

Catégories, algèbre homologique, cohomologie des groupes

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Stefaan CAENEPEEL. — **Brauer groups, Hopf algebras and Galois theory.** — *K-monographs in mathematics*, vol. 4. — Un vol. relié, 17×24,5, de xvi, 488 p. — ISBN 0-7923-4829-X. — Prix: Dfl. 345.00. — Kluwer Academic Publishers, Dordrecht, 1998.

This volume is devoted to the Brauer group of a commutative ring and related invariants. Part I presents a new self-contained exposition of the Brauer group of a commutative ring. Included is a systematic development of the theory of Grothendieck topologies and étale cohomology, and discussion of topics such as Gabber's theorem and the theory of Taylor's big Brauer group of algebras without a unit. Part II presents a systematic development of the Galois theory of Hopf algebras with special emphasis on the group of Galois objects of a cocommutative Hopf algebra. The Brauer-Long group of a Hopf algebra over a commutative ring is discussed in Part III.

Grigore CALUGAREANU, Peter HAMBURG. — **Exercises in basic ring theory.** — *Kluwer texts in the mathematical sciences*, vol. 20. — Un vol. relié, 16,5×25, de xiv, 198 p. — ISBN 0-7923-4918-0. — Prix: Dfl. 160.00. — Kluwer Academic Publishers, Dordrecht, 1998.

This book contains almost 350 exercises in the basics of ring theory. The problems form the "folklore" of ring theory, and the solutions are given in as much detail as possible. This makes the work ideally suited for self-study. Subjects treated include zero divisors, ring homomorphisms, divisibility in integral domains, division rings, automorphisms, the tensor product, artinian and noetherian rings, socle and radical rings, semisimple rings, polynomial rings, rings of quotients, and rings of continuous functions.

A.W. CHATTERS, C.R. HAJARNAVIS. — **An introductory course in commutative algebra.** — *Oxford science publications.* — Un vol. relié, 16,5×24, de vii, 144 p. — ISBN 0-19-853423-X. — Prix: £30.00. — Clarendon Press, Oxford, 1998.

This book is a concise and carefully written introduction to topics in commutative algebra, with an emphasis on worked examples and applications. The elegant algebraic theory is combined with applications to number theory, problems in classical Greek geometry, and the theory of finite fields, which has important uses in other branches of science. Topics covered include an introduction to rings and Euclidean rings, UFDs and PIDs, factorization of polynomials, fields and field extensions, and algebraic numbers.

Vesselin S. DRENSKY, Antonio GIAMBRUNO, Sudarshan SEHGAL, (Editors). — **Methods in ring theory: proceedings of the Trento conference.** — *Lecture notes in pure and applied mathematics*, vol. 198. — Un vol. broché, 18×25,5, de viii, 314 p. — ISBN 0-8247-0183-6. — Prix: US\$ 150.00. — Marcel Dekker, Inc., New York, 1998.

Extensive in its coverage of the subject, this book examines broad themes from ring theory and its relation with other branches of algebra, including actions of groups and Hopf algebras, modular group algebras, combinatorics of Young diagrams, growth of algebras, groups of units of group rings, structure theory of group algebras, representation theory of groups and algebras, invariant theory, commutative algebra, theory of superalgebras, varieties of Lie algebras, Kac-Moody algebras, structure of varieties in characteristic p ... and more.

Catégories, algèbre homologique, cohomologie des groupes

John L. BELL. — **A primer of infinitesimal analysis.** — Un vol. relié, 15,5×23,5, de xiii, 122 p. — ISBN 0-521-62401-0. — Prix: £19.95. — Cambridge University Press, Cambridge, 1998.

In this book basic calculus together with some of its applications to simple physical problems, are presented through the use of a straightforward, rigorous axiomatically formulated

concept of zero square, or nilpotent infinitesimal – that is, a quantity so small that its square and all higher powers can be set, literally to zero. As we show, the systematic employment of these infinitesimals reduces the differential calculus to simple algebra and at the same time, restores to use the infinitesimal methods figuring in traditional applications of the calculus to physical problems.

Théorie des groupes et généralisation

Robert CURTIS, Robert WILSON, (Editors). — **The Atlas of finite groups: ten years on.** — London Mathematical Society lecture note series, vol. 249. — Un vol. broché, $15,5 \times 23$, de XIII, 293 p. — ISBN 0-521-57587-7. — Prix: £27.95. — Cambridge University Press, Cambridge, 1998.

This book is a proceedings of a conference organised to mark the tenth anniversary of the publication of the *Atlas*, and contains twenty articles by leading experts in the field, covering many aspects of group theory and its applications. There are surveys on recent developments, expository articles, and research papers, as well as a historical article on the development of the *Atlas* project since 1970. The book emphasises recent advances in group theory and applications which have been stimulated by the comprehensive collection of information contained in the *Atlas*, and covers both theoretical and computational aspects of finite groups, modular representation theory, presentations, and applications to the study of surfaces.

Bertram HUPPERT. — **Character theory of finite groups.** — De Gruyter expositions in mathematics, vol. 25. — Un vol. relié, $17,5 \times 24,5$, de VI, 618 p. — ISBN 3-11-015421-8. — Prix: DM 328.00. — Walter de Gruyter, Berlin, 1998.

Based on the classical results by Frobenius, Burnside, and Schur character theory makes a central contribution to the complete classification of finite simple groups. This book serves as a modern introduction to this important part of group theory. In the first sections it develops the theory from the very beginning. Clifford theory is presented in great detail. Other topics covered are Frobenius groups, length of conjugacy classes and character degrees and derived length, groups with a small number of character degrees, etc. A special feature of the book is the inclusion of many examples, mostly of solvable groups, whose character tables in character degrees are determined.

Peter H. KROPHOLLER, Graham A. NIBLO and Ralph STÖHR, (Editors). — **Geometry and cohomology in group theory.** — London Mathematical Society lecture note series, vol. 252. — Un vol. broché, $15,5 \times 23$, de XII, 316 p. — ISBN 0-521-63556-X. — Prix: £24.95. — Cambridge University Press, Cambridge, 1998.

This volume reflects the fruitful connections between group theory and topology. It contains articles on cohomology, representation theory, and geometric and combinatorial group theory. Some of the world's best-known figures in this very active area of mathematics have made contributions, including substantial articles from Ol'shanskii, Mikhajlovskii, Carlson, Benson, Linnell, Wilson and Grigorchuk which will be valuable reference works for some years to come.

Gabriel NAVARRO. — **Characters and blocks of finite groups.** — London Mathematical Society lecture note series, vol. 250. — Un vol. broché, $15,5 \times 23$, de X, 287 p. — ISBN 0-521-59513-4. — Prix: £24.95. — Cambridge University Press, Cambridge, 1998.

This is an accessible and up to date exposition of modular representation theory of finite groups from a character theoretic viewpoint. The early chapters introduce Brauer characters and blocks and develop their basic properties. The next three chapters study and prove Brauer's first, second and third main theorems in turn. These results are then applied to prove a major