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Jedrzej SNIATYCKI. — **Geometric quantization and quantum mechanics.** — Applied mathematical sciences, vol. 30. — Un vol. broché, $15 \times 23,5$, de ix, 230 p. — Prix: DM 28.00. — Springer-Verlag, New York/Heidelberg/Berlin, 1980.

Introduction: Background. Hamiltonian dynamics. Prequantization. Representation space. Blattner-Kostant-Sternberg kernels. Quantization. Schrödinger representation. Other representations. Time-dependent Schrödinger equation. Relativistic dynamics in an electromagnetic field. Pauli representation. — *Hamiltonian dynamics*: Poisson algebra. Local expressions. Relativistic charged particle. Non-relativistic dynamics. — *Prequantization*: Connections in line bundles. Prequantization line bundle. Prequantization map. — *Representation space*: Polarization. The bundle $V \wedge^n F$. Square integrable wave functions. Bohr-Sommerfeld conditions. Distributional wave functions. — *Blattner-Kostant-Sternberg kernels*: Transverse polarizations. Strongly admissible pairs of polarizations. Metaplectic structure. Induced metaplectic structure. — *Quantization*: Lifting the action of Φ_f^t . Polarization preserving functions. Quantization via Blattner-Kostant-Sternberg kernels. Superselection rules. — *Schrödinger representation*: Single particle. System of particles. Blattner-Kostant-Sternberg kernels, quasiclassical approximations and Feynman path integrals. — *Other representations*: Bargmann-Fock representation. Harmonic oscillator energy representation. — *Time-dependent Schrödinger equation*. — *Relativistic dynamics in an electromagnetic field*: Relativistic quantum dynamics. Charge superselection rules. Quantization in the Kaluza theory. — *Pauli representation for spin*. Classical model of spin. Representation space. Quantization.

G. B. WHITHAM. — **Lectures on wave propagation.** — Tata Institute of fundamental research lectures on mathematics and physics, vol. 61. — Un vol. broché, 17×24 , de vii, 148 p. — Prix: DM 18.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1979.

Introduction to nonlinear waves: One dimensional linear equation. A basic nonlinear wave equation. Expansion wave. Centred expansion wave. Breaking. — *Examples*: Traffic flow. Flood waves in rivers. Chemical exchange processes. Glaciers. Erosion. — *Shock waves*: Discontinuous shocks. Equal area rule. Asymptotic behavior. Shock Structure. Burgers' equation. Chemical exchange processes; Thomas's equation. — *A second order system: shallow water waves*: The equations of shallow water theory. Simple waves. Method of characteristics for a system. Riemann's argument for simple waves. Hodge transformation. — *Waves on a sloping beach: shallow water theory*: Shallow water equations. Linearised equations. Linear theory for waves on a sloping beach. Nonlinear waves on a sloping beach. Bore on beach. Edge waves. Initial value problem and completeness. Weather fronts. — *Full theory of water waves*: Conservation equations and the

boundary value problem. Linearised theory. — *Waves on a sloping beach: full theory*: Normal incidence. Shallow water approximation. Behavior as $\beta \rightarrow 0$. General β . Oblique incidence and edge waves. Oblique incidence, $k < \lambda < \infty$. Edge waves, $0 < \lambda < k$. — *Exact solutions for certain nonlinear equations*: Solitary waves. Perturbation approaches. Burgers' and Thomas's equations. Korteweg-de Vries equation. Discrete set of α 's, interacting solitary waves. Continuous range; Marcenko integral equation. The series solution. Other equations.

J. A. WALKER. — **Dynamical systems and evolution equations: theory and applications.** — Mathematical concepts and methods in science and engineering, vol. 20. — Un vol. relié, 16 × 23,5, de VIII, 236 p. — Prix: \$29.50. — Plenum Press, New York and London, 1980.

Evolution equations on R^n : The space R^n . Evolution equations on R^n . Finite escape times. Processes on $R^n \times R$. Linear dynamical systems. The simplest class of processes. Stability of a particular motion: processes. Stability of equilibrium: dynamical systems. Stability of equilibrium: linear dynamical systems. Quadratic Liapunov functions and linearization. The invariance principle and asymptotic behavior. Comments and extensions. — *Preliminaries for abstract evolution equations*: Abstract spaces. Functions. Linear functions. Differentiation of functions. Abstract evolution equations. — *Abstract dynamical systems and evolution equations*: Dynamical systems and C_0 -semigroups. Linear dynamical systems. Generation of linear dynamical systems. Choosing the state space in applications. Generation of nonlinear dynamical systems. Comments and extensions. — *Some topological dynamics*: Liapunov functions and positive invariance. Computation of V . Stability and Liapunov's direct method. Positive limit sets and the invariance principle. Orbital precompactness and use of the invariance principle. Comments and extensions. — *Applications and special topics*: A feedback control problem. The thermoelastic stability problem. The viscoelastic stability problem. A fission reactor stability problem. A supersonic panel-flutter problem. Discrete dynamical systems. Finite-dimensional approximation.

Magnus J. WENNINGER. — **Spherical models.** — Un vol. broché, 18 × 25,5 de XII, 147 p. — Prix: £12.50. — Cambridge University Press, Cambridge/London/New York/Melbourne, 1979.

Introduction: Basic properties of the sphere. — *The regular spherical models*: The spherical hexahedron or cube. General instructions for making models. The spherical octahedron. The spherical tetrahedron. The spherical icosahedron and dodecahedron. The polyhedral kaleidoscope. — *The semiregular spherical models*: The spherical cuboctahedron. The spherical icosidodecahedron. Spherical triangles as characteristic triangles. The five truncated regular spherical models. The rhombic spherical models. The rhombitruncated spherical models. The snub forms as spherical models. The spherical duals. — *Variations*: Regular and semiregular variations. Star-faced spherical models. — *Geodesic domes*: The simplest geodesic domes. Geodesic domes derived from the icosahedron. General instructions for making geodesic models. An alternative method of approaching geodesic segmentation. Introduction to geodesic symbolism and classification. Geodesic models derived from the dodecahedron. An alternative for geodesic segmentation of the dodecahedron. A second alternative for geodesic segmentation of the icosahedron. An alternative for geodesic segmentation of the snub dodecahedron. A third alternative for geodesic segmentation of the icosahedron. Final comments. — *Miscellaneous models*: Honeycomb models, edge models, and noids. An introduction

to the notion of polyhedral density. Edge models of stellated forms. Some final comments about geodesic domes. Epilogue.

Krzysztof MAURIN. — **Analysis: part II: Integration, distributions, holomorphic functions, tensor and harmonic analysis.** — Un vol. relié, 16×23 , de xvii, 829 p. — Prix: Dfl 145.00. — D. Reidel Publishing Company, Dordrecht/Boston/London, and, PWN-Polish Scientific Publishers, Warsaw, 1980.

