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Charles W. CURTIS and Irving REINER. — **Methods of representation theory: with applications to finite groups and orders: volume I.** — Pure and applied mathematics. — Un vol. relié, 18 × 24, de XXI, 819 p. — Prix: £40.70. — John Wiley and Sons, New York/Chichester/Brisbane/Toronto, 1981.

Introduction : Background material on algebras and groups. The functors Hom and \otimes . Projective, injective, and flat modules. Semisimple rings and modules. The Wedderburn and Morita theorems. Dedekind domains. Radicals. Idempotents, indecomposable modules, and the Krull-Schmidt-Azumaya theorem. Projective covers and injective hulls. Separable algebras and splitting fields. Ext, Tor; cohomology of groups. — *Group representations and character theory* : Orthogonality relations and central idempotents. Induced modules. Decomposition of induced modules. Clifford theory and Hecke algebras. Tensor algebras. Tensor induction and transfer. Special classes and exceptional characters. The Artin and Brauer induction theorems. — *Introduction to modular representations* : The decomposition map. Brauer characters. The Cartan-Brauer triangle. Vertices and sources. The Green correspondence. Applications to character theory. The induction theorem for arbitrary fields. Modular representations of p -solvable groups. — *Integral representations: orders and lattices* : Lattices and orders. Jordan-Zassenhaus theorem. Extensions of lattices. Maximal and hereditary orders. Group rings and maximal orders. Twisted group rings and crossed product orders. Annihilator of Ext. — *Local and global theory of integral representations* : Local theory. Genus. Projective lattices over group rings; Swan's theorem. Finite representation type. Examples of integral representations. Invertible ideals. The Krull-Schmidt-Azumaya theorem over discrete valuation rings. Bass and Gorenstein orders.

E. B. Christoffel: the influence of his work on mathematics and the physical sciences. — International Christoffel symposium in honour of Christoffel on the 150th anniversary of his birth held on November 8-11, 1979 at Aachen and Monschau, Germany. — Edited by P. L. Butzer, F. Fehér. — Un vol. relié, 18 × 24, de xxiv, 761 p. — Prix: FS 92.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1981.

Portrait of E. B. Christoffel. — *Publications of E. B. Christoffel.* — *Christoffel and his time* : 5 exposés par P. L. Butzer, M. Jansen, M. A. Knus, E. Knobloch, F. R. Wollmershäuser. — *Gauss-Christoffel quadrature formulae* : 2 exposés par W. Gautschi, A. Ossicini et F. Rosati. — *Orthogonal polynomials, continued fractions and Padé approximation* : 7 exposés par J. Meixner, F. V. Atkinson et W. N. Everitt, W. Hahn, P. Wynn, W. J. Thron, J. S. R. Chisholm et A. K. Common, G. A. Baker et J. E. Gubernatis. —

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J. P. BICKEL, N. EL KAROUI, M. YOR. — **Ecole d'été de probabilités de Saint-Flour IX-1979**. — Edité par P. L. Hennequin. — Lecture notes in mathematics, vol. 876. — Un vol. broché, 16,5 × 24, de IX, 280 p. — Prix: DM 29.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

J. P. BICKEL: *Quelques aspects de la statistique robuste* : Introduction. Théorie de la robustesse pour les voisinages infinitésimaux. Statistique descriptive dans les modèles non paramétriques. Robustesse des plans de sondage contre la dépendance. — N. EL KAROUI: *Les aspects probabilistes du contrôle stochastique* : Introduction. Généralités sur le contrôle stochastique. Arrêt optimal. Contrôle continu dans un modèle fortement dominé. — M. YOR: *Sur la théorie du filtrage* : Cadre de l'étude. Projection d'une (\mathcal{F}_t) semi-martingale sur la filtration (\mathcal{G}_t) . Objet de la suite de l'étude. Le cas $h \equiv 1$. Etude de quelques exemples avec $h \neq 1$. En guise de conclusion.

Joachim ERVEN, Bernd-Jürgen FALKOWSKI. — **Low order cohomology and applications**. — Lecture notes in mathematics, vol. 877. — Un vol. broché, 16,5 × 24, de VI, 126 p. — Prix: DM 18.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

Continuous cohomology of Lie groups and Lie algebras : Basic definitions. Some applications. — *Continuous tensor products, infinitely divisible and factorizable representations*. — *First order cohomology groups for certain semi-direct products* : The general theory. The cohomology of the Euclidean motion groups. The cohomology of the first Leibniz-extension of compact Lie-groups. — *First order cohomology for $SL(2; \mathbf{R})$ and $SL(2; \mathbf{C})$* : Preliminaries. Representations of $SU(1, 1)$. The first order cocycles of $SU(1, 1)$ and $SL(2, \mathbf{C})$. — *Further results on semi-simple Lie groups* : Kazdan's result. Spherical functions. The connection between the cohomology of the Lie algebra and Lie group with applications to $SU(n; 1)$. — "Genuine" infinitely divisible representations : General definitions. Infinitely divisible positive functions on the first Leibniz-extensions of certain compact Lie groups. The explicit formula for the representations. Some remarks on irreducibility.

Numerical solution of nonlinear equations. — Proceedings of a symposium, Bremen, 1980. — Edited by E. L. Allgower, K. Glashoff and H.-O. Peitgen. — Lecture notes in mathematics, vol. 878. — Un vol. broché, 16,5 × 24, de xiv, 440 p. — Prix: DM 48.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

E. L. Allgower: A survey of homotopy methods for smooth mappings. — *E. L. Allgower, K. Böhmer and S. Mc Cormick*: Discrete correction methods for operator equations. — *K.-H. Becker, R. Seydel*: A Duffing equation with more than 20 branch points. — *L. Collatz*: Einschliessungssätze für Fixpunkte. — *K. Georg*: A numerically stable update for simplicial algorithms. — *K. Georg*: Numerical integration of the Davidenko equation. — *K.-H. Hoffmann*: Fixpunktprinzipien und freie Randwertaufgaben. — *R. B. Kearfott*: A derivative-free arc continuation method and a bifurcation technique. — *M. Kojima*: An introduction to variable dimension algorithms for solving systems of equations. — *G. v. d. Laan, A. J. J. Talman*: Labelling rules and orientation: on Sperner's lemma and Brouwer degree. — *H. D. Mittelman*: On the numerical solution of contact problems. — *H. O. Peitgen, K. Schmitt*: Positive and spurious solutions of nonlinear eigenvalue problems. — *H. Peters*: Change of structure and chaos for solutions. — *H. W. Siegborg*: Chaotic mappings on S^1 , periods one, two, three imply chaos on S^1 . — *F. Stenger*: An algorithm for ultrasonic tomography based on inversion of the Helmholtz equation. — *H. Weber*: On the numerical approximation of secondary bifurcation problems. — *W. Werner*: Some improvements of classical iterative methods for the solution of nonlinear equations.

Vjaceslav V. SAZONOV. — **Normal approximation: some recent advances.** — Lecture notes in mathematics, vol. 879. — Un vol. broché, 16,5 × 24, de vii, 105 p. — Prix: DM 18.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

The finite dimensional case: The two main methods and the main directions of extensions and improvements of classical results. The method of compositions. Estimates for convex and arbitrary Borel sets. The method of characteristic functions. Integral type estimates. Comments. — *The infinite dimensional case*: An estimate for balls with a fixed centre. A better speed estimate for balls with a fixed centre. Comments.

Non commutative harmonic analysis and Lie groups. — Actes du colloque d'analyse harmonique non commutative, 16 au 20 juin 1980, Marseille-Luminy. — Edited by J. Carmona and M. Vergne. — Lecture notes in mathematics, vol. 880. — Un vol. broché, 16,5 × 24, iv, 553 p. — Prix: DM 59.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

Nicole Berline et Michèle Vergne: Equations de Hua et noyau de Poisson. — *Philippe Blanc et David Wigner*: Homologie des groupes de Lie et dualité de Poincaré. — *Abderrazak Bouaziz*: Sur les représentations des algèbres de Lie semi-simples construites par T. Enright. — *Patrick Delorme*: Harish-Chandra homomorphisms and minimal K -types of real semisimple Lie groups. — *Thomas Enright and R. Parthasarathy*: A proof of a conjecture of Kashiwara and Vergne. — *Mogens Flensted-Jensen*: K -finite joint eigenfunctions on a non-riemannian semisimple symmetric space. — *Hidénori Fujiwara, Gérard Lion et Bernard Magneron*: Opérateurs d'entrelacement et calcul d'obstruction sur des groupes de Lie résolubles. — *Paul Gerardin*: Immeubles des groupes linéaires généraux. — *Alain Guichardet*: Sur les groupes EXTⁿ des représentations des groupes de Lie résolubles. — *Rebecca A. Herb*: Fourier inversion and the Plancherel theorem. —

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Robert LUTZ, Michel GOZE. — **Nonstandard analysis: a practical guide with applications.** — Lecture notes in mathematics, vol. 881. — Un vol. broché, $16,5 \times 24$, de xiv, 261 p. — Prix: DM 29.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

Elementary practice of non-standard analysis : (Quite classic) Infinitesimals. (With a slight non standard flavour) Limits. (Entirely non standard) Continuity. Uniform continuity. Derivatives and integrals. Differentiability. Some notions of topology in R . Digression on upper-bounded parts. Internal sequences. — *Logical foundations of non-standard analysis* : A review of the foundations: Z. F. To be natural or not to be. A non-standard extension of Z. F. Weak enlargements and ultrafilters. Enlargements in Z.F.C. Internal set theory. — *Some classical topics from a non-standard point of view* : General topology. Internal set theory with external sets. Compactness. Metric spaces. Functional sequences. Some exercises. Some intermediate objects in differential and algebraic topology. Holomorphic functions. — *Non standard analysis as a tool in perturbation problems* : Introduction and check-list of the tools. Perturbations of algebraic equations. Perturbations of linear operators. Perturbations of Lie algebra structures. Deformations of Lie algebra structures. Slow-fast flows in the plane. Boundedness of integral curves. Relaxation oscillations in Van der Pol's equation. Canards. Geodesics on flattened surfaces and the billiard ball problem. Asymptotic behaviour in boundary value problems with a small parameter. A semi-linear problem with boundary layer. A semi-linear problem with free and boundary layers. A sportsman's story. Forced layers in a non autonomous problem.

