with applications to coding theory... covers classical and new material on algebraic numbers, transcendence theory, and diophantine approximation, including the recent proof of algebraic independence of the numbers p, e^p, $G(1/4)$... dwells on the connections between the distribution of primes and the Riemann zeta-function... etc.

Géométrie algébrique

C.G. GIBSON. — **Elementary geometry of algebraic curves: an undergraduate introduction.** — Un vol. broché, 15,5×23, de XVI, 250 p. — ISBN 0-521-64641-3. — Prix: £15.95 (relié: £42.50). — Cambridge University Press, Cambridge, 1998.

This is an introduction to plane algebraic curves from a geometric viewpoint. The book is well illustrated, and contains several hundred worked examples and exercises. From the familiar lines and conics of elementary geometry the reader proceeds to general curves in the real affine plane, with excursions to more general fields to illustrate applications, such as number theory. By adding points at infinity the affine plane is extended to the projective plane, yielding a natural setting for curves and providing a flood of illumination into the underlying geometry. A minimal amount of algebra leads to the famous theorem of Bézout, whilst the ideas of linear systems are used to discuss the classical group structure on the cubic.

Juan C. MIGLIORE. — **Introduction to liaison theory and deficiency modules.** — Progress in mathematics, vol. 165. — Un vol. relié, 16×24, de XII, 215 p. — ISBN 0-8176-4027-4. — Prix: SFr. 88.00. — Birkhäuser, Boston, 1998.

This book carefully examines liaison theory and deficiency modules from basic principles, taking a geometric approach to the subject. The focus is on the role of deficiency modules in algebraic geometry, particularly with respect to liaison theory, which is treated here both as a subject in itself and as a tool. The structure and classification of liaison classes are explored, and a variety of ways are described in which liaison has been applied to geometric questions. The classical study of liaison via complete intersections is compared and contrasted with the relatively new study of the subject via arithmetic Gorenstein ideals.

Algèbre linéaire et multilinéaire, théorie des matrices

Albrecht BÖTTCHER, Bernd SILBERMANN. — **Introduction to large truncated Toeplitz matrices.** — Universitext. — Un vol. relié, 16,5×24, de XI, 258 p. — ISBN 0-387-98570-0. — Prix: DM 98.00. — Springer, New York, 1999.

This is a text on the application of functional analysis and operator theory to some concrete asymptotic problems of linear algebra. The book contains results on the stability of projection methods, deals with asymptotic inverses and Moore-Penrose inversion of large Toeplitz matrices, and embarks on the asymptotic behavior of the norms of inverses, the pseudospectra, the singular values, and the eigenvalues of large Toeplitz matrices. The approach is heavily based on Banach algebra techniques and nicely demonstrates the usefulness of C*-algebras and local principles in numerical analysis.

Anneaux et algèbres

J. ELIAS, J.M. GIRAL, R.M. MIRÓ-ROIG, S. ZARZUELA, (Editors). — **Six lectures on commutative algebra.** — Progress in mathematics, vol. 166. — Un vol. relié, 16,5×24, de IX, 398 p. — ISBN 3-7643-5951-X. — Prix: SFr. 108.00. — Birkhäuser Verlag, Basel, 1998.

Interest in commutative algebra has surged over the past decades. In order to survey and highlight recent developments in this rapidly expanding field, the Centre de Recerca Matema-

tica in Bellaterra organized the Summer School on Commutative Algebra 1996 which was held from July 16 to 26, 1996. *Contents:* Luchezar L. Avramov: Infinite free resolutions. — Mark L. Green: Generetic initial ideals. — Craig Huneke: Tight closure, parameter ideals, and geometry. — Peter Schenzel: On the use of local cohomology in algebra and geometry. — Giuseppe Valla: Problems and results on Hilbert functions of graded algebras. — Wolmer V. Vasconcelos: Cohomological degrees of graded modules.

Stephen DONKIN. — **The *q*-Schur algebra.** — London Mathematical Society lecture note series, vol. 253. — Un vol. broché, 15×23, de x, 179 p. — ISBN 0-521-64558-1. — Prix: £24.95. — Cambridge University Press, Cambridge, 1998.

This book focusses on the representation theory of *q*-Schur algebras and connections with the representation theory of Hecke algebras and quantum general linear groups. The aim is to present, from a unified point of view, quantum analogues of certain results known already in the classical case. The approach is largely homological, based on Kempf's vanishing theorem for quantum groups and the quasihereditary structure of the *q*-Schur algebras.

Alberto FACCHINI. — **Module theory: endomorphism rings and direct sum decompositions in some classes of modules.** — Progress in mathematics, vol. 167. — Un vol. relié, 16,5×24, de XIII, 285 p. — ISBN 3-7643-5908-0. — Prix: SFr. 118.00. — Birkhäuser Verlag, Basel, 1998.