Topology. Uniform structures. Function spaces: Topological spaces. A basis of neighbourhoods. Axioms of countability. Filters. Compact spaces. The Cartesian product of topological spaces. Metric spaces. Baire spaces. The topological product of metric spaces. Semicontinuous functions. Regular spaces. Uniform spaces. The completeness of a space. Precompact and compact uniform spaces. Uniform structures on spaces of mappings. Families of equicontinuous mappings. General Ascoli theorem. Complements and exercises. — *Theory of the integral:* Compactification of the real line. The Daniel-Stone integral. The functional μ^* and its properties. The Outer measure. Seminorms N_p . The Minkowski and Hölder inequalities. The spaces $\mathcal{F}^p$. The spaces $\mathcal{L}^p$. The space $\mathcal{L}^1$ of integrable functions. The integral. The set $\mathcal{E}$ for the Radon integral. Semicontinuity. Application of the Lebesgue theorem. Integrals with a parameter. Integration of series. Measurable functions. Measure. Integrable sets. The Stone axiom and its consequences. The spaces L^p . The Hahn-Banach theorem. Hilbert spaces. Theorem on orthogonal decomposition. The general form of a linear functional. The strong Stone axiom and its consequences. The tensor product of integrals. The Radon integral. Stone's second procedure. Finite Radon measures. Tough measures. The tensor product of Radon integrals. The Lebesgue integral on R^n . Change of variables. Mapping of Radon integrals. Integrals with density. The Radon-Nikodym theorem. The Wiener integral. The Kolmogorov theorem. Integration of vector fields. Direct integrals of Hilbert spaces. On the equivalence of the Stone and Radon integral theories. From measure to integral. — *Tensor analysis. Harmonic forms. Cohomology. Applications to electrodynamics:* Alternating maps. Grassmann algebra. Differential forms. Cohomology spaces. Poincaré Lemma. Integration of differential forms. Elements of vector analysis. The differentiable manifold. Tangent spaces. Covariant tensor fields. Riemannian metric and differential forms on a manifold. Orientation of manifolds. Examples. Poincaré-Stokes theorem for a manifold with boundary. Tensor densities. Weyl duality. Homology. Weyl duality and Hodge * operator. Generalized Green's formulas on Riemannian manifold. Harmonic forms. Hodge-Kodaira-de Rham theory. Application to electrodynamics. Invariant forms (Hurwitz integral). Cohomology of compact Lie groups. Complements, exercises. — *Elementary properties of holomorphic functions of several variables. Harmonic functions:* Holomorphic mappings. Cauchy-Riemann equations. Differential forms on complex manifolds. Forms of type (p, q) . Operators d' and d'' . Cauchy's formula and its applications. The topology of the space of holomorphic functions $A(\Omega)$. Elementary properties of harmonic functions. Green's function. Poisson integral formula. Harnack theorems. Subharmonic functions. Perron's solution of the Dirichlet problem. — *Complex analysis in one dimension (Riemann surfaces):* Zeros of holomorphic functions of one variable. Functions holomorphic in an annulus. The Laurent expansion. Singularities. Meromorphic functions. Application of the calculus of residues to the evaluation of integrals. Applications of the argument principle. Functions and differential forms on Riemann surfaces. Analytic continuation. Coverings. Fundamental group. The theory of Poincaré. The Koebe-Riemann theorem. Non-Euclidean geometry. Möbius transformations. The Perron method for Riemann surfaces. The Rado theorem. Resolutive functions. Harmonic measures. BreLOT's theorem. The Green's function of a Riemann surface. The uniformization theorem. Runge's theorem. Theorem of Behnke and Stein. Theorem of

Malgrange. Cousin problems for open Riemann surfaces. Theorems of Mittag-Leffler and Weierstrass. Examples of partial fractions and factorizations. Functions $\cos \pi z$, $\pi^2/\sin^2 \pi z$, $\Gamma(z)$. Mellin and Hankel formulae. Canonical products. Elliptic functions. Eisenstein series. The function p . Modular functions and forms. The modular figure, discontinuous groups of automorphisms. The multiplicity formula for zeros of a modular form. Dimension of vector spaces $M^o(k, \Gamma)$ of cusp forms. Mapping properties of j . Picard theorem. Elliptic curves. Jacobi's inversion problem. Abel's theorem. Uniformization principle. Automorphic forms. Riemann-Roch theorem and its consequences. Historical sketch. Appendices. Exercices (proofs of theorems of Runge, Florack, Koebe and Hurwitz. Triangle groups. Elliptic integrals and transcendental numbers). — *Normal and paracompact spaces. Partition of unity*: Locally compact spaces, countable at infinity. Normal spaces. Urysohn's lemma. Extendibility of continuous functions on normal spaces. Tychonoff spaces. Uniformizability. Compactification. The theory of maximal ideals. The Gel'fand theory of maximal ideals. Connection with quantum mechanics. Locally finite families. Paracompact spaces. Partition of unity. Metric spaces are paracompact. — *Measurable mappings. The transport of a measure. Convolutions of measures and functions*: Measurable mappings. Topologies determined by families of mappings. The transport of a measure. The projective limits of Hausdorff spaces. Infinite tensor products and the projective limits of measures. Convolutions of measures and functions. Convolutions of functions and measures on R^p . Convolutions of integrable functions. — *The theory of distributions. Harmonic analysis*: The space $C_0^\infty(\Omega)$. A differentiable partition of unity on R^n . The space of test functions. Distributions. Inductive limits. The topology of the space $\mathcal{D}$. The pasting together principle for distributions. The support of a distribution. The space $\mathcal{E}(\Omega)$. Distributions with compact supports. Operations on distributions. The convolution algebra $\mathcal{E}'(R^n)$. The image of a distribution. Remarks on the tensor products $E \widehat{\otimes} F$ and $E \hat{\otimes} F$. The kernel theorem. The tensor product $E \otimes F$ of Hilbert spaces. Regularization of distributions. Examples of distributions important for applications. The Fourier transformation. The space $\mathcal{S}$. The Fourier transformation as a unitary operator on the space $\mathcal{L}^2(R^n)$. Tempered distributions. The Fourier transformation in $\mathcal{S}'$. The Laplace-Fourier transformation for functions and distributions. The Paley-Wiener-Schwartz theorem. Fundamental solutions of differential operators. Positive-definite functions. Positive distributions. The theorems of Bochner and Minlos. Representations of locally compact groups. The relation between unitary representations and positive-definite functions. The Haar integral.

Hansraj GUPTA. — **Selected topics in number theory.** — Un vol. relié, $16,5 \times 24$, de 394 p. — Prix: £25.00. — Abacus Press Book Publishers, Tunbridge Wells, 1980.

Preliminary. Primitive roots and indices. Power residues, quadratic reciprocity and sum of squares. Class algebra of k -ic residues. Stirling numbers and Bernoulli numbers. Congruence properties of symmetric functions. Partition functions of various types, generating functions, graphs and identities. Partitions: inequalities and congruences. An asymptotic formula for $p(n, k)$. Partition of j -partite numbers. Some diophantine equations. Permutations of the first n natural numbers.

W. H. HAEMERS. — **Eigenvalue techniques in design and graph theory.** — Mathematical Centre tracts, vol. 121. — Un vol. broché, 16×24 , de 102 p. — Prix: Dfl 13.00. — Mathematisch Centrum, Amsterdam, 1980.

Matrices and eigenvalues: Introduction. Interlacing of eigenvalues. More eigenvalue inequalities. — *Inequalities for graphs*: Induced subgraphs. Chromatic number. —

Inequalities for designs: Subdesigns. Intersection numbers. — *4-colourable strongly regular graphs*: Introduction. Strongly regular graphs on 40, 50, 56, 64 and 77 vertices. Recapitulation. — *Generalized polygons*: Introduction. An equality for generalized hexagons. Geometric and pseudo-geometric graphs for generalized polygons. — *Constructions*: Some 2- (71, 15, 3) designs. Some strongly regular graphs. — *Appendices*: Graphs and designs. Tables.

D. L. IGLEHART, G. S. SHEDLER. — **Regenerative simulation of response times in networks of queues.** — Lecture notes in control and information sciences, vol. 26. — Un vol. broché, 16,5 × 24, de XII, 204 p. — Prix: DM 28.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1980.

Introduction. — *Simulation of regenerative processes*: Definition of regenerative process. Regenerative processes in networks of queues. — *Closed networks of queues*: Probabilistic assumptions. State vector definition. Definition of passage times. — *The marked job method*: Simulation for passage times. The underlying stochastic structure. — *Examples and simulation results*: A closed network of queues. A computer system model. Numerical results. — *Finite capacity open networks*: Markov arrival processes. Networks of queues and associated stochastic processes. Job marking. Example and numerical results. — *Marked job simulation via hitting times*: Preliminaries. Simulation for passage times. — *The decomposition method*: Simulation for passage times. The underlying stochastic structure. — *Efficiency of simulation*: Theoretical values for Markov chains. Variance constants for the marked job method. Variance constants for the decomposition method. Numerical results. — *Networks with multiple job types*: Preliminaries. Simulation for passage times. Example and numerical results. — *Implementation considerations*: Random number generators. Nonuniform random numbers. Single and multiple streams of random numbers. Generation of state vector processes. — *Appendices*: Convergence of passage times. Proof of ratio formula. Estimation of variance constants. Generation of Markov chain in *DL/I* component model.

Rolf FÄRE. — **Laws of diminishing returns.** — Lecture notes in economics and mathematical systems, vol. 176. — Un vol. broché, 17 × 24,5, de VIII, 97 p. — Prix: DM 22.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1980.