Integral representations and applications. — Proceedings of a conference held at Oberwolfach, Germany, June 22-28, 1980. — Edited by Klaus W. Roggenkamp. — Lecture notes in mathematics, vol. 882. — Un vol. broché, $16,5 \times 24$, de xii, 479 p. — Prix: DM 48.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

William H. Gustafson : Remarks on the history and applications of integral representations. — *Wilhelm Plesken* : Applications of the theory of orders to crystallographic groups. — *Robert Sandling* : Graham Higman's thesis "Units in group rings". — *Sudarshan K. Sehgal and Hans Zassenhaus* : On the supercentre of a group and its ring theoretic generalization. — *Olga Taussky* : Some facts concerning integral representations of ideals in an algebraic number field. — *Colin J. Bushnell and Irving Reiner* : Zeta-functions of orders. — *Jürgen Ritter* : The class group à la Fröhlich. — *Albrecht Fröhlich* : The hermitian classgroup. — *Martin J. Taylor* : Fröhlich's conjecture, logarithmic methods and Swan modules. — *Jacques Queyrut* : S -groupes de Grothendieck et structure galo-

sienne des anneaux d'entiers. — *Stephen V. Ullom*: Ratios of rings of integers as Galois modules. — *Stephen M. J. Wilson*: An extension of Miyata's theorem on the transfer map from the class group of a finite dihedral group to that of its cyclic maximal subgroup. — *Leonard Scott*: Hecke actions on Picard groups and class groups. — *Bruce A. Magurn*: Uses of units in Whitehead groups. — *Charles B. Thomas*: Integral representations in the theory of finite *CW*-complexes. — *Hyman Bass*: Lenstra's calculation of $G_0(R\pi)$, and applications to Morse-Smale diffeomorphisms. — *Juliusz Brzezinski*: Algebraic geometry of ternary quadratic forms and orders in quaternion algebras. — *Maurice Auslander and Sverre O. Smalø*: Preprojective lattices over classical orders. — *Ljudmilla A. Nazarova*: Poset representations. — *Michael C. R. Butler*: Grothendieck groups and almost split sequences. — *Ernst Dieterich*: Representation types of group rings over complete discrete valuation rings. — *Christine Bessenrodt*: On blocks of finite lattice type II. — *Alfred Wiedemann*: The Auslander-Reiten graph of blocks with cyclic defect two. — *Theodora Theohari-Apostolidi*: On the representation type of twisted group rings. — *Jon F. Carlson*: The complexity and varieties of modules. — *Peter J. Webb*: Restricting *ZG*-lattices to elementary abelian subgroups. — *Klaus W. Roggenkamp*: The lattice type of orders II: Auslander-Reiten quivers.

Cylindric set algebras. — Cylindric set algebras and related structures, by L. Henkin, J. D. Monk, and A. Tarski. — On cylindric-relativized set algebras, by H. Andréka and I. Németi. — Lecture notes in mathematics, vol. 883. — Un vol. broché, 16,5 × 24, de VII, 323 p. — Prix: DM 34.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

L. HENKIN, J. D. MONK, and A. TARSKI: *Cylindric set algebras and related structures*: Various set algebras. Relativization. Change of base. Subalgebras. Homomorphisms. Products. Ultraproducts. Reducts. Problems. — H. ANDREKA and I. NEMETI: *On cylindric-relativized set algebras*: Basic concepts and notations. Regular cylindric set algebras. Relativization. Change of base. Subalgebras. Homomorphisms. Products. Ultraproducts. Reducts. Problems.

Daniel S. KUBERT, Serge LANG. — **Modular units.** — Grundlehren der mathematischen Wissenschaften, vol. 244. — Un vol. relié, 16,5 × 24, de XIII, 358 p. — Prix: DM 98.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Distributions on toroidal groups: The Cartan group. Distributions. Stickelberger distributions. Lifting distributions. Bernoulli-Cartan numbers. Universal distributions. — *Modular units*: The Klein forms and Siegel functions. Units in the modular function field. The Siegel units as universal distribution. The precise distribution relations. The units over Z . The Weierstrass units. — *Quadratic relations*: Formal quadratic relations. The even primitive elements. Weierstrass forms. The Klein forms. The Siegel group. — *The Siegel units are generators*: Statement of results. Cyclotomic integers. Remarks on q -expansions. The prime power case. The composite case. Projective limits. — *The cuspidal divisor class group on $X(N)$* : The Stickelberger ideal. The prime power case. Computation of the order. Eigencomponents at level p . p -adic orders of character sums. Proof of the theorems. The special group. The special group disappears. Projective limits. — *The cuspidal divisor class group on $X_1(N)$* : Index of the Stickelberger ideal. The p -primary part at level p . Part of the cuspidal divisor class group. Computation of a class number. Projective limits. Projective limit of the trivial group. — *Modular units on Tate curves*:

Specializations of divisors and functions at infinity. Non-degeneracy of the units. The value of a Gauss sum. — *Diophantine applications*: Integral points. Correspondence with the Fermat curve. Torsion points. — *Unramified units*: The invariants. The index of the Siegel group. Lemmas on roots of unity. A refined index. — *More units in the modular function field*: Transformation of the Klein forms. Klein forms and Weierstrass functions. More expressions for modular units. — *Siegel-Robert units in arbitrary class fields*: Siegel-Ramachandra invariants as distributions. Stickelberger elements. Ideal factorization of the Siegel numbers. The Robert group in the ray class field. Taking roots. The Robert group under the norm map. — *Klein units in arbitrary class fields*: The Klein invariants. Behavior under the Artin automorphism. Modular units as Klein units. — *Computation of a unit index*: The regulator map and the inertia group. An index computation. Freeness results. The index. More roots of unity lemmas. Proof of theorem. — *Appendix*: The logarithm of the Siegel functions.

The correspondence between A. A. Markov and A. A. Chuprov on the theory of probability and mathematical statistics. — Edited by Kh. O. Ondar. — Translated by Charles and Margared Stein. — Un vol. relié, 16,5 × 24, de xvii, 181 p. — Prix: DM 74.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

The correspondence between A. A. Markov and A. A. Chuprov. — A review of the correspondence between A. A. Markov and A. A. Chuprov. — Appendices: A. A. Markov and A. A. Chuprov on the law of large numbers: On the basic principles of the calculus of probability and on the law of large numbers, by A. A. Markov. A review of A. A. Markov's book "The calculus of probability", by A. A. Chuprov. The bicentennial of the law of large numbers, by A. A. Markov. The law of large numbers in contemporary science, by A. A. Chuprov.

Jean-Pierre NAKACHE, Anne CHEVALIER, Vincent MORICE. — **Exercices commentés de mathématiques pour l'analyse statistique des données.** — Un vol. broché, 16 × 24, de xvi, 312 p. — Dunod, Paris, 1981.

Livre composé de 195 exercices, avec solution commentée. — *Ensembles et dénombrements*: Ensembles et applications. Éléments d'analyse combinatoire. — *Espaces vectoriels et applications linéaires*: Espaces vectoriels. Applications linéaires. Matrice associée à une application linéaire. — *Technique du calcul matriciel*: Calcul matriciel. Trace, déterminant, rang. Matrices par blocs. — *Diagonalisation, espaces euclidiens*: Valeurs propres, vecteurs propres, diagonalisation. Changement de base. Espaces euclidiens: produits scalaires et métriques associées. — *Application à l'analyse des données multidimensionnelles*: Dérivation matricielle et applications. Analyses factorielles et discrimination. Notions de proximité et classification automatique.

G. de BARRA. — **Measure theory and integration.** — Ellis Horwood series in mathematics and its applications. — Un vol. relié, 16 × 24, de 239 p. — Prix: £21.50 (broché: £8.50). — Ellis Horwood Ltd, Chichester (distributed by John Wiley and Sons, New York/Brisbane/Chichester/Toronto), 1981.

Preliminaries: Set theory. Topological ideas. Sequences and limits. Functions and mappings. Cardinal numbers and countability. Further properties of open sets. Cantor-

like sets. — *Measure on the real line* : Lebesgue outer measure. Measurable sets. Regularity. Measurable functions. Borel and Lebesgue measurability. Hausdorff measures on the real line. — *Integration of functions of a real variable* : Integration of non-negative functions. The general integral. Integration of series. Riemann and Lebesgue integrals. — *Differentiation* : The four derivatives. Continuous non-differentiable functions. Functions of bounded variation. Lebesgue's differentiation theorem. Differentiation and integration. The Lebesgue set. — *Abstract measure spaces* : Measures and outer measures. Extension of a measure. Uniqueness of the extension. Completion of a measure. Integration with respect to a measure. — *Inequalities and the L^p spaces* : Convex functions. Jensen's inequality. The inequalities of Hölder and Minkowski. Completeness. — *Convergence* : Convergence in measure. Almost uniform convergence. Convergence diagrams. Counter-examples. — *Signed measures and their derivatives* : Signed measures and the Hahn decomposition. The Jordan decomposition. The Radon-Nikodym theorem. Some applications of the Radon-Nikodym theorem. Bounded linear functionals on L^p . — *Lebesgue-Stieltjes integration* : Lebesgue-Stieltjes measure. Applications to Hausdorff measures. Absolutely continuous functions. Integration by parts. Change of variable. Riesz representation theorem. — *Measure and integration in a product space* : Measurability in a product space. The product measure and Fubini's theorem. Lebesgue measure in Euclidean space. Laplace and Fourier transforms. — *Hints and answers to exercises*.

Jane GROSSMAN. — **Meta-calculus: differential and integral**. — Un vol. broché, 15 × 23, de v, 30 p. — Prix: \$3.00. — Rockport, Mass.: Archimedes Foundation, 1981.

