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Kar-Ping SHUM, Earl J. TAFT, Zhe-Xian WAN, (Editors). — **Algebras and combinatorics.** — International Congress, ICAC'97, Hong Kong. — Un vol. broché, 15,5×23,5, de xx, 527 p. — ISBN 981-4012-31-8. — Prix: DM 139.00. — Springer, Singapore, 1999.

From the contents: Semiretracts and the intersection of retracts (J.A. Anderson). — Some inequalities for linear extensions of posets and ideals (T. Bier). — Gröbner-Shirshov bases for relations of a Lie algebra and its enveloping algebra (L. Bokut & P. Malcolmson). — Constructing tree lattices (L.J. Carbone). — Regular-solid varieties of commutative and idempotent groupoids (K. Denecke & P. Jampachon). —  $l_1$ -embeddable bifaced polyhedra (M. Deza & V. Grishukhin). — Nonstandard representation of the Malcev clone of a strong variety (H.J. Hoehnke). — On rings with inverse adjoint semigroups (A.V. Kelarev). — On Hamilton cycles in Cayley graphs of order  $pqr$  (Li Dengxin). — Implicative identities in groups (B.H. Neumann). — Isomorphism theorem, embedding theorem and replacement techniques for primitive rings (K.P. Shum, Xu Yonghua). — On morphisms between partial algebras (H.J. Vogel). — Geometry of matrices revisited (Zhe-Xian Wan). — Semiperfect coalgebras over rings (R. Wisbauer). — ... and other papers.

Manfred STERN. — **Semimodular lattices: theory and applications.** — Encyclopedia of mathematics and its applications, vol. 73. — Un vol. relié, 16×24, de xiv, 370 p. — ISBN 0-521-46105-7. — Prix: £50.00. — Cambridge University Press, Cambridge, 1999.

In this book, the author uses successive generalizations of distributive and modular lattices to outline the development of semimodular lattices from Boolean algebras. He focuses on the theory of semimodularity, its many ramifications, and its applications in discrete mathematics, combinatorics, and algebra. The author surveys and analyzes Garrett Birkhoff's concept of semimodularity and the various related concepts in lattice theory, and he presents theoretical results as well as applications in discrete mathematics, group theory, and universal algebra. Special emphasis is given to the combinatorial aspects of finite semimodular lattices. The book also deals with lattices that are "close" to semimodularity or can be combined with semimodularity, for example, supersolvable, admissible, consistent, strong, and balanced lattices.

## ***Théorie des nombres***

Joseph B. DENCE, Thomas P. DENCE. — **Elements of the theory of numbers.** — Un vol. relié, 16×23,5, de xvii, 517 p. — ISBN 0-12-209130-2. — Prix: US\$59.95. — Academic Press, San Diego, 1999.

This book offers a wealth of topics in two parts. Part I consists of fundamental or core material. It includes primes, congruences, primitive roots, residues, and multiplicative functions. Part II is a collection of more specialized topics, such as a brief look at number fields, recurrence relations, and additive number theory. Throughout the text, the authors offer historical references and introduce topics in their historical context. Over 900 exercises are included.

Jody ESMONDE, M. Ram MURTY. — **Problems in algebraic number theory.** — Graduate texts in mathematics, vol. 190. — Un vol. relié, 16,5×24, de xiv, 314 p. — ISBN 0-387-98617-0. — Prix: DM 98.00. — Springer, New York, 1999.

This book is a collection of about 500 problems in algebraic number theory, all systematically arranged to reveal ideas and concepts in the evolution of the subject. While some problems are easy and straight-forward, others are more difficult. The text is suitable for a first course in algebraic number theory with minimal supervision by the instructor. The exposition facilitates

independent study, and students having taken a basic course in calculus, linear algebra, and abstract algebra will find these problems interesting and challenging. For the same reasons, it is ideal for non-specialists in acquiring a quick introduction to the subject.

Graham EVEREST, Thomas WARD. — **Heights of polynomials and entropy in algebraic dynamics.** — Universitext. — Un vol. relié, 16×24, de XII, 211 p. — ISBN 1-85233-125-9. — Prix: DM 99.00. — Springer, London, 1999.

This book covers an exciting interplay between arithmetic and dynamical systems. The fulcrum is a natural measure of height of a polynomial, known as Mahler's measure. In dynamical systems, this same measure arises as the entropy - a measure of orbit complexity - of a map associated to the polynomial. The book concludes with a study of some primitive "elliptic" dynamical systems. In these, the idea is to show that the elliptic analogues of the original arithmetic constructions arise also as dynamical data. The book provides an ideal introduction to the field for advanced undergraduate and postgraduate students.

Pierre EYMARD, Jean-Pierre LAFON. — **Autour du nombre  $\pi$ .** — Actualités scientifiques et industrielles, vol. 1443. — Un vol. broché, 18×24, de IX, 318 p. — ISBN 2-7056-1443-5. — Prix: FF 148.00. — Hermann, Paris, 1999.

Ce livre est l'occasion pour les étudiants d'université et des classes préparatoires, ainsi que pour les professeurs de mathématiques, de revoir des notions introduites dans les programmes en suivant le fil directeur de ce nombre privilégié. L'ouvrage s'attache plus au sens mathématique qu'à l'aspect anecdotique, mais néanmoins l'ordre historique et sa complexité s'accroît au fil des chapitres. Une centaine d'exercices sont insérés dans le texte, les solutions en sont rassemblées dans un dernier chapitre.