Diminishing returns: Restrictions of the study. Outline of the monograph. — *The production technology*: The input correspondence. The production function. Properties of the production technology. Special production structures. — *Laws of bounded output and diminishing average returns*: Essential and weak limitational subsets of factors of production. Essential and strong limitational subsets of factors of production. The production axioms and bounded output. Law of bounded average returns. — *Congestion, null jointness and laws of variable proportions*: Congestion of production factors. Properties of *OL*-, *MOL*- and *OP*-congestion. Null joint factors of production. *OP*-congestion and null joint factors of production. Laws of variable proportions. An empirical example of congested and null joint factors of production. — *The law of diminishing returns at the extensive margin*: Diminishing returns to extensive use of a production factor. Holothetic production structure and diminishing returns to extensive use of a production factor. — *Standard notations and mathematical appendix*: Some standard notations. Mathematical appendix.

Christian OKONEK, Michael SCHNEIDER, Heinz SPINDLER. — **Vector bundles on complex projective spaces.** — Progress in mathematics, vol. 3. — Un vol. broché, $15,5 \times 23$, de VII, 389 p. — Prix: FS 36.00. — Birkhäuser, Boston, Basel, Stuttgart, 1980.

HOLOMORPHIC VECTOR BUNDLES AND THE GEOMETRY OF P_n : *Basic definitions and theorems*: Serre duality, the Bott formula, theorem A and theorem B. Chern classes and dual classes. — *The splitting of vector bundles*: The theorem of Grothendieck. Jump lines and the first examples. The splitting criterion of Horrocks. Historical remarks. — *Uniform bundles*: The standard construction. Uniform r -bundles over P_n , $r < n$. A non-homogeneous uniform $(3n-1)$ -bundle over P_n . Some historical remarks, further results and open questions. — *Examples of indecomposable $(n-1)$ -bundles over P_n* : Simple bundles. The null correlation bundle. The example of Tango. Concluding remarks and open questions. — *Holomorphic 2-bundles and codimension 2 locally complete intersections*: Construction of 2-bundles associated to a locally complete intersection. Examples. Historical remarks. — *Existence of holomorphic structures on topological bundles*: Topological classification of bundles over P_n . 2-bundles over P_2 . 2-bundles over P_3 . 3-bundles over P_3 . Concluding remarks. — STABILITY AND MODULI SPACES: *Stable bundles*: Some useful results from sheaf theory. Stability: definitions and elementary properties. Examples of stable bundles. Further results and open questions. — *The splitting behavior of stable bundles*: Construction of subsheaves. Applications of the theorem of Grauert and Müllich. Historical remarks, further results and open questions. — *Monads*: The theorem of Beilinson. Examples. A stable 2-bundle over P_4 . Historical remarks. — *Moduli of stable 2-bundles*: Construction of the moduli spaces for stable 2-bundles over P_2 . Irreducibility of $M_{P_2}(o, n)$. Examples. Historical remarks, further results, open problems.

Laurent SCHWARTZ. — **Semi-martingales sur des variétés, et martingales conformes sur des variétés analytiques complexes.** — Lecture Notes in Mathematics, vol. 780. — Un vol. broché, $16,5 \times 24$, de xv, 132 p. — Prix: DM 18.00. — Springer-Verlag, Berlin/Heidelberg/ New York, 1980.

Semi-martingale à valeurs dans une variété différentielle. Localisation des semi-martingales et passage du local au global. Localisation des processus attachés à une semi-martingale vectorielle; équivalences de semi-martingales vectorielles. Martingales conformes à valeurs vectorielles et leurs localisations. Martingales et semi-martingales conformes à valeurs dans des variétés analytiques complexes. Sous-espaces stables de martingales réelles. Sous-espaces stables et intégrales stochastiques associées à une semi-martingale à valeurs dans une variété. Sous-espaces stables de martingales complexes. Sous-espaces stables et intégrales stochastiques associées à une semi-martingale conforme à valeurs dans une variété C-analytique. Diffusion et mouvement brownien sur une variété sans bord.

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S. Antman: Geometric aspects of global bifurcation in nonlinear elasticity. — *V. Moncrief*: The branching of solutions of Einstein's equations. — *S. Deser*: What does supergravity teach us about gravity? — *C. Galvao*: Classical $\frac{1}{2}$ -spin particles with gravitational fields: a supersymmetric model. — *M. Gotay and J. Nester*: Generalized

constraint algorithm and special symplectic manifolds. — *A. Lichnerowicz* : Deformations and quantization. — *G. Kaiser* : Holomorphic gauge theory. — *R. Hermann* : A geometric variational formalism for the theory of nonlinear waves. — *B. Kupersmidt* : Geometry of jet bundles and the structure of Lagrangian and Hamiltonian formalisms. — *T. Ratiu* : Involution theorems.

Benedict H. GROSS. — **Arithmetic on elliptic curves with complex multiplication.** — With an appendix by B. Mazur. — Lecture Notes in Mathematics, vol. 776. — Un vol. broché, $16,5 \times 24$, de v, 95 p. — Prix: DM 18.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1980.

The theory of complex multiplication : Elliptic curves. Elliptic curves over $\mathbb{C}$ and $\mathbb{R}$. The analytic theory of complex multiplication. Elliptic curves over p -adic fields. l -adic Galois representations. The arithmetic theory of complex multiplication. — *A classification* : Curves over H . Descended curves. $\mathbf{Q}$ -curves. — *Local arithmetic* : A classification over F . A rational p -isogeny. Local invariants and global torsion. — *Global arithmetic* : Restriction of scalars. The $\mathbf{Q}$ -rank. The first descent. A factorization of the L -series. The sign in the functional equation. $\mathbf{Q}$ -curves and modular forms. — *The $\mathbf{Q}$ -curve $A(p)$* : Periods. The rank of $A(p)$. Global models. Computational examples. — *Appendix by B. Mazur* : The cohomology of the Fermat group scheme.

Séminaire sur les singularités des surfaces, Centre de mathématiques de l'Ecole polytechnique, Palaiseau 1976-1977. — Edité par M. Demazure, H. Pinkham et B. Teissier. — Lecture Notes in Mathematics, vol. 777. — Un vol. broché, $16,5 \times 24$, de ix, 339 p. — Prix: DM 34.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1980.

H. Pinkham : Singularités de Klein — I, II. — *B. Teissier* : Surfaces de Del Pezzo — I. — *M. Demazure* : Surfaces de Del Pezzo — II: Eclater n points dans $\mathbb{P}^2$. Surfaces de Del Pezzo — III: Positions presque générales. Surfaces de Del Pezzo — IV: Systèmes anticanoniques. Surfaces de Del Pezzo — V: Modèles anticanoniques. — *B. Teissier* : Résolution simultanée — I: Familles de courbes. Résolution simultanée — II: Résolution simultanée et cycles évanescents. — *H. Pinkham* : Singularités rationnelles de surfaces. Appendice. — *H. Pinkham* : Résolution simultanée de points doubles rationnels. — *R. O. Buchweitz* : On deformations of monomial curves. — *M. Demazure* : A, B, C, D, E, F , etc. — *M. Merle et B. Teissier* : Conditions d'adjonctions d'après Du Val. — *J. L. Brylinski* : Eventails et variétés toriques. — *M. Merle* : Polyèdre de Newton, éventail et désingularisation, d'après A. N. Varchenko. — *M. Merle* : Les anneaux coniques sont de Cohen-Macaulay, d'après A. G. Kouchnirenko. — *M. Lejeune-Jalabert* : Arcs analytiques et résolution minimale des singularités des surfaces quasi-homogènes.

SK_1 von Schiefkörpern: Seminar Bielefeld-Göttingen, 1976. — Herausgegeben von P. Draxl und M. Kneser. — Lecture Notes in Mathematics, vol. 778. — Un vol. broché, $16,5 \times 24$, de ii, 124 p. — Prix: DM 18.00. — Springer-Verlag, Berlin/Heidelberg/New York, 1980.