Classical calculus : Linear functions. Classical slope of a linear function. Classical gradient. Classical derivative. Arithmetic average. The basic theorem of classical calculus. The basic problem of classical calculus. Classical integral. The fundamental theorems of classical calculus. — *Meta-calculus* : Weight functions. Meta-measure of an interval. Meta-change of a function. Meta-uniform functions. Meta-slope of a meta-uniform function. Meta-gradient. Meta-derivative. Meta-average. The basic theorem of meta-calculus. The basic problem of meta-calculus. Meta-integral. The fundamental theorems of meta-calculus.

J. W. S. CASSELS. — **Economics for mathematicians**. — London mathematical society lecture note series, vol. 62. — Un vol. broché, 15 × 23, de xi, 145 p. — Prix: £7.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1981.

Utility, indifference surfaces : Budget constraints. Indifference hypersurfaces. Utility functions. — *Pure exchange economy* : The Edgeworth box. Existence of competitive allocations. Replicated economies. Non-convex economies. — *Theory of the firm* : Supply and demand. Perfect competition. Monopoly. Duopoly. Oligopoly. Factor costs. — *Welfare economics* : Public good. Service subject to congestion. Increasing returns to scale. Externalities. Arrow's impossibility theorem. — *Linear economic models* : Closed and open Leontieff models. The Sraffa and Marx models. The Gale economy. Von Neumann model. Turnpike theorems. — *Simple macroeconomic models* : An ultrasimple model. Government. Employment. Prices. Interest. Money. The labour market. Full employment. Unemployment. The long term. Definition of symbols. — *Appendices* : Convex sets. The Brouwer fixed point theorem. Non-negative matrices. — Exercices à la fin de chaque chapitre.

David A. VOGAN, Jr. — **Representations of real reductive Lie groups.** — Progress in mathematics, vol. 15. — Un vol. relié, 16 × 24, de xvii, 754 p. — Prix: FS 78.00. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

Preliminaries (Assumptions on G , roots, group representations and Harish-Chandra modules, finite dimensional representations) — $SL(2, R)$. — Geometry of the Kazhdan-Lusztig conjecture. — Kostant's Borel-Weil theorem. — Principal series representations and quasisplit groups. — Cohomology of modules. — Zuckerman's construction and the classification of irreducible modules. — Coherent continuation of characters. — Reducibility of the standard representations. — The Kazhdan-Lusztig conjecture.

Functional analysis and approximation. — Proceedings of the conference held at the Mathematical research institute at Oberwolfach, Black Forest, August 9-16, 1980. — Edited by P. L. Butzer, B. Sz.-Nagy, E. Görlich. — International series of numerical mathematics, vol. 60. — Un vol. relié, 17 × 24, de 482 p. — Prix: FS 90.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1981.

Operator theory: 5 exposés par T. Ando, M. Wolff, G. Lumer, P. Masani, M. Z. Nashed. — *Functional analysis*: 3 exposés par J. Musielak, C. Bennett and R. Sharpley, C. Ciesielski. — *Abstract harmonic analysis*: 4 exposés par H. Ombe and C. W. Onneweer, P. Lambert, H. G. Feichtinger, W. R. Bloom. — *Fourier analysis and integral transforms*: 5 exposés par J. Szabados, E. Görlich and C. Markett, F. Moricz, B. Muckenhoupt, M. Wehrens. — *Best approximation*: 4 exposés par H. Berens, U. Westphal, L. Bijvoets, W. Hogeveen and J. Korevaar, R. Beatson, Ch. K. Chui. — *Approximation by linear operators*: 4 exposés par P. Erdős and P. Vértesi, W. Dickmeis and R. J. Nessel, P. C. Sikkema, E. Görlich. — *Strong and Müntz approximation*: 3 exposés par L. Leindler, V. Totik, D. Leviatan. — *Number theory and probability*: 3 exposés par P. D. Lax and R. S. Phillips, V. Paulauskas, M. Roeckerath. — *Splines and numerical integration*: 4 exposés par: W. Schempp, J. B. Kioustelidis, N. S. Murthy, C. F. Osgood and O. Shisha, E. L. Stark.

Roland GLOWINSKI, Jacques-Louis LIONS and Raymond TREMOLIERES. — **Numerical analysis of variational inequalities.** — Studies in mathematics and its applications, volume 8. — Un vol. relié, 16 × 23, de xxx, 776 p. — Prix: Dfl 225.00. — North-Holland publishing company, Amsterdam/New York/Oxford, 1981.

General methods of approximation for steady-state inequality problems. — Optimisation algorithms. — Numerical analysis of the problem of the elasto-plastic torsion of a cylindrical bar. — Thermal control problems, boundary unilateral problems, and elliptic variational inequalities of order 4. — Numerical analysis of the steady flow of a Bingham fluid in a cylindrical duct. — General methods for the approximation and solution of time-dependent variational inequalities. — Further discussion of steady-state inequalities. — Further discussion of optimisation algorithms. — Further discussion of the numerical analysis of the elasto-plastic torsion problem. — Further discussion of boundary unilateral problems and elliptic variational inequalities of order 4. Application to fluid mechanics. — Further discussion of the numerical analysis of the steady flow of a Bingham fluid in a cylindrical duct. — Further discussion of the numerical analysis of time-dependent variational inequalities.

N. BOURBAKI. — **Eléments de mathématique: algèbre: chapitres 4 à 7.** — Nouvelle édition. — Un vol. relié, 19 × 25, de vii, 422 p. — Masson, Paris/New York/Barcelone/Milan/Mexico/Rio de Janeiro, 1981.

Polynômes et fractions rationnelles: Polynômes. Zéros des polynômes. Fractions rationnelles. Séries formelles. Tenseurs symétriques et applications polynomiales. Fonctions symétriques. — *Corps commutatifs*: Corps premiers: caractéristique. Extensions. Extensions algébriques. Extensions algébriquement closes. Extensions radicielles. Algèbres étales. Extensions algébriques séparables. Normes et traces. Éléments conjugués et extensions quasi-galoisiennes. Extensions galoisiennes. Extensions abéliennes. Corps finis. Extensions radicielles. Extensions transcendantes. Extensions séparables. Critères différentiels de séparabilité. Extensions régulières. — *Groupes et corps ordonnés*: Groupes ordonnés. Divisibilité. Corps ordonnés. — *Modules sur les anneaux principaux*: Anneaux principaux. Modules de torsion sur un anneau principal. Modules libres sur un anneau principal. Modules de type fini sur un anneau principal. Endomorphismes des espaces vectoriels. — Exercices à la fin de chaque chapitre.

Pierre BREMAUD. — **Point processes and queues, martingale dynamics.** — Springer series in statistics. — Un vol. relié, 17 × 24, de xviii, 354 p. — Prix: DM 88.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Martingales. — Point processes, queues, and intensities. — Integral representation of point-process martingales. — Filtering. — Flows in Markovian networks of queues. — Likelihood ratios. — Optimal control. — Marked point processes. — Background in probability and stochastic processes. — Stopping times and point-process histories. — Wiener-driven dynamical systems. — Stieltjes-Lebesgue calculus.

Interpreting multivariate data. — Proceedings of the conference entitled "Looking at multivariate data" held in the University of Sheffield, U.K., from 24-27 March 1980. — Edited by Vic Barnett. — Wiley series in probability and mathematical statistics. — Un vol. relié, 16 × 24, de xvi, 374 p. — Prix: £21.00. — John Wiley & Sons, Chichester/New York/Brisbane/Toronto, 1981.

METHODS FOR INVESTIGATING BIVARIATE DATA: *P. J. Green*: Peeling bivariate data. *R. Sibson*: A brief description of natural neighbour interpolation. *B. W. Silverman*: Density estimation for univariate and bivariate data. *P. J. Diggle*: Some graphical methods in the analysis of spatial point patterns. *D. G. Kendall*: The statistics of shape. — REDUCTION, DISPLAY, AND ANALYSIS OF DATA MATRICES AND MULTIWAY TABLES: *J. C. Gower and P. G. N. Digby*: Expressing complex relationships in two dimensions. *M. J. Greenacre*: Practical correspondence analysis. *K. R. Gabriel*: Biplot display of multivariate matrices for inspection of data and diagnosis. *D. F. Andrews*: Statistical applications of real-time interactive graphics. — GRAPHICAL DISPLAY OF DATA SETS IN 3 OR MORE DIMENSIONS: *P. A. Tukey and J. W. Tukey*: Preparation; prechosen sequences of views. *P. A. Tukey and J. W. Tukey*: Data-driven view selection; agglomeration and sharpening. *P. A. Tukey and J. W. Tukey*: Summarization; smoothing; supplemented views. — SPECIFIC METHODS AND PRACTICAL APPLICATIONS: *B. S. Everitt and J. C. Gower*: Plotting the optimum positions of an array of cortical electrical phosphenes. *S. E. Fienberg, M. M. Meyer and S. S. Wasserman*: Analysing data from multivariate directed graphs: an application to social networks. *H. Goldstein*: Some graphical procedures for the preliminary processing of longitudinal data. *I. Graham*: Interpreting archaeological data. *A. F. M. Smith and D. J. Spiegelhalter*: Bayesian approaches to multivariate structure.

D. J. HAND. — **Discrimination and classification.** — Wiley series in probability and mathematical statistics. — Un vol. relié, 16 × 24, de x, 218 p. — Prix: £15.50. — John Wiley & Sons, Chichester/New York/Brisbane/Toronto, 1981.

Introduction: Scope and background. The measurement space. Decision theory. Design sets and test sets. Distances. Overview. — *Distribution-free methods*: Histograms. Kernel estimators. k -nearest-neighbour methods. Series expansions. — *Parameterized distributions*: Desirable properties of estimators. Estimation methods. Relationships between the methods. Sequential methods of parameter estimation. — *Linear discriminant functions*: General ideas. Linear programming and the perceptron criterion. Error correction and the perceptron criterion. Fisher's criterion. The least squares approach. Choosing an estimation method. Specializations and generalizations. — *Discrete variables*: Distribution-free methods. Parameterizations of the probability functions. Other aspects of discrete variables. Choice of method. — *Variable selection*: Dimensionality and misclassification rate. Class separability measures. Selecting the variables. Selection by transformation. — *Cluster analysis*: Distance measures. Hierarchical methods. Optimization methods. Other methods. — *Miscellaneous topics*: Assessing a classifier. Incomplete data. Incorrectly classified design sets. The reject option. — Exercices à la fin de chaque chapitre.

