of the theory to nonlinear systems arising in the physical sciences. Solitary waves, cnoidal waves, conservation laws, the initial-value problem for the Korteweg-de Vries equation, the Lax method, the sine-Gordon equation and Bäcklund transformations are treated.