SEMINAR BIELEFELD-GÖTTINGEN (Sommersemester 1976): *Vorträge* : *R. Schulze-Pillot* : Struktur von $GL_n(D)$. *D. Scheringer* : Präsentation der $GL_n(D)$ und Dieudonné-Determinante. *U. Stuhler* : Normen und Spuren in assoziativen Algebren. *D. Osterholz* : Der Trägheitsschiefkörper. *M. Kneser* : Schiefkörper über vollständig diskret bewerteten Körpern. *P. Draxl* : Eigenschaften von SK_1 und „vernünftige“ Körper. *P. Draxl* : SK_1 bei vollständig diskret bewerteten Körpern. — *Anhang* : *P. Draxl* : Ergänzende Bemerk-

ungen zum 8. Vortrag: SK_1 bei gewissen zyklischen Algebren. Über $\hat{H}^{-1}(L/K)$. Verhalten von SK_1 bei Konstantenerweiterung und eventuelle Unendlichkeit von SK_1 bzw. $\hat{H}^{-1}(L/K)$. Verhalten von SK_1 unter der Multiplikation in der Brauergruppe. Verhalten von SK_1 bei rein-transzendenter Konstantenerweiterung. — TEIL II: *P. Draxl*: SK_1 von Schiefkörpern über beliebig-rangig Henselsch bewerteten Körpern. Eine Liftung der Dieudonné-Determinante und Anwendungen die multiplikative Gruppe eines Schiefkörpers betreffend. *U. Rehmann*: Kommutatoren in $GL_n(D)$.

Euclidean harmonic analysis. — Proceedings of seminars held at the University of Maryland, 1979. — Edited by J. J. Benedetto. — Lecture Notes in Mathematics, vol. 779. — Un vol. broché, 16,5 × 24, de III, 177 p. — Prix: DM 21.50. — Springer-Verlag, Berlin/Heidelberg/New York, 1980.

L. Carleson: Some analytic problems related to statistical mechanics. — *Y. Domar*: On spectral synthesis in $\mathbb{R}^n$, $n \geq 2$. — *L. Hedberg*: Spectral synthesis and stability in Sobolev spaces. — *R. Coifman and Y. Meyer*: Fourier analysis of multilinear convolutions, Calderon's theorem, and analysis on Lipschitz curves. — *R. Coifman, M. Cwikel, R. Rochberg, Y. Sagher and G. Weiss*: The complex method for interpolation of operators acting on families of Banach spaces. — *A. Córdoba*: Maximal functions: a problem of A. Zygmund. Multipliers of $F(L^p)$.

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N. Artémiades: Criteria for absolute convergence of Fourier series. — *A. Bernard*: On the $BMO-H'$ duality for doubly indexed martingales. — *R. Blei*: Fractional cartesian products in harmonic analysis. — *J. Boidol*: On a regularity condition for group algebras of non Abelian locally compact groups. — *A. Figà-Talamanca*: Singular positive definite functions. — *T. W. Gamelin*: Jensen measures, subharmonicity, and the conjugation operation. — *J. B. Garnett*: Two constructions in BMO . — *R. F. Gundy*: Maximal function characterization of H^p for the bidisc. — *D. Gurarie*: Harmonic analysis based on crossed product algebras and motion groups. — *J. P. Kahane*: Sur le treizième problème de Hilbert, le théorème de superposition de Kolmogorov et les sommes algébriques d'arcs croissants. — *T. W. Körner*: Ivašev Musatov in many dimensions. — *H. Leptin*: Bemerkungen über Linksideale in Gruppenalgebren. — *P. Malliavin*: C^∞ parametrix on Lie groups and two steps factorization on convolution algebras. — *N. C. Petridis*: Distance and volume decreasing theorems for a family of harmonic mappings of Riemannian manifolds. — *S. K. Pichorides*: On the L' norm of exponential sums. — *D. Poquntke*: Symmetry (or simple modules) of some Banach algebras. — *J. D. Stegeman*: Some problems on spectral synthesis. — *Y. Weit*: On spectral analysis in locally compact groups.

Rudolf J. FREUND, Paul D. MINTON. — **Regression methods: a tool for data analysis.** — Statistics: textbooks and monographs, vol. 30. — Un vol. relié, 16 × 23,5, de XI, 259 p. — Prix: FS 30.00. — Marcel Dekker, Inc., New York/Basel, 1979.

Matrices: Definitions and properties. Matrix operations. Linear equations. A procedure for matrix inversion. Operations with partitioned matrices. Quadratic forms. —

Linear models: estimation: Definitions and uses of linear models. Basic definitions. Assumptions and limitations. Estimation of parameters by least squares. The partial regression coefficient. An example. Standardized regression coefficients. Regression through an arbitrary point. Curvilinear regressions. — *Linear models: inference*: Simple linear regression. The correlation coefficient. Multiple regression. Test for the entire model. Multiple correlation. Test for subset of the model. A subset of size one: a special case. Partial correlation. Confidence intervals. — *The "random" error*: Specification error. An example of specification error. Autocorrelation. Heteroskedasticity. — *Too many variables*: Multicollinearity. Variable selection. Other procedures. An example of ridge regression. Significance tests. — *Models not strictly linear*: Polynomial regression. Orthogonal polynomials. Multidimensional polynomials and response surfaces. Analysis of response surface experiments. Nonlinear regression. — *General linear models*: Example: two-factor balanced experiment. Two-factor unbalanced experiment. Variances of treatment differences and combinations. Unbalanced data, multifactor experiments. — *Regression with grouped data; covariance*: Models involving individual observations. Model involving group means. Analysis of covariance. The general linear model. A note on computations. — Problems at the end of each chapter.

John KNOPFMACHER. — **Analytic arithmetic of algebraic function fields.** — Lecture notes in pure and applied mathematics, vol. 50. — Un vol. broché, 18 × 25, de III, 130 p. — Prix: FS 36.00. — Marcel Dekker, Inc., New York/Basel, 1979.

Additive arithmetical semigroups satisfying axiom $A^\#$. The generating function. Average values of arithmetical functions. Asymptotic moments. Error estimates for average values. Asymptotic enumeration of modules and algebras. Sharper estimates for certain functions. The abstract prime number theorem. Prime-divisor functions. Maximum orders of magnitude. Further sharp estimates. Some open questions.

Angus E. TAYLOR, David C. LAY. — **Introduction to functional analysis.** — 2nd edition. — Un vol. relié, 17 × 23,5, de XI, 467 p. — Prix: £13.95. — John Wiley and Sons, New York/Chichester/Brisbane/Toronto, 1980.

The abstract approach to linear problems: Abstract linear spaces. Examples of linear spaces. Linear operators. Linear operators in finite-dimensional spaces. Other examples of linear operators. Direct sums and quotient spaces. Linear functionals. Linear functionals in finite-dimensional spaces. Zorn's lemma. Extension theorems for linear operators. Hamel bases. The transpose of a linear operator. Annihilators, ranges, and null spaces. Conclusions. — *Topological linear spaces*: Normed linear spaces. Examples of normed linear spaces. Finite-dimensional normed linear spaces. Banach spaces. Quotient spaces. Inner-product spaces. Hilbert space. Examples of complete orthonormal sets. Topological linear spaces. Convex sets. Locally convex spaces. Minkowski functionals. Metrizable topological linear spaces. — *Linear functionals and weak topologies*: Linear varieties and hyperplanes. The Hahn-Banach theorem. The conjugate of a normed linear space. The second conjugate space. Some representations of linear functionals. Weak topologies for linear spaces. Polar sets and annihilators. Equicontinuity and $\mathcal{G}$ -topologies. The principle of uniform boundedness. Weak topologies for normed linear spaces. The Krein-Milman theorem. — *General theorems on linear operators*: Spaces of linear operators. Integral equations of the second kind. $\mathcal{L}^2$ kernels. Differential equations and integral equations. Closed linear operators. Some representations of bounded linear operators. The M. Riesz convexity theorem. Conjugates of linear operators. Theorems about continuous inverses. The states of an operator and its conjugate. Adjoint operators.

Projections. Fredholm operators. — *Spectral analysis of linear operators*: Analytic vector-valued functions. The resolvent operator. The spectrum of a bounded linear operators. Subdivisions of the spectrum. Reducibility. The ascent and descent of an operator. Compact operators. An operational calculus. Spectral sets. The spectral mapping theorem. Isolated points of the spectrum. Operators with a rational resolvent. — *Spectral analysis in Hilbert spaces*: Bilinear and quadratic forms. Symmetric operators. Normal and self-adjoint operators. Compact symmetric operators. Symmetric operators with compact resolvent. The spectral theorem for bounded self-adjoint operators. Unitary operators. Unbounded self-adjoint operators. — *Banach algebras*: Examples of Banach algebras. Spectral theory in a Banach algebra. Ideals and homomorphisms. Commutative Banach algebras. Applications and extensions of the Gelfand theory. B^* -algebras. The spectral theorem for a normal operator.

