

Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 44 (1998)
Heft: 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

Kapitel: Anneaux et algèbres

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interesting exercises in each chapter helps students understand and manipulate the objects of linear algebra. No prerequisites are assumed other than the usual demand for suitable mathematical maturity. This second edition includes a new section on orthogonal projections and minimization problems. The sections on self-adjoint operators, normal operators, and the spectral theorem have been rewritten.

Richard KAYE and Robert WILSON. — **Linear algebra**. — Oxford science publications. — Un vol. relié, 16×24 , de XI, 230 p. — Prix: £35.00. — ISBN 0-19-850238-9. — Oxford University Press, Oxford, 1998.

This book provides a complete account of undergraduate linear algebra suitable for students with no prior exposure to abstract algebra. The approach is rigorous, without being unnecessarily abstract. It covers matrices, vector spaces, bases, and dimensions, inner products, bilinear and sesquilinear forms on vector spaces, linear transformations, eigenvalues, eigenvectors, diagonalization, Jordan normal form. Abstract methods are illustrated with concrete examples throughout, and more detailed examples highlight applications of linear algebra to analysis, geometry, differential equations, relativity, and quantum mechanics.

Richard C. PENNEY. — **Linear algebra: ideas and applications**. — Un vol. relié, $19,5 \times 24$, de XVI, 382 p. — ISBN 0-471-18179-X. — Prix: £24.50. — John Wiley, Chichester, 1998.

This book explores linear algebra using an approach that introduces abstract concepts only as they are needed to understand the computations. No new concept is introduced without first justifying its importance and relationship to something which is already in the readers' sphere of experience, allowing readers to see immediately why each concept is necessary. This approach ensures that the relation between theory and application is clear and immediate. — *Contents*: Systems of Linear Equations. Linear Independence and Dimension. Linear Transformations. Orthogonality. Determinants. Diagonalization and Matrix Representations. Chapter summary. Answers and Hints to Odd-Numbered Exercises.

Anneaux et algèbres

Bruno BUCHBERGER, Franz WINKLER, (Editors). — **Gröbner bases and applications**. — London Mathematical Society lecture note series, vol. 251. — Un vol. broché, 15×23 , de VIII, 552 p. — ISBN 0-521-63298-6. — Prix: £29.95. — Cambridge University Press, Cambridge, 1998.

This book provides a short and easy-to-read account of the theory of Gröbner bases and its applications. It is in two parts, the first consisting of tutorial lectures, beginning with a general introduction. The subject is then developed in a further 12 tutorials, written by leading experts, on the application of Gröbner bases in various fields of mathematics. In the second part are 17 original research papers on Gröbner bases. An appendix contains the English translations of the original German papers of Bruno Buchberger in which Gröbner bases were introduced.

Stefaan CAENEPEEL, Alain VERSCHOREN, (Editors). — **Rings, Hopf algebras, and Brauer groups**. — Proceedings of the fourth week on algebra and algebraic geometry. — Pure and applied mathematics, vol. 197. — Un vol. broché, $18 \times 25,5$, de X, 332 p. — ISBN 0-8247-0153-4. — Prix: US\$175.00. — Marcel Dekker, New York, 1998.

Based on papers presented at a recent international conference on algebra and algebraic geometry, this book presents both survey and research articles featuring new results from the

intersection of algebra and geometry. It furnishes in-depth discussions on Hopf algebras and quantum groups, Brauer groups, localization theory, K-theory, linear algebra over rings, category theory, noncommutative algebraic geometry, and more. Containing some 900 display equations and over 400 bibliographic citations and illustrations, the book is a valuable resource for algebraists, number theorists, ring theorists, and graduate-level students in these disciplines.

S.K. JAIN, S. Tariq RIZVI, (Editors). — **Advances in ring theory.** — Trends in mathematics. — Un vol. relié, 16×24, de vi, 333 p. — ISBN 0-8176-3969-1 (Boston), 3-7643-3969-1 (Basel). — Prix: SFr. 148.00. — Birkhäuser, Boston, 1997.

This research volume provides a collection of invited research papers, many of which were presented at 23rd Ohio State Denison Math Conference held at Denison University, Granville, in May 1996. The articles give the latest developments and trends in classical ring theory. Containing contributions of over 35 well-known mathematicians, the volume examines wide-ranging developments in ring theory and provides a variety of methodologies which will be useful to any researchers in the field.

Gerhard SAAD and Momme Johs THOMSEN, (Editors). — **Nearrings, nearfields and K-loops.** — Proceedings of the Conference on Nearrings and Nearfields, Hamburg, Germany, July 30-August 6, 1995. — Mathematics and its applications, vol. 426. — Un vol. relié, 16,5×24,5, de xiii, 444 p. — ISBN 0-7923-4799-4. — Prix: Dfl. 340.00. — Kluwer Academic Publishers, Dordrecht, 1997.

The volume contains the written version of five invited lectures concerning the development from nearfields to K-loops, non-zerosymmetric nearrings, nearrings of homogeneous functions, the structure of Ω -groups, and ordered nearfields. They are followed by 30 contributed papers reflecting the diversity of the subject of nearrings and related structures with respect to group theory, combinatorics, geometry, topology as well as the purely algebraic structure theory of these algebraic structures.

Catégories, algèbre homologique, cohomologie des groupes

F. William LAWVERE, Stephen H. SCHANUEL. — **Conceptual mathematics: a first introduction to categories.** — Un vol. broché, 17,5×25, de xii, 358 p. — ISBN 0-521-47817-0. — Prix: £24.95 (relié: £65.00). — Cambridge University Press, Cambridge, 1997.

This book is the first book to serve both as a skeleton key to mathematics for the general reader or beginning student and as an introduction to categories for computer scientists, logicians, physicists, linguists, etc. While the ideas and techniques of basic category theory are useful throughout modern mathematics, this book does not presuppose knowledge of specific fields but rather develops elementary categories such as directed graphs and discrete dynamical systems from the beginning. The fundamental ideas are then illuminated in an engaging way by examples in these categories.

Théorie des groupes et généralisation

Jürgen ELSTRODT, Fritz GRUNEWALD, Jens MENNICKE. — **Groups acting on hyperbolic space: harmonic analysis and number theory.** — Springer monographs in mathematics. — Un vol. relié, 16×24, de xv, 524 p. — ISBN 3-540-63745-6. — Prix: DM 149.00. — Springer, Berlin, 1998.

This book deals with a broad range of topics from the theory of automorphic functions on three-dimensional hyperbolic space and its arithmetic, group-theoretic, and geometric