Ronald W. SHEPHARD. — **Cost and production functions.** — Reprint of the first edition. — Lecture notes in economics and mathematical systems, vol. 194. — Un vol. broché, 17 × 24, de xi, 104 p. — Prix: DM 22.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

The process production function. Heuristic principle of minimum costs. The producer's minimum cost function. Dual determination of production function from cost function. Geometric interpretation of the duality between cost and production function. Constraints on the factors of production. Homothetic production functions. The Cobb-Douglas production function. The problem of aggregation. The dynamics of monopoly.

E. SENETA. — **Non-negative matrices and Markov chains.** — Second edition. — Springer series in statistics. — Un vol. relié, 16 × 24, de xv, 279 p. — Prix: DM 69.90. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

FINITE NON-NEGATIVE MATRICES: *Fundamental concepts and results in the theory of non-negative matrices*: The Perron-Frobenius theorem for primitive matrices. Structure of a general non-negative matrix. Irreducible matrices. Perron-Frobenius theory for irreducible matrices. — *Some secondary theory with emphasis on irreducible matrices and applications*: Iterative methods for solution of certain linear equation systems. Some extensions of the Perron-Frobenius structure. Combinatorial properties. Spectrum localization. Estimating non-negative matrices from marginal totals. — *Inhomogeneous products of non-negative matrices*: Birkhoff's contraction coefficient: generalities. Results on weak ergodicity. Strong ergodicity for forward products. Birkhoff's contraction coefficient: derivation of explicit form. — *Markov chains and finite stochastic matrices*: Finite Markov chains and coefficients of ergodicity. Sufficient conditions for weak ergodicity. Strong ergodicity for forward products. Backwards products. — COUNTABLE NON-NEGATIVE MATRICES: *Countable stochastic matrices*: Classification of indices. Limiting behaviour for recurrent indices. Irreducible stochastic matrices. The "dual" approach;

subinvariant vectors. Potential and boundary theory for transient indices. Example. — *Countable non-negative matrices*: The convergence parameter and the classification. Subinvariance and invariance; positivity. Consequences for finite and stochastic infinite matrices. Finite approximations. An example. — *Truncations of infinite stochastic matrices*: Determinantal and cofactor properties. The probability algorithm. Quasi-stationary distributions. — *Appendices*: Some elementary number theory. Some general matrix lemmas. Upper semi-continuous functions.

Thomas BANCHOFF, Terence GAFFNEY and Clint McCORRY. — **Cusps of Gauss mappings**. — Research notes in mathematics, vol. 55. — Un vol. broché, 17 × 25, de VIII, 88 p. — Prix: £6.25. — Pitman advanced publishing program, Boston/London/Melbourne, 1982.

Prelude: Gauss mappings of plane curves. Gauss mappings of surfaces. Characterizations of Gaussian cusps. Singularities of families of mappings. Projections to lines. Focal and parallel surfaces. Projections to planes. Singularities and extrinsic geometry.

Pierre BERLOQUIN. — **Le jardin du Sphinx: 151 énigmes mathématiques**. — Un vol. relié, 15 × 21, de 200 p. — Paris, Dunod, 1981.

Les 151 jeux-énigmes mathématiques et leur solution qui composent cet ouvrage sont parus dans le journal *Le Monde* au cours des dernières années. Leurs lecteurs ont souvent réagi pour aller plus loin que les énoncés et les solutions, vers des raisonnements plus beaux ou plus insolites, ou vers de nouveaux problèmes. Il s'est ainsi construit un dialogue, où les problèmes de Pierre Berloquin et ceux choisis dans la littérature ludique provoquaient l'imagination des joueurs. Le présent recueil est le fruit de cet échange.

Robert R. SOKAL and F. James ROHLF. — **Biometry: the principles and practice of statistics in biological research**. — Second edition. — Un vol. relié, 16 × 24, de XVIII, 859 p. — Prix: £19.50. — W. H. Freeman & Sons, San Francisco, 1981.

Introduction. — Data in biology. — The handling of data. — Descriptive statistics. — Introduction to probability distributions: binomial and Poisson. — The normal probability distribution. — Estimation and hypothesis testing. — Introduction to analysis of variance. — Single classification analysis of variance. — Nested analysis of variance. — Two-way analysis of variance. — Multiway analysis of variance. — Assumptions of analysis of variance. — Linear regression. — Correlation. — Multiple and curvilinear regression. — Analysis of frequencies. — Miscellaneous methods. — Appendixes.

F. James ROHLF; Robert R. SOKAL. — **Statistical tables**. — Second edition. — Un vol. broché, 15,5 × 23,5, de VIII, 219 p. — Prix: £6.50. — W. H. Freeman & Sons, San Francisco, 1981.

Common logarithms of factorials. Orthogonal polynomials. The angular transformation. Proportions corresponding to an angle. The z -transformation of correlation coefficient r . Correlation coefficient r as a function of transform z . Gurland and Tripathi's

correction for the standard deviation. Ten thousand random digits. Areas of the normal curve. *Critical values* : of Student's *t*-distribution; of Student's *t*-distribution based on Sidak's multiplicative inequality; of the chi-square distribution; of the chi-square distribution based on Sidak's multiplicative inequality; of the *F*-distribution; of the studentized range; for Welsch's step-up procedure; of the studentized augmented range; of the studentized maximum modulus distribution. Shortest unbiased confidence limits for the variance. Confidence limits for percentages. Relative expected frequencies for individual terms of the Poisson distribution. Critical values for correlation coefficients. Mean ranges of samples from a normal distribution. Rankits (normal order statistics). *Critical values* : of the number of runs; the Mann-Whitney statistic; of the two-sample Kolmogorov-Smirnov statistic; of the one-sample Kolmogorov-Smirnov statistic; of the one-sample Kolmogorov-Smirnov statistic for intrinsic hypotheses; for Page's test; of Olmstead and Tukey's test criterion; for testing outliers (according to Dixon); for testing outliers (according to Grubbs); for Kendall's rank correlation coefficient; for runs up and down. Some mathematical constants.

UMAP modules 1980: tools for teaching. — Un vol. relié, 15,5 × 23,5, de XII, 690 p. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

Vahe Bedian : Analysis. — *Simon Cohen* : Ascent-Descent. — *Brindell Horelick and Sinan Koont* : The digestive process of sheep. Epidemics. Tracer methods in permeability. Feldman's model. A strange result in visual perception. — *Sister Mary K. Keller* : Food service management and applications of matrix methods: food service and dietary requirements. Computer graphics and applications of matrix methods. Electrical circuits and applications of matrix methods: analysis of linear circuits. — *Edward L. Keller* : Population projection. — *David G. Kleinbaum and Anna Kleinbaum* : Adjusted rates: the direct rate. — *Peter A. Lindstrom* : Developing the fundamental theorem of calculus. — *Nelson L. Max* : Curves and their parametrization. — *James M. Maynard* : A linear programming model for scheduling prison guards. — *Mark D. Meyerson* : The impossibility of trisecting angles. — *Richard G. Montgomery* : Listening to the earth: controlled source seismology. — *Werner C. Rheinboldt* : Horner's scheme and related algorithms. — *Philip M. Tuchinsky* : General equilibrium: a Leontief economic model. Viscous fluid flow and the integral calculus. The human cough. Zipf's law and his efforts to use infinite series in linguistics. — *W. Thurmon Whitley* : Five applications of max-min theory from calculus. — *Dina A. Zinnes, John V. Gillespie, and G. S. Tahim* : The Richardson arms race model.

H. S. M. COXETER. — **Unvergängliche Geometrie.** — Ins Deutsche übersetzt von J. J. Burckhardt. — Zweite, erweiterte und überarbeitete Auflage. — Wissenschaft und Kultur, vol. 17. — Un vol. relié, 17 × 24, de 558 p. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1981.

Dreiecke. — Regelmässige Vielecke. — Bewegungen in der Euklidischen Ebene. — Zweidimensionale Kristallographie. — Ähnlichkeit in der Euklidischen Ebene. — Kreise und Kugeln. — Bewegung und Ähnlichkeit im Euklidischen Raum. — Koordinaten. — Komplexe Zahlen. — Die fünf Platonischen Körper. — Goldener Schnitt und Phyllotaxis. — Anordnungsgeometrie. — Affine Geometrie. — Projektive Geometrie. — Absolute Geometrie. — Hyperbolische Geometrie. — Differentialgeometrie der Kurven. — Tensoren. — Differentialgeometrie der Flächen. — Geodätische Linien. — Topologie der Flächen. — Vierdimensionale Geometrie.

Daniel H. GREENE, Donald E. KNUTH. — **Mathematics for the analysis of algorithms.** — Progress in computer science, vol. 1. — Un vol. relié, 15,5 × 23,5, de 107 p. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

Binomial identities: Summary of useful identities. Deriving the identities. Inverse relations. Operator calculus. Identities with the harmonic numbers. — *Recurrence relations*: Linear recurrence relations. Nonlinear recurrence relations. — *Operator methods*: The cookie monster. Coalesced hashing. Open addressing: uniform hashing. Open addressing: secondary clustering. — *Asymptotic analysis*: Basic concepts. Stieltjes integration. Asymptotics from generating functions. — *Appendices*: Lectures. Homework assignments. Midterm exam and solutions. Final exam and solutions.

James C. FRAUENTHAL. — **Smallpox: when should routine vaccination be discontinued?** — The UMAP expository monograph series. — Un vol. broché, 15,5 × 23,5, de XII, 50 p. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

The history of smallpox vaccination. — The epidemiology of smallpox. — The mathematical model: introduction. — The preepidemic model. — The epidemic initiation model. — The epidemic subsidence model. — The optimal vaccination policy. — Calibrating the model. — Concluding remarks. — Appendices: conditional expectations, Poisson processes and exponentially distributed events.