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HISTORY: *Irmgard Süß* : Origin of the Mathematical Research Institute, Oberwolfach at the countryseat "Lorenzenhof". — **INEQUALITIES OF COMBINATORICS AND NUMBER THEORY:** *Donald R. Snow* : A functional inequality arising in combinatorics. *Olga Taussky* : Pairs of sums of three squares of integers whose product has the same property. — *Moshe Goldberg and E. G. Straus* : Combinatorial inequalities, matrix norms, and generalized numerical radii. *Raymond Redheffer and Carey Smith* : The case $n = 2$ of the Goldberg-Straus inequality. — **INEQUALITIES OF MATRIX THEORY AND LINEAR ALGEBRA:** *P. D. Johnson, Jr., and R. N. Mohapatra* : Inequalities involving infinite matrices with nonnegative entries. *S. Schaible and R. W. Cottle* : On pseudoconvex quadratic forms. *R. Hellman* : Some inequalities for positive definite matrices. *M. Marcus and I. Filippenko* : Inequalities connecting eigenvalues and nonprincipal subdeterminants. — **INEQUALITIES OF DIFFERENTIAL AND INTEGRAL OPERATORS:** *P. R. Beesack* : Minimum properties of eigenvalues, elementary proofs. *J. Szarski* : Infinite systems of first-order partial-differential functional inequalities. *E. Lukacs* : Inequalities for Fourier-Stieltjes transformations of functions of bounded variation. — **INEQUALITIES FOR SUMS, SERIES, AND INTEGRALS:** *V. Skarda* : l_1 -bounds for inner products. *S. Haber and O. Shisha* : On the location of the intermediate point in Taylor's theorem. *J. Aczel and E. F. Beckenbach* : On Hölder's inequality. *P. R. Beesack* : On some integral inequalities of E. T. Copson. *D. K. Ross and A. Mahajan* : On enveloping series for some of the special functions, and on integral inequalities involving them. — **FUNCTIONAL INEQUALITIES:** *D. Brydak* : A generalization of theorems concerning a nonlinear functional inequality in a single variable. *B. Choczewski and Z. Powazka* : Generalized subadditivity and convexity. *R. Ger* : Homogeneity sets for Jensen-convex functions. — **INEQUALITIES OF APPROXIMATION THEORY:** *A. Jakimovski and D. C. Russell* : On an interpolation problem and spline functions. *J. Rätz* : On approximately additive mappings. — **INEQUALITIES OF FUNCTIONAL ANALYSIS:** *B. Fuchssteiner and H. König* : New versions of the Hahn-Banach theorem. *D. Gaspar* : On interpolation of weak-type operators. *F. Feher* : A generalized Schur-Hardy inequality on normed Köthe spaces. *H. H. Kairies* : Mean values and function spaces. — **INEQUALITIES OF OPERATOR THEORY:** *P. L. Butzer* : The Banach-Steinhaus theorem with rates, and applications to various branches of analysis. *K. Fan* : Harnack's inequalities for operators. *M. Kwapisz* : General inequalities and fixed-point

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Point-set topology of Euclidean spaces: Preliminaries. Open sets, closed sets, and continuity. Compact spaces. Connectivity properties. Real-valued continuous functions. Retracts. Topological dimension. — *Elementary combinatorial techniques*: Hyperplanes

in R^n . Simplexes and complexes. Sample triangulations. Simplicial maps. Barycentric subdivision. The simplicial approximation theorem. Sperner's lemma. The Brouwer fixed point theorem. Topological dimension of compact subsets of R^n . — *Homotopy theory and the fundamental group*: The homotopy relation, nullhomotopic maps, and contractible spaces. Maps of spheres. The fundamental group. Fundamental groups of the spheres. — *Simplicial homology theory*: Oriented complexes and chains. Boundary operators. Cycles, boundaries, and homology groups. Elementary examples. Cone complexes, augmented complexes, and the homology groups $H_p(K_n(S_n \times 1))$. Incidence numbers and the homology groups $H_p(K_n(S_n \times 1))$. Elementary homological algebra. The homology complex of a geometric complex. Acyclic carrier functions. Invariance of homology groups under barycentric subdivision. Homomorphisms induced by continuous maps. Homology groups of topological polyhedra. The Hopf Trace theorem. The Lefschetz fixed point theorem. — *Differential techniques*: Smooth maps. The Stone-Weierstrass theorem. Derivatives as linear transformations. Differentiable manifolds. Tangent spaces and derivatives. Regular and critical values of smooth maps. Measure zero and Sard's theorem. Morse functions. Manifolds with boundary. One-dimensional manifolds. Topological characterization of S^k . Smooth tangent vector fields. — Enoncés d'exercices à la fin de chaque chapitre.

I. JUHASZ. — **Cardinal functions in topology—Ten years later.** — Mathematical Centre tracts; 123. — Un vol. broché, 16×24 , de 160 p. — Prix: Dfl 20.00. — Mathematisch Centrum, Amsterdam, 1980.

Preliminaries. Introduction to cardinal functions. Interrelations between cardinal functions. Cardinal functions on special classes of spaces. The $\sup = \max$ problem. Cardinal functions on products. Cardinal functions on unions of chains. Examples.

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The algorithms of Gauss, Borchardt and Carlson. Orders of magnitude and rates of convergence. Recurrence relations for powers. The solution of equations. Uniform convergence and approximation. The acceleration processes of Aitken and Euler. Asymptotic series. Interpolation. Quadrature. Difference equations, differentiation, and differential equations. Appendix: Bessel functions. Solutions to selected problems.

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General relativity: an Einstein centenary survey. — Edited by S. W. Hawking, W. Israel. — Un vol. broché, 16×23 , de xviii, 919 p. — Prix: £12.50. — Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1980.

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Torsion theories. Change of rings. Left convenient rings. Compact torsion theories. Symmetric torsion theories. Prime ideals and prime torsion theories. Topologies of R -sp. Comparison with other spaces. Localization at a torsion theory. The presheaf $\bar{Q}$. The sheaf $\bar{Q}$ and the definition of a scheme.

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Introduction: Data collection. Regression analysis. Uses of regression analysis. Abuses of regression analysis. — *Initial data exploration*: Preliminary data editing. Initial model specification. Reexpressing variables. — *Single-variable least squares*: Appropriateness. Least squares parameter estimation. Additional measures of fit. — *Multiple-variable preliminaries*: Review of matrix algebra. Care in model building. Standardization. Multicollinearity. — *Multiple-variable least squares*: Parameter estimation. Interpretation of fitted models. Initial assessment of fit. — *Inference*: Model definition. Estimator properties. Tests of hypothesis. Interval estimation. — *Residual analysis*: Types of residuals. Verification of error assumptions. Model specification. Outlier detection. — *Variable selection techniques*: Basic considerations. Subset selection methods. Stepwise selection methods. — *Multicollinearity effects*: Coefficient estimators. Inference procedures. Population-inherent multicollinearities. — *Biases regression estimators*: Principal component regression. Latent root regression analysis. Ridge regression. Final remarks. — *Appendices*: Data sets analyzed in this text. Data sets for further study. Statistical tables.

D. SUNDARARAMAN. — **Moduli, deformations and classifications of compact complex manifolds.** — Research notes in mathematics, vol. 45. — Un vol. broché, 17 × 24, de 261 p. — Prix: £9.95. — Pitman advanced publishing program, Boston/London/Melbourne, 1980.

The moduli problem: The problem of existence of complex structures. Characteristic classes. The problem of uniqueness of the complex structure on the complex projective space. The problem of embedding of complex manifolds. The moduli problem. — *Deformation theory of compact complex manifolds*: The theorem of Kodaira-Nirenberg-Spencer. The theorem of Kuranishi. Obstructions to the existence of deformations and to the existence of a local space of moduli. Stability of structures. Deformation theories for other structures. — *Classification theory of compact complex manifolds*: Classification of compact Riemann surfaces. Classification of compact connected complex surfaces. Classification of higher dimensional compact complex manifolds.

