

Algèbre linéaire et multilinéaire, théorie des matrices

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Reduction of singularities for differential equations. — J.M. Aroca: Puiseux solutions of singular differential equations. — S. Encinas, O. Villamayor: A course on constructive desingularization and equivariance. — G. Bodnár, J. Schicho: A computer program for the resolution of singularities. — V. Cossart: Uniformisation et désingularisation des surfaces d'après Zariski. — D. Cox: Toric varieties and toric resolution. — B. van Geemen, F. Oort: A compactification of a fine moduli space of curves. — T. Geisser: Applications of de Jong's theorem on alterations. — R. Goldin, B. Teissier: Resolving singularities of plane analytic branches with one toric morphism. — H. Hauser: Excellent surfaces and their taut resolution. — A.-J. de Jong: An application of alterations to Dieudonné modules. — F.-V. Kuhlmann: Valuation theoretic and model theoretic aspects of local uniformization. — D.T. Lê: Les singularités Sandwich. — J. Lipman: Equisingularity and simultaneous resolution of singularities. — G. Müller: Resolution of weighted homogeneous surface singularities. — F. Pop: Alterations and birational anabelian geometry. — H. Reitberger: The turbulent fifties in resolution of singularities. — M. Vaquié: Valuations.

Marc HINDRY, Joseph H. SILVERMAN. — **Diophantine geometry: an introduction.** — Graduate texts in mathematics, vol. 201. — Un vol. broché, $15,5 \times 23,5$, de xiii, 558 p. — ISBN 0-387-98981-1. — Prix: DM 79.00. — Springer, New York, 2000.

Diophantine geometry is the study of integral and rational solutions to systems of polynomial equations using ideas and techniques from algebraic number theory and algebraic geometry. The ultimate goal is to describe the solutions in terms of geometric invariants of the underlying algebraic variety. This book contains complete proofs of four of the fundamental finiteness theorems in Diophantine geometry, the Mordell-Weil theorem, Roth's theorem, Siegel's theorem, Faltings' theorem. Also included are a lengthy overview (with sketched or omitted proofs) of algebraic geometry, a detailed development of the theory of height functions, a discussion of further results and open problems, numerous exercises, and a comprehensive index.

Vladimir VOEVODSKY, Andrei SUSLIN, and Eric M. FRIEDLANDER. — **Cycles, transfers, and motivic homology theories.** — Annals of mathematics studies, no. 143. — Un vol. broché, $15,5 \times 23,5$, de v, 254 p. — ISBN 0-691-04815-0. — Prix: US\$24.95. — Princeton University Press, Princeton, N.J., 2000.

The original goal that ultimately led to this volume was the construction of motivic cohomology theory, whose existence was conjectured by A. Beilinson and S. Lichtenbaum. This is achieved in the book's fourth paper, using results of the other papers whose additional role is to contribute to our understanding of various properties of algebraic cycles. The material presented provides the foundations for the recent proof of the celebrated Milnor conjecture by Vladimir Voevodsky. — *Contents*: Introduction. Relative cycles and Chow sheaves. — Cohomological theory of presheaves with transfers. — Bivariant cycle cohomology. — Triangulated categories of motives over a field. — Higher Chow groups and Etale cohomology.

Algèbre linéaire et multilinéaire, théorie des matrices

R.B. BAPAT. — **Linear algebra and linear models.** — 2nd edition. — Universitext. — Un vol. relié, 16×24 , de x, 138 p. — ISBN 0-387-98871-8. — Prix: DM 89.00. — Springer, New York, 2000.

The main purpose of *Linear Algebra and Linear Models* is to provide a rigorous introduction to the basic aspects of the theory of linear estimation and hypothesis testing. The necessary prerequisites in matrices, multivariate normal distribution, and distributions of quadratic forms are

developed along the way. The book is aimed at advanced undergraduate and first-year graduate master's students taking courses in linear algebra, linear models, multivariate analysis, and design of experiments. It should also be of use to research mathematicians and statisticians as a source of standard results and problems.

Anneaux et algèbres

Stefaan CAENEPEEL, Freddy VAN OYSTAEYEN, (Editors). — **Hopf algebras and quantum groups: proceedings of the Brussels Conference.** — Lecture notes in pure and applied mathematics, vol. 209. — Un vol. broché, $17,5 \times 25,5$, de XII, 309 p. — ISBN 0-8247-0395-2. — Prix: US\$165.00. — Marcel Dekker, New York, 2000.

Based on the proceedings of a recently held conference at the Free University of Brussels, Belgium, this book presents state-of-the-art papers on the theory of Hopf algebras, including multiplier Hopf algebras, and quantum groups. The work examines Nichols algebras and pointed Hopf algebras, cross product bialgebras, graded coalgebras, coalgebra-Galois extensions, Doi-Hopf modules, cyclic cohomology, Schur-Weyl categories, classical Lie superalgebras, finite-dimensional quantum groupoids, and more.

Roberto COSTA, Alexander GRISHKOV, Henrique GUZZO, Jr., Luiz A. PERESI, (Editors). — **Nonassociative algebra and its applications: the fourth International Conference.** — Un vol. broché, $17,5 \times 25,5$, de XII, 469 p. — ISBN 0-8247-0406-1. — Prix: US\$185.00. — Marcel Dekker, New York, 2000.

This volume collects lectures presented at the fourth International Conference on Nonassociative Algebra and Its Applications held in São Paulo, Brazil, on topics including alternative, Jordan, Lie and Bernstein and Malcev algebras and superalgebras. The book reviews Petit's construction, giving proof of his existence criteria, discusses the problem of the classification of the extensions of Virasoro algebra, illustrates how a Lie-theoretic result of Zelmanov relates to group theory, describes geometric properties of smooth quasigroups defined by the left square distributive identity, reviews the construction of Toda-type equations in low- and high-dimensional spaces, studies the subloop structure of the smallest simple Moufang loop, surveys results concerning polynomial identities of quadratic algebras, and more.

Uwe FRANZ, René SCHOTT. — **Stochastic processes and operator calculus on quantum groups.** — Mathematics and its applications, vol. 490. — Un vol. relié, 16×25 , de VII, 227 p. — ISBN 0-7923-5883-X. — Prix: Dfl. 187.00. — Kluwer Academic Publishers, Dordrecht, 1999.

This book aims to present several new developments on stochastic processes and operator calculus on quantum groups. Topics which are treated include operator calculus, dual representations, stochastic processes and diffusions, Appell polynomials and systems in connection with evolution equations. This volume contains introductory material for graduate students who are new in the field, as well as more advanced material for specialists in probability theory, algebraic structures, representation theory, mathematical physics and theoretical physics.

Tonny A. SPRINGER, Ferdinand D. VELDKAMP. — **Octonions, Jordan algebras and exceptional groups.** — Springer monographs in mathematics. — Un vol. relié, 16×24 , de VIII, 208 p. — ISBN 3-540-66337-1. — Prix: DM 139.00. — Springer, Berlin, 2000.

The 1963 Göttingen notes of T.A. Springer are well-known in the field but have been unavailable for some time. This book is a translation of those notes, completely updated and revised. The part of the book dealing with the algebraic structures is on a fairly elementary level, presupposing basic results from algebra. In the group-theoretical part, use is made of some results from the theory of linear algebraic groups. The book will be useful to mathematicians interested in octonion algebras and Albert algebras, or in exceptional groups.