Philip M. TUCHINSKY. — **Man in competition with the spruce budworm: an application of differential equations.** — The UMAP expository monograph series. — Un vol. broché, 15,5 × 23,5, de VIII, 77 p. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

The war against the budworm: Budworm and balsam fir in balance. Man intervenes. The simulation model. Description versus prescription. — *The Ludwig-Jones-Holling differential equations model*: Modeling the density of budworm. Behavior of the budworm population. A brief side journey: catastrophe theory. Differential equations modeling the forest's response. The behavior of the slow variables. The complete model at last. Improving the model. Fitting the model to nature. Putting the models to work: a beginning. — *Appendices*: The logistic model. The idea of equilibrium. The cusp.

Phillip A. GRIFFITHS, John W. MORGAN. — **Rational homotopy theory and differential forms.** — Progress in mathematics, vol. 16. — Un vol. relié, 15,5 × 23,5, de XI, 242 p. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

Basic concepts. — The CW homology theorem. — The Whitehead and Hurewicz theorems. — The Serre spectral sequence. — Obstruction theory. — Cohomology, Eilenberg-MacLane spaces, and principal fibrations. — Postnikov towers and rational homotopy theory. — de Rham's theorem for simplicial complexes. — Differential graded algebras. — Homotopy theory of D.G.A.'s. — The connection between the homotopy theory of D.G.A.'s and rational homotopy theory. — The fundamental group. — Examples. — Functoriality. — Proof of the Hirsch lemma. — Functorial comparison of C^∞ - and \mathbb{Q} -polynomial minimal models.

A. BELLER, R. JENSEN and P. WELCH. — **Coding the universe.** — London mathematical society lecture note series, vol. 47. — Un vol. broché, 15 × 23, de 353 p. — Prix: £17.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

The building blocks. — The conditions. — Distributivity. — The dénouement. — Applications. — The fine-structural lemmas. — The Cohen-generic sets. — How to get rid of “ $\neg 0 \neq$ ”. — Some further applications.

A. M. W. GLASS. — **Ordered permutation groups.** — London mathematical society lecture note series, vol. 55. — Un vol. broché, 15 × 23, de XLIX, 266 p. — Prix: £12.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1981.

OPENING THE INNINGS: *Introduction*: Actions of groups on chains. Partially ordered groups. Congruences. Stabilisers and blocks. Transitive actions. Primitive components. Dedekind completion and character. Bumps and supports. Multiple transitivity. Identities. — *Doubly transitive $A(\Omega)$* : Geometry versus algebra. Divisibility and conjugacy. The normal subgroups. The automorphisms. Embedding. — THE STRUCTURE THEORY: *Congruences and blocks*: Transitive and intransitive ordered permutation groups. — *Primitive ordered permutation groups*: Transitive primitive ordered permutation groups. Totally ordered transitive ordered permutation groups. Periodic primitive l -permutation groups. Intransitive primitive ordered permutation groups. The proof of the theorem. — *The wreath product*. — APPLICATIONS TO ORDERED PERMUTATION GROUPS: *Simple l -permutation groups*. — *Uniqueness of representation*: Ordered permutation groups. — *Pointwise suprema and closed subgroups*: Closed stabiliser subgroups. Pointwise suprema. Closed subgroups. — Automorphisms. — APPLICATIONS TO LATTICE-ORDERED GROUPS: *Embedding theorems for lattice-ordered groups*. — *Normal valued lattice-ordered groups*. — THE AUTHOR'S PREROGATIVE: *Algebraically closed lattice-ordered groups*. — *The word problem for lattice-ordered groups*.

T. TSUZUKU. — **Finite groups and finite geometries.** — Translated by A. Sevenster and T. Okuyama. — Cambridge tracts in mathematics, vol. 78. — Un vol. relié, 15 × 22, de x, 328 p. — Prix: £22.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Introduction: Notation and preliminaries. Groups. Algebraic structures. Vector spaces. Geometric structures. — *Fundamental properties of finite groups*: The Sylow theorems. Direct products and semi-direct products. Normal series. Finite Abelian groups. p -groups. Groups with operators. Group extensions and the theorem of Schur-Zassenhaus. Normal π -complements. Normal p -complements. Representation of finite groups. Frobenius groups. — *Fundamental theory of permutation groups*: Permutations. Transitivity and intransitivity. Primitivity and imprimitivity. Multiple transitivity. Normal subgroups. Permutation groups of prime degree. Primitive permutation groups. — *Examples: symmetric groups and general linear groups*: Conjugacy classes and composition series of the symmetric and alternating group. Conditions for being a symmetric or alternating group. Subgroups and automorphism groups. Generators and fundamental relations. The structure of general semi-linear groups. Properties of $PSL(V)$ as a permutation group. Symmetric groups and general linear groups of low order. — *Finite projective geometry*: Projective planes and affine planes. Higher-dimensional projective geometry.

Characterization of projective geometries. — *Finite groups and finite geometries*: Designs constructed from 2-transitive groups. Characterization of projective transformation groups.

Leonard LEWIN. — **Polylogarithms and associated functions.** — Un vol. relié, $16 \times 23,5$, de xvii, 359 p. — Prix: Dfl 150.00 (U.S.A. and Canada: \$54.95). — Elsevier North-Holland Inc., New York/Oxford, 1981.

The dilogarithm. — The inverse tangent integral. — The generalized inverse tangent integral. — Clausen's integral. — The dilogarithm of complex argument. — The trilogarithm. — The higher-order functions. — Integration of functions and summation of series. — Reference data and tables.

Nobuyuki IKEDA, Shinzo WATANABE. — **Stochastic differential equations and diffusion processes.** — North-Holland mathematical library, vol. 24. — Un vol. relié, 15×23 , de xiv, 464 p. — Prix: Dfl 175.00. — North-Holland publishing company, Amsterdam/Oxford/New York, and Kodansha Ltd., Tokyo, 1981.

Preliminaries: Probability measures on a metric space. Expectations, conditional expectations and regular conditional probabilities. Continuous stochastic processes. Stochastic processes adapted to an increasing family of sub σ -fields. Martingales. — Brownian motions. Poisson random measures. Point processes and Poisson point processes. — *Stochastic integrals and Ito's formula*: Itô's definition of stochastic integrals. Stochastic integrals with respect to martingales, and with respect to point processes. Semi-martingales. Itô's formula. Martingale characterization of Brownian motions and Poisson point processes. Representation theorem for semi-martingales. — *Stochastic calculus*: The space of stochastic differentials. Stochastic differential equations with respect to quasimartingales. Moment inequalities for martingales. Some applications of stochastic calculus to Brownian motions. Exponential martingales. — *Stochastic differential equations*: Existence theorem. Uniqueness theorem. Solution by transformation of drift and by time change. Diffusion processes. Diffusion processes generated by differential operators and stochastic differential equations. Stochastic differential equations with boundary conditions. Examples. Stochastic differential equations with respect to Poisson point processes. — *Diffusion processes on manifolds*: Stochastic differential equations on manifolds. Flow of diffeomorphisms. Heat equation on a manifold. Non-degenerate diffusions on a manifold and their horizontal lifts. Stochastic parallel displacement and heat equation for tensor fields. The case with boundary conditions. Malliavin's stochastic calculus of variation for Wiener functionals. The case of stochastic differential equations and hypoellipticity problem of heat equations. — *Theorems on comparison and approximation and their applications*: A comparison theorem for one-dimensional Itô processes. An application to an optimal control problem. Some results on one-dimensional diffusion processes. Comparison theorem for one-dimensional projection of diffusion processes. Approximation theorems for stochastic integrals and stochastic differential equations. The support of diffusion processes. Asymptotic evaluation of the diffusion measure for tubes around a smooth curve.

Stochastic systems: the mathematics of filtering and identification and applications. — Proceedings of the NATO advanced study institute held at Les Arcs, Savoie, France, June 22-July 5, 1980. — Edited by Michiel Hazewinkel and Jan C. Willems. — NATO

advanced study institutes series, series C: mathematical and physical sciences, vol. 78. — Un vol. relié, 16 × 25, de xi, 663 p. — Prix: Dfl 160.00. — D. Reidel publishing company, Dordrecht/Boston/London, 1981.

The main themes of the ASI "stochastic systems": the mathematics of filtering and identification and applications: 1 exposé par M. Hazewinkel and J. C. Willems. — *Introductory tutorial material for identification and filtering problems*: 5 exposés par J. C. Willems, R. F. Curtain, M. H. A. Davis and S. I. Marcus, M. Hazewinkel. — *Foundations of stochastic systems and modeling issues and applications*: 5 exposés par L. Arnold, R. Boel, A. Lindquist and G. Picci, V. Wihstutz. — *Identification*: 5 exposés par E. J. Hannan, L. Ljung, M. Deistler, D. Guegan, P. S. Krishnaprasad and S. I. Marcus. — *Linear filtering*: 3 exposés par T. Kailath, P. Dewilde, J. T. Fokkema and I. Widya, M. Hazewinkel. — *Adaptive control*: 3 exposés par Y. D. Landau, P. E. Caines and D. Dorner, J.-J. J. Fuchs. — *Nonlinear filtering*: 15 exposés par R. W. Brockett, S. K. Mitter, M. H. A. Davis, E. Pardoux, J. Baillieul, J. S. Baras, B. Z. Bobrovsky and M. Zakai, G. B. di Masi and W. J. Runggaldier, M. Hazewinkel and S. I. Marcus, O. Hijab, F. Le Gland, D. Michel, D. Ocone, H. J. Sussmann, M. Zakai.

Jacques VAUTHIER. — **Problèmes d'analyse: agrégation de mathématiques, avec rappels de cours.** — 2^e édition, années 1970-1980. — Un vol. broché, 16 × 24, de 246 p. — Prix: FF 108.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Rio de Janeiro, 1981.

Classes de Hardy; calcul symbolique dans des espaces de Hilbert. — Equations différentielles de Bessel. — Un théorème de Hörmander sur une équation aux dérivées partielles. — Problème des moments. — Polynômes orthogonaux; représentation de fonction par des développements en séries. — Théorème de Hardy sur les zéros de la célèbre fonction de Riemann. — Fonctions polyharmoniques. — Théorème de préparation différentiable. — Autour de l'inégalité de Hardy Littlewood. — Fonctions quasi-différentiables. — Projecteurs contractants d'espaces de Banach. — Énoncé et corrigé pour chaque problème.