Paul LÉVY. — **Œuvres de Paul Lévy, vol. IV: processus stochastiques.** — Publiées sous sa direction par Daniel Dugué, avec la collaboration de Paul Deheuvels et Michel Ibéro. — Un vol. relié, 17,5 × 26,5, de 632 p. — Prix: FF 230.00. — Gauthier-Villars, Paris, 1980.

INTÉGRATION ET DIFFÉRENTIATION STOCHASTIQUES; PROCESSUS LAPLACIENS: Généralisation de l'espace différentiel de N. Wiener. Sur les espaces V et W . Compléments à l'étude des espaces V et W . Sur les intégrales dont les éléments sont des variables aléatoires indépendantes. Observation sur un précédent mémoire de l'auteur. Sur certaines solutions de l'équation de Chapman. Extensions stochastiques des notions de série, d'intégrale et d'aire. Sur certains processus stochastiques homogènes. Intégrales stochastiques. Intégrales stochastiques (second mémoire). Dérivation, intégration et équations différentielles stochastiques. Les processus fortement continus et la loi de Laplace. L'analyse harmonique des fonctions aléatoires stationnaires. Fonctions aléatoires laplaciennes. Processus laplaciens et équations différentielles stochastiques. Wiener's random function, and other laplacian random functions. L'arithmétique des lois de probabilité et les produits finis de lois de Poisson. Random functions: general theory with special reference to laplacian random functions. A special problem of Brownian motion, and a general theory of Gaussian random functions. La représentation canonique des fonctions aléatoires laplaciennes. Sur une classe de fonctions aléatoires gaussiennes. Intégration d'une équation intégrale non linéaire. Une nouvelle classe de fonctions symboliques: les σ -fonctions. Fonctions aléatoires à corrélation linéaire. Fonctions aléatoires à corrélation linéaire (second mémoire). Random functions: a laplacian random function depending on a point of Hilbert space. Définitions faibles et définitions complètes des fonctions aléatoires, application aux processus stochastiques laplaciens. Systèmes laplaciens de variables aléatoires. Sur quelques problèmes de la théorie des liaisons stochastiques. Remarques sur un problème relatif aux lois stables. — PROCESSUS MARKOVIENS, SEMI-MARKOVIENS, PSEUDO-MARKOVIENS: Chaînes doubles de Markoff et fonctions aléatoires de deux variables. Exemples de processus doubles de Markoff. Processus doubles de Markoff. Exemples de processus pseudo-markoviens. Processus à la fois stationnaires et markoviens pour les systèmes ayant une infinité dénombrable d'états possibles. Éléments de la théorie des processus à la fois stationnaires et de Markoff, dans le cas d'un système ayant une infinité dénombrable d'états possible. Deux nouveaux exemples de processus stochastiques. Fonctions aléatoires $H(t)$ à valeurs entières, dépendant de processus à la fois markoviens et stationnaires. Processus de Markoff, cas dénombrable. Complément à l'étude des processus de Markoff. Systèmes markoviens et stationnaires, cas dénombrable. Processus markoviens et stationnaires du cinquième type (infinité dénombrable d'états possibles, paramètre continu). Processus semi-markoviens. Processus strictement markoviens. Processus strictement ou presque strictement markoviens. Remarques sur le processus de W. Feller et H. P. MacKean. Construction de processus de W. Feller et H. P. MacKean, en partant du mouvement brownien. Fonctions linéairement markoviennes d'ordre n . Processus markoviens et stationnaires, cas dénombrable. Remarques sur le développement de la théorie des processus stochastiques. Remarques sur les états instantanés des processus markoviens et stationnaires, à une infinité dénombrable d'états possibles. Un nouveau point de vue pour l'étude des processus markoviens.

Paul LÉVY. — **Œuvres de Paul Lévy, vol. V: mouvement brownien.** — Publiées sous sa direction par Daniel Dugué, avec la collaboration de Paul Deheuvels et Michel Ibéro. — Un vol. relié, 17,5 × 26,5, de 484 p. — Prix: FF 180.00. — Gauthier-Villars, Paris, 1980.

Mouvement brownien et schémas géométriques. Sur un problème de M. Marcinkiewicz. Mouvement brownien linéaire et mouvement brownien plan. Le mouvement

brownien plan. Une propriété d'invariance projective dans le mouvement brownien. Un théorème d'invariance projective relatif au mouvement brownien. Sur le mouvement brownien dépendant de plusieurs paramètres. Trois théorèmes sur le mouvement brownien. Sur l'aire comprise entre un arc de la courbe de mouvement brownien plan et sa corde. La mesure de Hausdorff de la courbe du mouvement brownien à n dimensions. La mesure de Hausdorff de la courbe du mouvement brownien. Rectification à un théorème sur le mouvement brownien à p paramètres. Le mouvement brownien à $n = 2p + 1$ paramètres I. Le mouvement brownien à $n = 2p + 1$ paramètres II. Le mouvement brownien. Propriétés asymptotiques de la courbe du mouvement brownien à N dimensions. Le caractère universel de la courbe du mouvement brownien et la loi du logarithme itéré. Brownian motion depending on n parameters; the particular case $n = 5$. Sur une classe de courbes de l'espace de Hilbert et sur une équation intégrale non linéaire. Le mouvement brownien fonction d'un point de la sphère de Riemann. Deux nouvelles extensions du mouvement brownien. Le déterminisme de la fonction brownienne d'un point de l'espace de Hilbert. Le mouvement brownien fonction d'un ou de plusieurs paramètres. Le déterminisme de la fonction brownienne dans l'espace de Hilbert (second mémoire). Fonctions browniennes dans l'espace Euclidien et dans l'espace de Hilbert.

Paul LÉVY. — **Œuvres de Paul Lévy, vol. VI: théorie des jeux.** — Publiées sous sa direction par Daniel Dugué, avec la collaboration de Paul Deheuvels et Michel Ibéro. — Un vol. relié, $17,5 \times 26,5$, de 423 p. — Prix: FF 180.00. — Gauthier-Villars, Paris, 1980.

CALCUL DES PROBABILITÉS: Sur l'application du théorème de Fubini au calcul des probabilités. Sur la notion de probabilité conditionnelle. Sur quelques points de la théorie des probabilités dénombrables. Distance de deux variables aléatoires et distance de deux lois de probabilité. Sur la définition des lois de probabilité par leurs projections. Les paradoxes de l'infini et le calcul des probabilités, commentaire sur le livre d'Emile Borel. A propos du paradoxe et de la logique. Un paradoxe de la théorie des ensembles aléatoires. Sur les conditions de comptabilité des données marginales relatives aux lois de probabilité. Remarques sur certains ensembles aléatoires. Les fondements du calcul des probabilités. Esquisse d'un calcul des probabilités plus ou moins nulles. Une hiérarchie des probabilités plus ou moins nulles, application à certains nuages de points. — THÉORIE DES JEUX, THÉORIE DES PERMUTATIONS: Sur le gain maximum au cours d'une partie de pile ou face. Nuove formule relative al giuoco di testa e croce. Formules relatives au jeu de pile ou face. Etude d'une classe de permutations. Etude d'une nouvelle classe de permutations. Sur deux classes de permutations. Un problème de la théorie des permutations. Sur une classe remarquable de permutations. Sur quelques classes de permutations. Premiers éléments de l'arithmétique des substitutions aléatoires. — ARITHMÉTIQUE: Sur la densité des nombres premiers inférieurs à une grandeur donnée. Sur les lois de probabilité dont dépendent les quotients complets et incomplets d'une fraction continue. Sur la probabilité et la fréquence asymptotiques des différentes valeurs des quotients complets et incomplets d'une fraction continue. Sur le développement en fraction continue d'un nombre choisi au hasard. Observation sur une note de M. Denjoy. Observations sur le mémoire de M. F. Tricomi. Sur la division d'un segment par des points choisis au hasard. Remarques sur un théorème de M. Emile Borel. Arithmétique et calcul des probabilités. Axiome de Zermelo et nombres transfinis. Fractions continues aléatoires.

Eiichi ABE. — **Hopf algebras.** — Translated by Hisae Kinoshita and Hiroko Tanaka. — Cambridge tracts in mathematics, vol. 74. — Un vol. relié, $14,5 \times 22$, de xii, 284 p. — Prix: £16.00. — Cambridge university press. Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1980.

