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Gorenstein algebras, space curves, Nagata's theorem, Betti numbers, canonical curves, Green's theorem, Cohen-Macaulay rings, closed subschemes, deformations of projective subschemes..., etc.

## *Algèbre linéaire et multilinéaire, théorie des matrices*

Jean FRESNEL. — **Espaces quadratiques, euclidiens, hermitiens.** — Actualités scientifiques et industrielles, vol. 1445. — Collection Formation des enseignants et formation continue. — Un vol. broché, 17,5 × 24, de xi, 315 p. — Prix: FF 160.00. — Hermann, Paris, 1999.

Cet ouvrage traite de l'algèbre bilinéaire et propose 150 exercices. L'objectif essentiel est l'étude des espaces vectoriels munis d'une forme bilinéaire symétrique, ainsi que l'étude du groupe des automorphismes préservant cette structure. La partie la plus conséquente de l'ouvrage est consacrée aux espaces vectoriels euclidiens. Les exercices fournis permettent d'aboutir avec des moyens élémentaires, à des résultats réputés délicats. Cet ouvrage est né du contact permanent de l'auteur avec les candidats à l'Agrégation externe et interne de mathématiques.

Fuzhen ZHANG. — **Matrix theory: basic results and techniques.** — Universitext. — Un vol. relié, 16 × 24, de xiii, 277 p. — ISBN 0-387-98696-0. — Prix: DM 89.50. — Springer, New York, 1999.

The aim of this book is to present concisely fundamental ideas, results, and techniques in linear algebra and mainly matrix theory. The book contains eight chapters covering various topics ranging from similarity and special types of matrices to Schur complements and matrix normality. Each chapter focuses on the results, techniques, and methods that are beautiful, interesting, and representative, followed by carefully selected problems. Many theorems are given several different proofs. The book can be used as a text or a supplement for a linear algebra and matrix theory class or seminar for advanced undergraduate or graduate students.

## *Anneaux et algèbres*

John A. BEACHY. — **Introductory lectures on rings and modules.** — London Mathematical Society student texts, vol. 47. — Un vol. broché, 15,5 × 23, de viii, 238 p. — ISBN 0-521-64407-0. — Prix: £15.95. — Cambridge University Press, Cambridge, 1999.

The focus of this book is the study of the noncommutative aspects of rings and modules, and the style will make it accessible to anyone with a background in basic abstract algebra. Features of interest include an early introduction of projective and injective modules; a module theoretic approach to the Jacobson radical and the Artin-Wedderburn theorem; the use of Baer's criterion for injectivity to prove the structure theorem for finitely generated modules over a principal ideal domain; and applications of the general theory to the representation theory of finite groups. Optional material includes a section on modules over the Weyl algebras and a section on Goldie's theorem.

David E. DOBBS, Marco FONTANA, Salah-Eddine KABBAJ, (Editors). — **Advances in commutative ring theory.** — Proceedings of the third International Conference on Commutative Ring Theory in Fez, Morocco. — Lecture notes in pure and applied mathematics, vol. 205. — Un vol. broché, 18 × 25,5, de xi, 555 p. — ISBN 0-8247-7147-8. — Prix: US\$195.00. — Marcel Dekker, New York, 1999.

The book covers monoid rings and the  $n$ -generator property... factorization and irreducibility criteria, class group, integer-valued polynomials, Skolem properties, and normsets... Koszul

algebras, primary decomposition, Noetherian domains, and the Krull-Schmidt property...  $\pi$ -domains, Prüfer domains, GCD-domains, pullbacks,  $A + XB[X]$  domains, pseudo-valuation rings, Hermite rings, and semi-Steinitz rings... Krull and projective dimensions,  $n$ -coherence, Kaplansky ideal transform, trace properties, polynomial rings, formal power series rings, semi-normality, and root closure... plane cubic curves, spectral topology, and completions.

### ***Théorie des groupes et généralisations***

John COSSEY, Charles F. MILLER III, Walter D. NEUMANN, Michael SHAPIRO, (Editors). — **Geometric group theory down under.** — Proceedings of a Special Year in Geometric Group Theory, Canberra, Australia, 1996. — Un vol. relié,  $18 \times 24,5$ , de XII, 332 p. — ISBN 3-11-016366-7. — Prix: DM 248.00. — Walter de Gruyter, Berlin, 1999.

This volume contains the fully refereed proceedings of a Special Year held at the Australian National University and Melbourne University. The high point of the year was an International Conference from 14-19 July 1996 held at the ANU in Canberra. The contributions to this volume present an overall picture of current research in the area, including such topics as theory of algebraic groups, theory of automatic and hyperbolic groups, convergence groups, distortion of subgroups, Artin groups and braid groups, amenable groups, combinatorial approaches to conformal structure, algebraic and geometric automorphism groups, and geometric invariants of groups.

Benjamin FINE, Gerhard ROSENBERGER. — **Algebraic generalizations of discrete groups: a path to combinatorial group theory through one-relator products.** — Pure and applied mathematics, vol. 223. — Un vol. relié,  $16 \times 24$ , de IX, 316 p. — ISBN 0-8247-0319-7. — Prix: US\$ 150.00. — Marcel Dekker, New York, 1999.

As the first full-length monograph on one-relator products of cyclics, this book analyzes generalizations of discrete groups that share linearity properties such as the Tits alternative, virtual torsion-freeness, and amalgam structures with discrete groups... introduces the concept of essential representations as a major tool in the study of infinite discrete groups and their linearity properties... investigates the Magnus method and its geometric version, cyclically pinched and conjugacy pinched one-relator groups, Bass-Serre theory, the techniques of Nielsen reduction, and geometric group theory... and more.

A.A. IVANOV. — **Geometry of sporadic groups I: Petersen and tilde geometries.** — Encyclopedia of mathematics and its applications, vol. 76. — Un vol. relié,  $16 \times 23,5$ , de XIII, 408 p. — ISBN 0-521-41362-1. — Prix: £45.00. — Cambridge University Press, Cambridge, 1999.

This book is the first volume in two-volume set, which will provide the complete proof of classification of two important classes of geometries, closely related to each other: Petersen and tilde geometries. There is an infinite family of tilde geometries associated with non-split extensions of symplectic groups over a field of two elements. Besides that there are 12 exceptional Petersen and tilde geometries. These exceptional geometries are related to sporadic simple groups, including the famous Monster group, and this volume gives a construction for each of the Petersen and tilde geometries which provides an independent existence proof for the corresponding automorphisms group.

Shoon K. KIM. — **Group theoretical methods and applications to molecules and crystals.** — Un vol. relié,  $18 \times 25$ , de XVI, 492 p. — ISBN 0-521-64062-8. — Prix: £95.00. — Cambridge University Press, Cambridge, 1999.

The book explains the basic aspects of symmetry groups as applied to problems in physics and chemistry using an approach pioneered and developed by the author. The symmetry groups and their representations are worked out explicitly, eliminating the unduly abstract nature of