Marie-Paule MALLIAVIN. — **Les groupes finis et leurs représentations complexes.** — Collection « Maîtrise de mathématiques pures » Un vol. broché, 16 × 24, de 94 p. — Prix: FF 82.00. — Masson, Paris/New York/Barcelone/Milan/Mexico/Rio de Janeiro, 1981.

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— *Représentation du groupe symétrique*: Partitions. Tableaux. Modules de Specht. Algèbre de groupe. La base standard d'un module de Specht. Degrés des représentations irréductibles.

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Lattices: Definitions. Isomorphic lattices, and sublattices. Distributive and modular lattices. Complete lattices, equivalence relations, and algebraic lattices. Closure operators. — *The elements of universal algebra*: Definition and examples of algebras. Isomorphic algebras and subalgebras. Algebraic lattices and subuniverses. The irredundant basis theorem. Congruences and quotient algebras. Homomorphisms and the homomorphism and isomorphism theorems. Direct products, factor congruences, and directly indecomposable algebras. Subdirect products, subdirectly irreducible algebras, and simple algebras. Class operators and varieties. Terms, term algebras, and free algebras. Identities, free algebras, and Birkhoff's theorem. Mal'cev conditions. The center of an algebra. Equational logic and fully invariant congruences. — *Selected topics*: Steiner triple systems, squags, and sloops. Quasigroups, loops, and Latin squares. Orthogonal Latin squares. Finite state acceptors. — *Starting from Boolean algebras*: Boolean algebras and rings. Filters and ideals. Stone duality. Boolean powers. Ultra-products and congruence-distributive varieties. Primal algebras. Boolean products. Discriminator varieties. Quasiprimal algebras. Functionally complete algebras and skew-free algebras. Semisimple varieties. Directly representable varieties. — *Connections with model theory*: First-order languages, first-order structures, and satisfaction. Reduced products and ultraproducts. Principal congruence formulas. Three finite basis theorems. Semantic embeddings and undecidability. — *Recent developments and open problems*.

Peter WALTERS. — **An introduction to ergodic theory.** — Graduate texts in mathematics, vol. 79. — Un vol. relié, 17 × 25, de ix, 250 p. — Prix: DM 69.50. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Preliminaries: Measure spaces. Integration. Absolutely continuous measures and conditional expectations. Function spaces. Haar measure. Character theory. Endomorphisms of tori. Perron-Frobenius theory. Topology. — *Measure-preserving transformations*: Definition and examples. Problems in ergodic theory. Associated isometries. Recurrence. Ergodicity. The ergodic theorem. Mixing. — *Isomorphism, conjugacy, and spectral isomorphism*: Point maps and set maps. Isomorphism of measure-preserving transformations. Conjugacy of measure-preserving transformations. The isomorphism problem. Spectral isomorphism. Spectral invariants. — *Measure-preserving transformations with discrete spectrum*: Eigenvalues and eigenfunctions. Discrete spectrum. Group rotations. — *Entropy*: Partitions and subalgebras. Entropy of a partition. Conditional entropy, Entropy of a measure-preserving transformation. Some methods for calculating $h(T)$. Examples. How good an invariant is entropy? Bernoulli automorphisms and Kolmogorov automorphisms. The Pinsker σ -algebra of a measure-preserving transformation. Sequence entropy. Non-invertible transformations. Comments. — *Topological dynamics*: Examples. Minimality. The non-wandering set. Topological

transitivity. Topological conjugacy and discrete spectrum. Expansive homeomorphisms. — *Invariant measures for continuous transformations*: Measures on metric spaces. Invariant measures for continuous transformations. Interpretation of ergodicity and mixing. Relation of invariant measures to non-wandering sets, periodic points and topological transitivity. Unique ergodicity. Examples. — *Topological entropy*: Definition using open covers. Bowen's definition. Calculation of topological entropy. — *Relationship between topological entropy and measure-theoretic entropy*: The entropy map. The variational principle. Measures with maximal entropy. Entropy of affine transformations. The distribution of periodic points. Definition of measure-theoretic entropy using the metrics d_n . — *Topological pressure and its relationship with invariant measures*: Topological pressure. Properties of pressure. The variational principle. Pressure determines $M(X, T)$. Equilibrium states. — *Applications and other topics*: The qualitative behaviour of diffeomorphisms. The subadditive ergodic theorem and the multiplicative ergodic theorem, Quasi-invariant measures. Other types of isomorphism. Transformations of intervals.

Otto FORSTER. — **Lectures on Riemann surfaces.** — Translated by Bruce Gilligan. — Graduate texts in mathematics, vol. 81. — Un vol. relié, 17 × 25, de VIII, 254 p. — Prix: DM 88.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Covering spaces: The definition of Riemann surfaces. Elementary properties of holomorphic mappings. Homotopy of curves. The fundamental group. Branched and unbranched coverings. The universal covering and covering transformations. Sheaves. Analytic continuation. Algebraic functions. Differential forms. The integration of differential forms. Linear differential equations. — *Compact Riemann surfaces*: Cohomology groups. Dolbeault's lemma. A finiteness theorem. The exact cohomology sequence. The Riemann-Roch theorem. The Serre duality theorem. Functions and differential forms with prescribed principal parts. Harmonic differential forms. Abel's theorem. The Jacobi inversion problem. — *Non-compact Riemann surfaces*: The Dirichlet boundary value problem. Countable topology. Weyl's lemma. The Runge approximation theorem. The theorems of Mittag-Leffler and Weierstrass. The Riemann mapping theorem. Functions with prescribed summands of automorphy. Line and vector bundles. The Riemann-Hilbert problem. The triviality of vector bundles. — *Appendix*: Partitions of unity. Topological vector spaces.

Michio SUZUKI. — **Group theory I.** — Grundlehren der mathematischen Wissenschaften, vol. 247, — Un vol. relié, 17 × 25, de XIV, 434 p. — Prix: DM 118.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Basic concepts: The definition of a group and some examples. Subgroups. Cosets. Normal subgroups, factor groups. Homomorphisms, isomorphism theorems. Automorphisms. Permutation groups, G -sets. Operator groups, semidirect products. General linear groups. — *Fundamental theorems*: Theorems about p -groups. Theorems of Sylow. Subnormal series, Schreier's refinement theorem. The Krull-Remark-Schmidt theorem. Fundamental theorems on Abelian groups. Generators and relations. Extensions of groups and cohomology theory. Applications of cohomology theory, the Schur-Zassenhaus theorem. Central extensions, Schur's multiplier. Wreath products. — *Some special classes of groups*: Torsion-free Abelian groups. Symmetric groups and alternating groups. Geometry of linear groups. Coxeter groups. Surveys of finite simple groups. Finite subgroups of two-dimensional special linear groups.

Jack MACKI, Aaron STRAUSS. — **Introduction to optimal control theory.** — Undergraduate texts in mathematics. — Un vol. relié, 17 × 25, de xiii, 165 p. — Prix: DM 58.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Introduction and motivation. — Controllability. — Linear autonomous time-optimal control problems. — Existence theorems for optimal control problems. — Necessary conditions for optimal controls. — the Pontryagin maximum principle. — Proof of the Pontryagin maximum principle. — Exercices à la fin de chaque chapitre.

L. R. FOULDS. — **Optimization techniques: an introduction.** — Undergraduate texts in mathematics. — Un vol. relié, 17 × 25, de xi, 502 p. — Prix: DM 84.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Introduction. — Linear programming. — Advanced linear programming topics. — Integer programming. — Network analysis. — Dynamic programming. — Classical optimization. — Nonlinear programming. — Appendix: linear algebra and basic calculus. — Exercices à la fin de chaque chapitre, avec solutions.

Richard K. GUY. — **Unsolved problems in number theory.** — Unsolved problems in intuitive mathematics, vol. 1. — Problem books in mathematics. — Un vol. relié, 16 × 25, de xviii, 161 p. — Prix: DM 42.000. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Discussions of hundreds of open questions, organized into 178 different topics. These numerous aspects of number theory are organized into six categories: prime numbers, divisibility, additive number theory, diophantine equations, sequences of integers, and miscellaneous.

New directions in applied mathematics. — Papers presented April 25/26, 1980, on the occasion of the Case centennial celebration. — Edited by Peter J. Hilton and Gail S. Young. — Un vol. relié, 16 × 25, de ix, 163 p. — Prix: DM 53.00.—Springer-Verlag, New York/Heidelberg/Berlin, 1982.

Kenneth Baclawski: Combinatorics: trends and examples. — *R. W. Brockett*: Control theory and singular Riemannian geometry. — *Christopher I. Byrnes and Tyrone E. Duncan*: On certain topological invariants arising in system theory. — *D. Kleitman*: Operations research and discrete applied mathematics. — *Bertram Kostant and Shlomo Sternberg*: Symplectic projective orbits. — *Jerrold E. Marsden*: Four applications of nonlinear analysis to physics and engineering. — *E. C. Zeeman*: Bifurcation, catastrophe and turbulence. — *Peter J. Hilton*: The emphasis on applied mathematics today and its implications for the mathematics curriculum.

John T. CANNON, Sigalia DOSTROVSKY. — **The evolution of dynamics: vibration theory from 1687 to 1742.** — Studies in the history of mathematics and physical sciences, vol. 6. — Un vol. relié, 17 × 25, de ix, 184 p. — Prix: DM 98.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Newton (1687): Pressure wave. — *Taylor (1713)*: Vibrating string. Absolute frequency. — *Sauveur (1713)*: Vibrating string. — *Hermann (1716)*: Pressure wave.