Modules and algebras: Modules. Algebras over a commutative ring. Lie algebras. Semi-simple algebras. Finitely generated commutative algebras. — *Hopf algebras*: Bialgebras and Hopf algebras. The representative bialgebras of semigroups. The duality between algebras and coalgebras. Irreducible bialgebras. Irreducible cocommutative bialgebras. — *Hopf algebras and representations of groups*: Comodules and bimodules. Bimodules and bialgebras. Integrals for Hopf algebras. The duality theorem. — *Applications to algebraic groups*: Affine k -varieties. Affine k -groups. Lie algebras of affine algebraic k -groups. Factor groups. Unipotent groups and solvable groups. Completely reducible groups. — *Applications to field theory*: K/k -bialgebras. Jacobson's theorem. Modular extensions. — *Appendix: Categories and functors*: Categories. Functors. Representable functors. Adjoint functors. $\mathcal{C}$ -groups and $\mathcal{C}$ -cogroups.

J. PONSTEIN. — **Approaches to the theory of optimization.** — Cambridge tracts in mathematics, vol. 77. — Un vol. relié, $14,5 \times 22$, de xii, 205 p. — Prix: £16.00. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1980.

Approaching optimization by means of examples: Definition of optimization problem. Examples of optimization problems. — *An intuitive approach to mathematical programming*: Introduction. Perturbation of the two problems. Introducing perturbations abstractly; bifunctions. Subdifferentiability. The Lagrangian. Duality. Perturbation of the dual problem. Global conditions versus local conditions. Mathematical programming versus dynamic programming. — *A global approach by bifunctions*: Convexity and the positive cone. Topological considerations. Separation theorems. Two theorems on the positive cone. A geometric interpretation of inf and sup; normality. A duality theorem for convex bifunctional programming. Some sufficient conditions for normality. On the existence of optimal solutions. Summary of results; examples. Saddle-points, saddle-values and the meaning of the Lagrangian. Lagrangian duality. Lagrangian duality; affine equality constraints. Lagrangian duality; mixed constraints; linear programming. Fenchel duality. Fenchel duality extended. On the equivalence of dualities. — *A global approach by conjugate duality*: Converse duality; conjugate functions. Closed functions. Closed functions applied to normality and converse duality. The perturbation function and subdifferentiability. The Lagrangian. Saddle-points, variational inequalities and the complementarity problem. — *A local approach for optimization problems in Banach spaces*: Introduction; Fréchet differentiability; some lemmas. Finitely many constraints; first-order conditions. Finitely many constraints; second-order conditions. Problems with arbitrary constraints; first-order conditions; linearizing sets. Problems with arbitrary constraints; second-order conditions. — *Some other approaches*: The fixed point approach. The sup inf = inf sup approach. Modified Lagrangians. — *Some applications*: Returning to the initial examples; a well-known inequality. Chebyshev approximation. A fixed time optimal control problem. A two-period stochastic inventory problem. Theorems of the alternative; multi-objective optimization. Relating dynamic programming to linear programming. Separation by optimization.

Recursion theory: its generalisations and applications. — Proceedings of logic colloquium 1979, Leeds, August 1979. — Edited by F. R. Drake and S. S. Wainer. — London mathematical lecture note series, vol. 45. — Un vol. broché, $15 \times 22,5$, de 319 p. — Prix: £10.95. — Cambridge university press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 1980.

CLASSICAL RECURSION THEORY: R. I. Soare: Fundamental methods for constructing recursively enumerable degrees. — D. B. Posner: A survey of non-RE degrees $\leq O'$. —

C. G. Jockusch : Degrees of generic sets. — *M. Lerman* : The degrees of unsolvability: some recent results. — GENERALISATIONS: *R. Shore* : Some constructions in α -recursion theory. — *D. Normann* : The recursion theory of the continuous functionals. — *G. E. Sacks* : Three aspects of recursive enumerability in higher types. — APPLICATIONS: *J. V. Tucker* : Computing in algebraic systems. — *C. H. Smith* : Applications of classical recursion theory to computer science. — *D. A. Alton* : "Natural" programming languages and complexity measures for subrecursive programming languages: an abstract approach. — *R. E. Ladner* : Complexity theory with emphasis on the complexity of logical theories.

Numerical methods. — Colloquium on numerical methods held in Keszthely from 5th to 10th September, 1977. — Edited by P. Rozsa. — Colloquia mathematica societatis Janos Bolyai, vol. 22. — Un vol. relié, 17 × 24, de 631 p. — Prix: Dfl 180.00. — North-Holland publishing company, Amsterdam/Oxford/New York, 1980.

41 exposés par: J. Abaffy. — A. A. Abramov, E. S. Birger, N. B. Konyukhova, V. I. Ulyanova. — L. Adamczyk. — Gy. Adler. — R. Ansorge. — G. Avdelas, A. Hadjidimos. — Katalin Balla. — L. Collatz. — T. Desperat. — L. Elsner. — H. R. Farzan, G. Molnarka. — M. Fiedler. — A. Galantai. — L. Gerencser. — J. Gergely. — R. Gorenflo. — D. Greenspan. — Eva Gyurkovics, T. Vörös. — A. Hadjidimos. — L. Halada. — H. Heinrich. — C. P. Huang, R. T. Gregory. — A. S. Ilinskii. — F. Juhasz, K. Malyusz. — A. Kokoszkiewicz. — Margit Kovacs. — G. Maess. — Andrea Mesko. — J. Miklosko. — Fernanda A. Oliveira. — G. N. de Oliveira. — Olga Pokorna. — D. Richter. — S. M. Sallam. — A. A. Samarskii. — E. Schechter. — F. Schipp. — Olga Taussky. — J. Todd. — Gy. Varga. — I. M. Zhileikin, I. Környei.

J. P. et F. BENZECRI. — **Pratique de l'analyse des données, vol. I: Analyse des correspondances, exposé élémentaire.** — Un vol. broché, 15,5 × 24, de VIII, 424 p. — Prix: FF 89.00. — Dunod, Paris, 1980.

Cours : l'analyse des correspondances : Tableau de correspondance; notion de profil. Représentation spatiale des ensembles en correspondance: les nuages $N(I)$ et $N(J)$; espaces multidimensionnels; profils de fréquence et loi de probabilité. Moyenne et centre de gravité; dispersion et inertie. Distance euclidienne; distance distributionnelle. Propriétés d'inertie dans le plan et l'espace à 3 dimensions. Inertie en dimension quelconque; définition des axes principaux d'inertie. Propriétés des facteurs sur un ensemble; décomposition de l'inertie; contributions. Relations liant les facteurs définis sur les deux ensembles: formule de transition et formule de reconstitution. Géométrie vectorielle et géométrie affine. Géométrie euclidienne. Définition algébrique des axes principaux d'inertie. Démonstration des propriétés des facteurs en analyse des correspondances. — *Exemple numérique d'analyse de correspondance : exercice illustrant le cours* : Les données. Les nuages $N(I)$ et $N(IO)$. Le nuage $N(J)$. Représentation simultanée des nuages $N(IO)$ et $N(J)$. Formule de reconstitution; interprétation. Calcul des contributions. Adjonction d'éléments supplémentaires. — *Lecture et interprétation des listages* : Le tableau des données et son entrée dans l'ordinateur. Sortie des résultats; étiquettes, le tableau de données et ses marges, les valeurs propres, tableau des facteurs sur l'ensemble I des individus principaux, tableau des facteurs sur l'ensemble J des variables principales, tableau des facteurs sur l'ensemble $J2$ (ou $JSUP$) des variables supplémentaires, les graphiques. — *Listage commenté* en III. — *Le programme FORTRAN*. — *Analyse et interprétation* : Problèmes et méthodes. L'enseignement supérieur en Grèce; origine socio-professionnelle des étudiants. Les importations du Brésil en équipements indus-

triels; leur évolution de 1971 à 1975. Les budgets familiaux. Les emplois des verbes français par modes, temps et personnes. La crâniométrie des équidés. Une description de forme d'outils. Dépouillement d'une enquête, la réforme agraire en Iran. Les scrutins en 1967 à l'Assemblée des Nations Unies. La description d'un végétal, application au genre *Erodium*. Typologie des effets de la trinitrine iv selon l'état initial du malade. Les émissions de variétés, codage de sept appréciations suivant un ensemble de trois modalités sous-jacentes. Tableau des notes obtenues par les candidats à l'Ecole polytechnique: analyse avec dédoublement des colonnes. Le parallélisme dans les distiques chinois. Le recensement scolaire du Liban. Estimation des paléotempératures d'après l'écologie des foraminifères. Méthodes de discrimination appliquées à des données médicales en vue d'une décision thérapeutique.