The purpose in writing this expository monograph has been three-fold. First, the author set out to present the solution of a problem posed by Wolfgang Krull in 1932. He asked whether what is now called the "Krull-Schmidt theorem" holds for artinian modules. Second, the author presents the answer to a question posed by Warfield in 1975, namely, whether the Krull-Schmidt-Theorem holds for serial modules. The solution to the Warfield problem shows an interesting behavior; in fact, it is a phenomenon so rare in the history of Krull-Schmidt type theorems that its presentation to a wider mathematical audience provides the third incentive for this monograph.

T.Y. LAM. — **Lectures on modules and rings.** — Graduate texts in mathematics, vol. 189. — Un vol. relié, 16×24, de XXI, 557 p. — ISBN 0-387-98428-3. — Prix: DM 119.00. — Springer, New York, 1999.

This book provides a new alternative introduction to the theory of modules and rings that is largely independent of the author's earlier graduate text, *A first course in noncommutative rings* (GTM 131). This text is ideally suited for use in graduate courses and seminars. Focusing on some of the most central topics in modules and rings, the author efficiently introduces the reader to a wealth of basic and useful ideas without the hindrance of heavy machinery or undue abstractions. Topics covered include free, projective, injective, and flat modules, homological and uniform dimensions, finiteness conditions, Ore localization, nonsingular rings and Goldie's theorems, maximal and Martindale rings of quotients, Frobenius and quasi-Frobenius rings, and the classical Morita theory of module category equivalences and dualities.

Paul C. ROBERTS. — **Multiplicities and Chern classes in local algebra.** — Cambridge tracts in mathematics, vol. 133. — Un vol. relié, 16×23,5, de XI, 303 p. — ISBN 0-521-47316-0. — Prix: £37.50. — Cambridge University Press, Cambridge, 1998.

This book gives a detailed account of recent work on relations between commutative algebra and intersection theory, with a particular emphasis on applications of the theory of local Chern characters. This theory is the result of many years of development, having originated in

topology and been introduced in algebraic geometry about thirty years ago. Building on the algebraic form described in *Intersection Theory* by W. Fulton, Paul Roberts presents further developments and important algebraic applications that were not known at the time Fulton's book was written. Some of these applications come from the author's own work.

Askar A. TUGANBAEV. — **Semidistributive modules and rings.** — Mathematics and its applications, vol. 449. — Un vol. relié, 17×25, de x, 352 p. — ISBN 0-7923-5209-2. — Prix: Dfl. 290.00. — Kluwer Academic Publishers, Dordrecht, 1998.

This is the first monograph on the theory of semidistributive modules and rings. It investigates such topics as the relationship between semidistributive modules and flat, projective, injective, multiplication, as well as Bézout modules. The volume concludes with an extensive bibliography. It can be recommended as an introduction to structural and homological ring theory, and will prove useful for postgraduates and researchers specialising in algebra.

Catégories, algèbre homologique, cohomologie des groupes

David M. CLARK, Brian A. DAVEY. — **Natural dualities for the working algebraist.** — Cambrige studies in advanced mathematics, vol. 57. — Un vol. relié, 16×23,5, de XII, 356 p. — ISBN 0-521-45415-8. — Prix: £40.00. — Cambridge University Press, Cambridge, 1998.

The theory of natural dualities, as presented in this text, is broad enough to encompass many known dualities through a rich assortment of substantive theorems yet concrete enough to be used to generate an array of previously undiscovered dualities. This text will serve as a user manual for algebraists, for category theorists and for those who use algebra in their work, particularly mathematicians and computer scientists interested in non-classical logics. As the first text devoted to the theory of natural dualities, it provides an efficient path through a large body of results, examples and applications in this subject which is otherwise available only in scattered research papers.

Théorie des groupes et généralisations

C.M. CAMPBELL, E.F. ROBERTSON, N. RUSKUC, G.C. SMITH, (Editors). — **Groups St Andrews 1997 in Bath, I and II.** — London Mathematical Society lecture note series, vol. 260, 261. — Deux vol. brochés, 15,5×23, de X, 737 p. pour l'ensemble. — ISBN 0-521-65588-9 (vol. 1), 0-521-65576-5 (vol. 2). — Prix: £29.95 (vol. 1), £29.95 (vol. 2). — Cambridge University Press, Cambridge, 1999.

This two-volume book contains selected papers from the international conference "Groups St Andrews 1997 in Bath". The articles are arranged in roughly alphabetical order and cover a wide spectrum of modern group theory. There are articles based on lecture courses given by five main speakers together with refereed survey and research articles contributed by other conference participants. Proceedings of earlier "Groups St Andrews" conferences have had a major impact on the development of group theory and these volumes should be equally important.

Peter J. CAMERON. — **Permutation groups.** — London Mathematical Society student texts, vol. 45. — Un vol. broché, 15×23, de X, 220 p. — ISBN 0-521-65378-9. — Prix: £15.95 (relié: £42.50). — Cambridge University Press, Cambridge, 1999.

Permutation groups are one of the oldest topics in algebra. Their study has recently been revolutionised by new developments, particularly the classification of finite simple groups, but also relations with logic and combinatorics, and importantly, computer algebra systems have