Vibrating string. — *Cramer (1722)*: Sound. — *Euler (1727)*: Vibrating ring. — *Johann Bernoulli (1728)*: Vibrating string (continuous and discrete). — Remark on the energy method. — *Daniel Bernoulli (1733; 1734)*: *Euler (1736)*: Linked pendulum and hanging chain. Laguerre polynomials and J_0 . Double and triple pendula. Roots of polynomials. Zeros of J_0 . Other boundary conditions. The Bessel functions J_ν . — *Euler (1735)*: Pendulum condition. Vibrating rod. — *Johann II Bernoulli (1736)*: Pressure wave. — *Daniel Bernoulli (1739; 1740)*: Floating body. Dangling rod. Remarks on superposition. — *Daniel Bernoulli (1742)*: Vibrating rod. Absolute frequency and experiments. Superposition. — *Euler (1742)*: Linked compound pendulum. Dangling rod and weighted chain. — *Johann Bernoulli (1742)*: One degree of freedom. Dangling rod. Linked pendulum — *Appendix: Daniel Bernoulli's papers on the hanging chain and the linked pendulum* (reproduction of the original publications, and translations).

LOO-KENG HUA. — **Starting with the unit circle: background to higher analysis.** — Translated by Kuniko Weltin. — Un vol. relié, 16 × 25, de xi, 179 p. — Prix: DM 69.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

The geometric theory of harmonic functions. — Fourier analysis and the expansion formulas for harmonic functions. — Extended space and spherical geometry. — The Lorentz group. — The fundamental theorem of spherical geometry, with a discussion of the fundamental theorem of special relativity. — Non-Euclidean geometry. — Partial differential equations of mixed type. — Formal Fourier series and generalized functions.

Francis John ANSCOMBE. — **Computing in statistical science through APL.** — Springer series in statistics. — Un vol. relié, 19 × 26, de xv, 426 p. — Prix: DM 59.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1981.

Description of APL: Origins. Primitive scalar functions. Arrays. Primitive functions on arrays. Defined functions. Illustrations. Comments. — *Experiments in statistical analysis*: Changing attitudes. Time series: Yale enrolment. Regression: public school expenditures. Contingency tables and Pearson-Plackett distributions. — *Appendices*: Two occasional papers. Tests of residuals. ASP: a statistical package in a programming language. — Exercices à la fin de chaque chapitre.

Quantum mechanics in mathematics, chemistry, and physics. — Ed. by Karl E. Gustafson and William P. Reinhardt. Un vol. relié, 17 × 26, de ix, 506 p. — Prix: \$59.50. — Plenum Press, New York/London, 1981.

37 exposés par: V. Enss & B. Simon. — E. J. Heller, E. B. Stechel & M. J. Davis. — F. H. Brownell. — J.-P. Marchand. — A. Devinatz & P. Rejto. — K. B. Sinha. — K. Gustafson & G. Johnson. — R. D. Richtmyer. — R. L. Hartman & K. Gustafson. — D. W. Noid, M. L. Koszykowski & R. A. Marcus. — W. P. Reinhardt & C. Jaffé. — C. L. Dolph & A. G. Ramm. — J. S. Howland. — R. Ramaswamy & R. A. Marcus. — K. Gustafson, R. K. Goodrich & B. Misra. — D. Xia. — M. Tabor. — I. W. Herbst. — P. Pfeifer. — R. Lavine. — R. B. Shirts & W. P. Reinhardt. — M. Seddighin & K. Gustafson. — I. M. Sigal. — A. G. Ramm. — R. K. Goodrich & K. Gustafson. — A. O. Barut. — M. Shechter & R. Weder. — H. Baumgärtel. — C. W. McCurdy. — H. Tadjeran, K. Gustafson & J. Gary. — M. P. Strand & R. S. Berry. — T. Ton-That & W. H. Klink. — W. B. Jones & W. J. Thron. — F. E. Schroek, Jr. — R. Mercer. — R. L. Hudson, P. D. F. Ion & K. R. Parthasarathy. — B. Misra.

Heinz BAUER. — **Probability theory and elements of measure theory.** — 2d English ed. — Probability and mathematical statistics: a series of monographs and textbooks. — Un vol. relié, 15,5 × 23 de XIII, 460 p. — Prix: £32.20. — Academic press, London/New York/Toronto/Sydney/San Francisco, 1981.

Measure and integration theory: Measure theory. Integration theory. Product measures. — *Probability theory*: Fundamental concepts of the theory. Independence. The law of large numbers. — *Continuation of measure and integration theory*: Measures on topological spaces. Fourier analysis. — *Further development of probability theory*: Limit distributions. Conditional expectations. Martingales. Stochastic processes.

E. BRIESKORN, H. KNÖRRER. — **Ebene algebraische Kurven.** — Un vol. relié, 17 × 24, de XI, 964 p. — Prix: SFr. 44.00. — Birkhäuser, Basel/Boston/Stuttgart, 1981.

Geschichte der algebraischen Kurven: Ursprung und Erzeugung von Kurven. Synthetische und analytische Geometrie. Die entwicklung der projektiven Geometrie. — *Untersuchung von Kurven mit elementaren algebraischen Methoden*: Polynome. Definition und elementare Eigenschaften von ebenen algebraischen Kurven. Der Schnitt von ebenen Kurven. Einige einfache Arten von Kurven. — *Untersuchungen von Kurven durch Auflösung der Singularitäten*: Lokale Untersuchungen. Globale Untersuchungen.

R. P. BURN. — **A pathway into number theory.** — Un vol. broché, 15 × 23, de VII, 257 p. — Prix: £7.50 broché/£18.00 relié. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

The fundamental theorem of arithmetic. — Modular addition and Euler's φ function. — Modular multiplication. — Quadratic residues. — The equation $x^n + y^n = z^n$, for $n = 2, 3, 4$. — Sums of squares. — Partitions. — Quadratic forms. — Geometry of numbers. — Continued fractions. — Approximation of irrationals by rationals.

Heinrich W. URSPRUNG. — **Die elementare Katastrophentheorie**: eine Darstellung aus der Sicht der Ökonomie. — Lecture notes in economics and mathematical systems, vol. 195. — Un vol. broché, 16,5 × 24,5 de VII, 332 p. — Prix: DM 46.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Einleitung und Inhaltsübersicht. — Die elementare Katastrophentheorie aus der Sicht der Singularitätstheorie. — Die Elementare Katastrophentheorie aus der Sicht der qualitativen Theorie dynamischer Systeme. — Eine Beweisskizze des Klassifikations-theorems. — Zur Anwendung der elementaren Katastrophentheorie.

A. DODD. — **The core model.** — London mathematical society lecture note series, vol. 61. — Un vol. broché, 15 × 23, de XXXVIII, 229 p. — Prix: £12.50. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Fine structure. — Normal measures. — Mice. — The core model. — The covering lemma. — Larger core models. — *Appendices*: Some generic models. Absoluteness results.

Jean FRESNEL, Marius VAN DER PUT. — **Géométrie analytique rigide et applications.** — Progress in mathematics, vol. 18. — Un vol. relié, 15 × 23, de XII, 215 p. — Prix: SFr. 30.00. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

La droite projective. — Algèbres affinoïdes. — Espaces analytiques sur k . — Les courbes et leurs réductions. — Réduction d'un sous-espace de \mathbf{P} . — Tores analytiques et variétés abéliennes.

C. P. ROURKE, B. J. SANDERSON. — **Introduction to piecewise-linear topology.** — Springer study edition. — Revised printing of Ergebnisse der Mathematik und ihrer Grenzgebiete, vol. 69, 1972. — Un vol. broché, 15,5 × 23, de VIII, 123 p. — Prix: DM 24.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1982.

Polyhedra and P. L. maps. — Complexes. — Regular neighbourhoods. — Pairs of polyhedra and isotopies. — General position and applications. — Handle theory. — Applications. — *Appendices*: Algebraic results. Torsion.

Ronald CEHESSAT. — **Exercices commentés de statistique et informatique appliquées.** — CEHESSAT, nom collectif de: P. Cohendet, C. Com-Nougue, A. Leclerc, J.-M. Levy, J. C. Backe, C. Garçon, M. O. Lebeaux, J. P. Fenelon, A. Kobilinsky, N. Ossipof. — 2^e éd. — Un vol. broché, 15,5 × 24, de XX, 460 p. — Prix: FF 89.00. — Dunod, Paris, 1981.

Calcul des probabilités: Probabilité sur un ensemble discret. Variables aléatoires sur un ensemble discret. Variables aléatoires générales. — *Induction statistique*: Introduction à l'induction statistique. Estimation. Tests classiques. Regression et modèle linéaire. Méthodes non paramétriques. — *Analyse des données*: Analyse en composantes principales (A.C.P.). Analyse des correspondances (A.F.C.). Analyse de données-compléments. — *Annexe*: Sous-programmes utilitaires en FORTRAN.

Mathematical modeling of the hearing process. — Proceedings of the NSF-CBMS regional conference held in Troy, NY July 21-25, 1980. — Edited by Mark H. Holmes and Lester A. Rubinfeld. — Lecture notes in biomathematics, vol. 43. — Un vol. broché, 16,5 × 24, de v, 104 p. — Prix: DM 19.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1981.

J. B. Allen: Cochlear modeling-1980. — *R. S. Chadwick*: Studies in cochlear mechanics. — *M. H. Holmes*: A hydroelastic model of the cochlea: an analysis for low frequencies. — *S. M. Khanna and D. G. B. Leonard*: Basilar membrane response measured in damaged cochleas of cats. — *W. C. van Buskirk*: A mathematical model of the semi-circular canals. — *M. M. Sondhi*: The acoustical inverse problem for the cochlea.

D. R. COX, E. J. SNELL. — **Applied statistics: principles and examples.** — Science paperbacks, vol. 174. — Un vol. broché, 15,5 × 23, de VIII, 189 p. — Prix: £5.95. — Chapman and Hall, London/New York, 1981.

Principles: Nature and objectives of statistical analysis. Some general concepts. Some strategical aspects. Some types of statistical procedure. — *Examples*: Admissions to intensive care unit. Intervals between adjacent births. Statistical aspects of literary

style. Temperature distribution in a chemical reactor. A "before and after" study of blood pressure. Comparison of industrial processes in the presence of trend. Cost of construction of nuclear power plants. Effect of process and purity index of fault occurrence. Growth of bones from chick embryos. Factorial experiment on cycles to failure of worsted yarn. Factorial experiment on diets for chickens. Binary preference data for detergent use. Fertilizer experiment of growth of cauliflowers. Subjective preference data on soap pads. Atomic weight of iodine. Multifactor experiment on a nutritive medium. Strength of cotton yarn. Biochemical experiment on the blood of mice. Voltage regulator performance. Intervals between the failure of air-conditioning equipment in aircraft. Survival times of leukemia patients. A retrospective study with binary data. Housing and associated factors. Educational plans of Wisconsin schoolboys.