Ch. BASTIN, J. P. BENZECRI, Ch. BOURGARIT, P. CAZES. — **Pratique de l'analyse des données, vol. 2: Abrégé théorique, étude de cas modèle.** — Un vol. broché, 15,5 × 24, de xi, 466 p. — Prix: FF 89.00. — Dunod, Paris, 1980.

Euclide: distance et inertie en géométrie euclidienne: Formulaire sur les calculs de distance et inertie. Décomposition de l'inertie d'un nuage de points. Détermination d'un nuage de quatre points par ses éléments d'inertie. Comparaison entre critères pour l'ajustement linéaire. Recherche du déplacement minimisant la distance entre deux ensembles de points homologues situés dans un plan. Analyse du triple pour un nuage heptagonal régulier. Analyse du triple pour une pyramide. Majoration des moments principaux d'inertie pour le nuage des centres des classes d'une partition. Détermination approchée d'un ensemble de points par son ordonnance. — *Laplace: modèle normal et analyse discriminante:* Formulaire sur le modèle normal et la discrimination. Espérance mathématique du produit de trois variables dont la loi conjointe est normale. Le modèle factoriel selon Spearman et Thurstone. Profils des échantillons: de la loi multinomiale au modèle normal. Métrique d'inertie et cloison optimale entre deux carrés. Discrimination par ajustement à des lois normales multidimensionnelles: exemple d'une distribution en anneau. Une caractérisation de la métrique d'inertie. Discrimination entre deux classes par affectation barycentrique. — *Correspondances: notions et formules de l'analyse des correspondances:* Rappel des formules de l'analyse des correspondances. Représentation du simplexe $P(I)$ par un triangle équilatéral. Le centre du nuage $N(J)$ est l'orthocentre du simplexe $P(I)$. Correction d'erreurs dans l'attribution des sigles. Correction d'une erreur sur un élément supplémentaire. Ligne ou colonne supplémentaire associée à une classe d'individus. Calcul de la variance interclasse en projection sur un axe factoriel. Estimation d'une donnée manquante à l'intersection d'une ligne et d'une colonne supplémentaires. Estimation de données manquantes par reconstitution itérée. Cas de reconstitution des marges en fonction des facteurs. Contributions, corrélations, inertie du nuage en projection sur un axe. Corrélations entre facteurs issus de deux tableaux juxtaposés. Corrélations résiduelles entre colonnes et facteurs. — *Symétries et blocs: cas de résolution de l'équation des facteurs: symétries et blocs:* Recherche des facteurs: symétries des tableaux; tableaux décomposés en blocs. Analyse d'un tableau d'invariant par permutation simultanée de ses lignes et de ses colonnes. Analyse d'un tableau symétrique et reconstitution d'éléments supplémentaires. Recherche des facteurs d'après l'orthogonalité et la symétrie. Tableau en neuf blocs réductible à un carré 2×2 . Tableau en deux blocs carrés 2×2 . Tableau construit en permutant deux blocs de rangs 1 et 2. Tableau en deux blocs de rang deux avec éléments équivalents. Tableaux en deux blocs de rangs 2 et 3. Tableau symétrique à trois blocs: Analyse d'un tableau dont une case a un poids prédominant. Tableau formé de blocs construit par produit tensoriel. Juxtaposition de blocs diagonaux, avec blocs latéraux

simplifiés. — *Codage : codage et transformations des données* : Formes de codage des données en vue de l'analyse des correspondances. Analyse d'un tableau de notes dédoublées. Recodage d'un tableau de notes dédoublées. Codage d'un tableau par une transformation linéaire des colonnes conservant les facteurs. Analyse du nuage des points-milieux. Convergence d'un algorithme de pondération relative pour deux groupes homogènes de lignes ou de colonnes. Effet de masse dans une correspondance entre observateurs indépendants et événements équivalents. Codage et analyse des préférences. Représentation géométrique des préférences et tableaux de correspondance. — *Questionnaires : analyse des questionnaires* : Questionnaires, descriptions sous forme disjonctive complète; correspondances multiples. Calculs élémentaires sur un exemple de questionnaire. Distances et angles dans le nuage des modalités de réponse à un questionnaire. Tableau de Burt pour deux questions et correspondance binaire. Codage des non-réponses et subdivision d'une modalité pour un questionnaire. Etude dans un questionnaire d'un modèle de non-réponses. Correspondance entre l'ensemble des modalités et une partition de l'ensemble des systèmes de réponses. La correspondance entre l'ensemble des modalités et l'ensemble des systèmes de réponses. Analyse du tableau cumulatif du code génétique. — *Guttman : Effet Guttman et correspondances continues* : Espaces de fonctions et correspondances continues. Analyse d'un scalogramme fini, cas de trois questions. Analyse d'un scalogramme fini, transition et facteurs polynomiaux. Les scalogrammes pondérés. Situation typique suggérée par des mélanges binaires. Exemples de correspondances entre un ensemble fini et un espace. Correspondances entre espaces et contraintes de positivité. Correspondances entre espaces avec un exemple de symétrie. Correspondances entre espaces et transitions probabilistes.

Richard BRAUER. — *Collected papers: vol. I: theory of algebras, and finite groups*. — Edited by Paul Fong and Warren J. Wong. — *Mathematicians of our time*, vol. 17. — Un vol. relié, 19 × 26, de LIV, 615 p. — Prix: £34.10. — Cambridge, Mass./London, 1980.

Richard Dagobert Brauer by J. A. Green. — Bibliography of Richard Brauer. — Theory of algebras: Über Zusammenhänge zwischen arithmetischen und invariantentheoretischen Eigenschaften von Gruppen linearer Substitutionen. Über minimale Zerfällungskörper irreduzibler Darstellungen (with E. Noether). Untersuchungen über die arithmetischen Eigenschaften von Gruppen linearer Substitutionen I. Über Systeme hyperkomplexer Zahlen. Zum Irreduzibilitätsbegriff in der Theorie der Gruppen linearer homogener Substitutionen (with I. Schur). Untersuchungen über die arithmetischen Eigenschaften von Gruppen linearer Substitutionen II. Über die algebraische Struktur von Schiefkörpern. Beweis eines Hauptsatzes in der Theorie der Algebren (with H. Hasse and E. Noether). Über die Konstruktion der Schiefkörper, die von endlichem Rang in bezug auf ein gegebenes Zentrum sind. Über den Index und den Exponenten von Divisionalgebren. Algebra der hyperkomplexen Zahlensysteme (Algebren). On the regular representations of algebras (with C. Nesbitt). On normal division algebras of index 5. On modular and p -adic representations of algebras. On sets of matrices with coefficients in a division ring. On the nilpotency of the radical of a ring. On hypercomplex arithmetic and a theorem of Speiser. On splitting fields of simple algebras. Representations of groups and rings. On a theorem of H. Cartan. Some remarks on associative rings and algebras. — *Finite groups*: Über die Darstellung von Gruppen in Galoisschen Feldern. On the modular representations of groups of finite order I (with C. Nesbitt). On the representation of groups of finite order. On the Cartan invariants of groups of finite order. On the modular characters of groups (with C. Nesbitt). On the connection between the ordinary and the modular characters of groups of finite order. Investigations on group characters. On groups whose order contains a prime number to the first power I.

On groups whose order contains a prime number to the first power II. On permutation groups of prime degree and related classes of groups. On the arithmetic in a group ring. On simple groups of finite order (with H. F. Tuan). On the representation of a group of order g in the field of the g -th roots of unity. On blocks of characters of groups of finite order, I. On blocks of characters of groups of finite order, II. On Artin's L -series with general group characters. Applications of induced characters. On a conjecture by Nakayama. On the algebraic structure of group rings. On the representations of groups of finite order. A characterization of the characters of groups of finite order. On the characters of finite groups (with J. Tate).

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