Kálmán GYÖRY, Henryk IWANIEC, Jerzy URBANOWICZ, (Editors). — **Number theory in progress, vol. 1: Diophantine problems and polynomials, vol. 2: Elementary and analytic number theory.** — Proceedings of the International Conference on Number Theory organized by the Stefan Banach International Mathematical Center in honor of the 60<sup>th</sup> birthday of Andrzej Schinzel, Zakopane, Poland, June 30-July 9, 1997. — 2 vol. reliés, 18×24,5, de XVI, VI, 1185 p. — ISBN 3-11-015715-2. — Prix: DM 398.00. — Walter de Gruyter, Berlin, 1999.

These proceedings contain 71 selected and refereed contributions arising from this conference. The material is divided into two volumes according to the conference program: Diophantine problems and polynomials, and elementary and analytic number theory. The first volume covers diophantine equations, diophantine approximation, transcendental number theory and polynomials. The second volume contains papers on sieve methods, automorphic forms, Hecke operators, estimates on exponential and character sums,  $L$ -functions and other topics. The two volume work containing articles from leading experts in the world encompasses an account of the state of research in a wide variety of topics. It will prove invaluable to anyone working in number theory.

Yoshiyuki KITAOKA. — **Arithmetic of quadratic forms.** — Cambridge tracts in mathematics, vol. 106. — Un vol. broché, 15,5×22,5, de X, 270 p. — ISBN 0-521-64996-X. — Prix: £18.95. — Cambridge University Press, Cambridge, 1999.

The aim of this book is to provide an introduction to quadratic forms that builds from basics up to the most recent results. The author is well known for his work in this area, and in this book he covers many aspects of the subject, including lattice theory, Siegel's formula, and some results involving tensor products of positive definite quadratic forms. The reader is required to

have only an elementary knowledge of algebraic number fields, making this book ideal for graduate students and researchers wishing for an insight into quadratic forms.

Sergei KONYAGIN, Igor SHPARLINSKI. — **Character sums with exponential functions and their applications.** — Cambridge tracts in mathematics, vol 136. — Un vol. relié,  $16 \times 23,5$ , de VIII, 163 p. — ISBN 0-521-64263-9. — Prix: £30.00. — Cambridge University Press, Cambridge, 1999.

The theme of this book is the study of the distribution of integer powers modulo a prime number. It provides numerous new, sometimes quite unexpected, links between number theory and computer science as well as other areas of mathematics. Possible applications include (but are not limited to) complexity theory, random number generation, cryptography, and coding theory. The main method discussed is based on bounds of exponential sums. Accordingly, the book contains many estimates of such sums, including new estimates of classical Gaussian sums. It also contains many open questions and proposals for further research.

## *Corps et polynômes*

Bruno DESCHAMPS. — **Problèmes d'arithmétique des corps et de théorie de Galois.** — Collection méthodes. — Un vol. broché,  $15 \times 22$ , de 247 p. — ISBN 2-7056-6379-7. — Prix: FF 180.00. — Hermann, Paris, 1998.

L'ouvrage poursuit un double objectif: présentation des notions classiques: corps finis, polynômes cyclotomiques, symbole de Legendre, etc.; présentation de notions plus sophistiquées: corps pythagoriciens, arithmétique des corps ordonnables, corps gauches, corps hilbertiens, niveau de corps, etc., ainsi que des résultats frappants d'arithmétique tels que l'impossibilité de la quadrature du cercle ou le fait qu'un élément de torsion dans un groupe de Galois absolu est une involution. Ce livre s'adresse principalement aux étudiants qui passent un certificat d'algèbre commutative et/ou d'arithmétique, et plus encore à ceux qui, parmi eux, se destinent à un troisième cycle universitaire.

Paulo RIBENBOIM. — **The theory of classical valuations.** — Springer monographs in mathematics. — Un vol. relié,  $16 \times 24$ , de IX, 403 p. — ISBN 0-387-98525-5. — Prix: DM 129.00. — Springer, New York, 1999.

In the second half of the last century, Kummer introduced "local" methods in his study of Fermat's theorem. Hensel constructed the  $p$ -adic numbers and proved the so-called "Hensel lemma". Kürschak formally introduced the concept of a valuation of a field, and Ostrowski, Hasse, Schmidt, Krull, and others developed the theory. These classical valuations play a role in the study of number fields and algebraic functions of one variable. The present book is one of the first texts in English devoted to the theory of classical valuations. The book is self-contained and up-to-date, and proofs are given in full detail.

Helmut VÖLKLEIN, David HARBATER, Peter MÜLLER, J.G. THOMPSON, (Editors). — **Aspects of Galois theory.** — London Mathematical Society lecture note series, vol. 256. — Un vol. broché,  $15,5 \times 23$ , de VIII, 282 p. — ISBN 0-521-63747-3. — Prix: £27.95. — Cambridge University Press, Cambridge, 1999.

Galois theory is a central part of algebra, dealing with symmetries between solutions of algebraic equations in one variable. This is a collection of papers from the participants of a conference on Galois theory, and brings together articles from some of the world's leading experts in this field. Topics are centred around the inverse Galois problem, comprising the full range of methods and approaches in this area, making this an invaluable resource for all those whose research involves Galois theory.