B. S. EVERITT and D. J. HAND. — **Finite mixture distributions.** — Monographs on applied probability and statistics. — Un vol. relié, 14 × 22, de ix, 143 p. — Prix: £7.50. — Chapman and Hall, London/New York, 1981.

General introduction: Some applications of finite mixture distributions. Definition. Estimation methods. — *Mixtures of normal distributions*: Some descriptive properties of mixtures of normal distributions. Estimating the parameters in normal mixture distributions. — *Mixtures of exponential and other continuous distributions*: Exponential mixtures. Estimating exponential mixture parameters. Properties of exponential mixtures. Other continuous distributions. Mixtures of different component types. — *Mixtures of discrete distributions*: Mixtures of binomial distributions. Mixtures of Poisson and binomial distributions. Mixtures of other discrete distributions. — *Miscellaneous topics*: Determining the number of components in a mixture. Probability density function estimation. Miscellaneous problems.

Nonlinear phenomena in physics and biology. — Proceedings of a NATO advanced study institute, held August 17-29, 1980, at the Banff Center, Banff, Alberta, Canada. — Edited by Richard H. Enns, Billy L. Jones, Robert M. Miura and Sadanand S. Rangnekar. — NATO advanced study institute series. Series B: physics, vol. 75. — Un vol. relié, 18 × 26, de x, 609 p. — Prix: \$75.00. — Plenum press, New York/London, 1981.

21 exposés par: Norman J. Zabusky. — Alwyn C. Scott. — Mark J. Ablowitz. — David J. Kaup. — Norman J. Zabusky. — Bengt Fornberg. — Gregoire Nicolis. — Louis N. Howard. — John Rinzel. — Robert M. Miura. — Stuart A. Kaufman. — Peter Schuster. — Donald Ludwig. — Geoffrey W. Hoffmann. — J. Harnad and P. Winternitz. — R. L. Anderson, J. Harnad and P. Winternitz. — H. Lange. — Masuo Suzuki. — Alfred M. Grundland. — M. W. Kalinowski.

Samuel M. Vovsi. — **Triangular products of group representations and their applications.** — Progress in mathematics, vol. 17. — Un vol. relié, 15,5 × 24, de viii, 127 p. — Prix: SFr. 28.00. — Birkhäuser, Boston/Basel/Stuttgart, 1981.

Triangular products: The definition and basic properties of triangular products. The embedding theorem. Connections with closure operations. Generalized triangular products. Isomorphisms and automorphisms of triangular products. Identities of triangular products. — *Applications*: Identities of triangular matrix groups and their canonical representations. Augmentation powers and dimension subgroups. The semigroup of varieties of group representations. The semigroups of radical classes and

prevarieties of group representations. Infinite products of radical classes and prevarieties. Invariant subspaces in representations. — *Triangular products in related categories.*

Numerical treatment of free boundary value problems. — Workshop on numerical treatment of free boundary value problems, Oberwolfach, November 16-22, 1980. — Edited by J. Albrecht, L. Collatz, K.-H. Hoffmann. — International series of numerical mathematics, vol. 58. — Un Vol. relié, 17 × 24, de VIII, 349 p. — Prix: SFr 66.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1982.

24 exposés par: J. Baumeister. — M. Brokate. — J. Crank. — A. B. Crowley. — C. M. Elliott, C. J. Mason. — R. Gorenflo, S. Kiesner. — K. P. Hadeler. — K.-H. Hoffmann, H.-J. Kornstaedt. — P. Jochum. — G. Joubert, A. Maeder. — P. Knaber. — H. Krüger. — Li-shang Jiang. — J. A. McGeough. — G. H. Meyer. — M. Niezgodka. — J. Nitsche. — M. Primicerio. — R. Reemtsen. — L. Rubinstein. — C. Saguez. — G. Salzano, G. Chavent. — J. E. W. Rogers. — R. Wegmann.

Numerical methods of approximation theory, vol. 6. — Workshop on numerical methods of approximation theory, Oberwolfach, January 18-24, 1981. — Edited by L. Collatz, G. Meinardus, H. Werner. — International series of numerical mathematics, vol. 59. — Un vol. relié, 17 × 24, de 265 p. — Prix: SFr 52.00. — Birkhäuser Verlag, Basel/Boston/Stuttgart, 1982.

19 exposés par: H.-P. Blatt. — K. Böhmer. — M. Brannigan. — H. Brass. — A. Bultheel. — R. Colgen, K. Schnatz. — W. A. Dahmen, Ch. A. Micchelli. — Ph. Defert, J.-P. Thiran. — D. Handscomb. — K. Nixdorff. — P. W. Pedersen. — O. Pokorna, I. Pragerova. — R. Scherer, K. Zeller. — R. Schmidt. — H. F. Sinwel, P. O. Runck. — H.-J. Töpfer. — C. R. Traas. — G. A. Watson. — L. Wuytack, G. Claessens.

A. C. M. VAN ROOIJ and W. H. SCHIKHOF. — **A second course on real functions.** — Un vol. broché, 15 × 23, de XIII, 200 p. — Prix: £5.95 (relié: £15.00). — Cambridge: Cambridge university press, 1982.

Monotone functions: Continuity of monotone functions. Indefinite integrals of monotone functions (convex functions). Differences of monotone functions. Differentiability of monotone functions. — *Subsets of \mathbf{R}* : Small sets. F_σ -sets and G_δ -sets. Behaviour of arbitrary functions. — *Continuity*: Continuous functions. Darboux continuous functions. Semicontinuous functions. Functions of the first class of Baire. Riemann integrable functions. — *Differentiation*: Differentiable functions. Derivatives. The fundamental theorem of calculus. — *Borel measurability*: The classes of Baire. Transfinite construction of the Borel functions. Analytic sets. — *Integration*: The Lebesgue integral. Lebesgue measurability. Absolute continuity. The Perron integral. The Stieltjes integral. — *Appendices*: The real number system. Cardinalities.

Mike FIELD. — **Several complex variables and complex manifolds I.** — London mathematical society lecture note series, vol. 65. — Un vol. broché, 15 × 23, de x, 198 p. — Prix: £10.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Functions of one complex variable: Analytic functions and power series. Meromorphic functions. Theorems of Weierstrass and Mittag-Leffler. Riemann surfaces. Vector bundles.

— *Functions of several complex variables*: Elementary theory of analytic functions of several complex variables. Removable singularities. Extension of analytic functions. Domains of holomorphy. Pseudoconvexity. The Bergman kernel function. The Cousin problems. — *Local rings of analytic functions*: Elementary properties of power series rings. Weierstrass division and preparation theorems. Factorization and finiteness properties. Meromorphic functions. Local properties of analytic sets. Modules. — *Complex manifolds*: Generalities on complex manifolds and analytic sets. Complex submanifolds of C^n . Projective algebraic manifolds. Complex tori. Properly discontinuous actions. Analytic hypersurfaces. Blowing up.

Mike FIELD. — **Several complex variables and complex manifolds II**. — London mathematical society lecture note series, vol. 66. — Un vol. broché, 15×23 , de vii, 211 p. — Prix: £11.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1982.

Calculus on complex manifolds: Review of linear algebra. Calculus on differential manifolds. Complexification. Complex linear algebra. Generalities on complex vector bundles. Tangent and cotangent bundles of a complex manifold. Calculus on a complex manifold. The Dolbeault-Grothendieck lemma. Holomorphic vector bundles on compact complex manifolds. Pseudoconvexity and Stein manifolds. — *Sheaf theory*: Sheaves and presheaves. Enveloppe of holomorphy. Sheaf cohomology. — *Coherent sheaves*: Coherent sheaves. Coherent sheaves on a Stein manifold. The finiteness theorem of Cartan and Serre. The finiteness theorem of Grauert. Coherent sheaves on projective space. The Kodaira embedding theorem.

James M. ORTEGA, William G. POOLE, Jr. — **An introduction to numerical methods for differential equations**. — Un vol. broché, 17×24 , de ix, 329 p. — Prix: £8.95. — Pitman publishing inc., Marshfield, Mass./London, 1981.

The world of scientific computing. — Initial-value problems in ordinary differential equations. — Pinning it down on both ends: two-point boundary-value problems. — Life is really nonlinear. — Is there more to computing than finite differences? — n important numbers: eigenvalue computations. — Space and time. — The curse of dimensionality. — Basic results from analysis. — Ordinary differential equations. — Linear algebra and matrix theory.

D. K. ARROWSMITH, and C. M. PLACE. — **Ordinary differential equations: a qualitative approach with applications**. — Chapman and Hall mathematics series. — Un vol. broché, $14 \times 21,5$, de ix, 252 p. — Prix: £7.95. — Chapman and Hall, London/New York, 1982.

Introduction: Preliminary ideas. Autonomous equations. Autonomous systems in the plane. Construction of phase portraits in the plane. Flows and evolution. — *Linear systems*: Linear changes of variable. Similarity types for 2×2 real matrices. Phase portraits for canonical systems in the plane. Classification of simple linear phase portraits in the plane. The evolution operator. Affine systems. Linear systems of dimension greater than two. — *Non-linear systems in the plane*: Local and global behaviour. Linearization at a fixed point. The linearization theorem. Non-simple fixed points. Stability of fixed points. Ordinary points and global behaviour. First integrals. Limit cycles. Poincaré-Bendixson theory. — *Applications*: Linear models. Affine models. Non-

linear models. Relaxation oscillations. Piecewise modelling. — *Advanced techniques and applications*: The Liénard equation. Regularization and some economic models. The Zeeman models of heartbeat and nerve impulse. Liapunov functions. Bifurcation of systems. A mathematical model of tumor growth. — Exercices à la fin de chaque chapitre.

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