Ordre,treillis

Anders BJÖRNER, Michel LAS VERGNAS, Bernd STURMFELS, Neil WHITE, Günter M. ZIEGLER. — **Oriented matroids.** — Second edition. — Encyclopedia of mathematics and its applications, vol. 46. — Un vol. broché, 15,5×23,5, de XII, 548 p. — ISBN 0-521-77750-X. — Prix: £30.00. — Cambridge University Press, Cambridge, 1999.

Oriented matroids are a very natural mathematical concept which presents itself in many different guises and which has connections and applications to many different areas. These include discrete and computational geometry, combinatorics, convexity, topology, algebraic geometry, operations research, computer science and theoretical chemistry. This is the first comprehensive, accessible account of the subject. For the second edition, the authors have expanded the bibliography greatly to ensure that it remains comprehensive and up-to-date, and they have also added an appendix surveying research since the work was first published.

David M. BRESSOUD. — **Proofs and confirmations: the story of the alternating sign matrix conjecture.** — Spectrum series. — Un vol. broché, 15,5×23, de XV, 274 p. — ISBN 0-521-66646-5. — Prix: £17.95. — Cambridge University Press, Cambridge, 1999.

This is an introduction to recent developments in algebraic combinatorics and an illustration of how research in mathematics actually progresses. The author recounts the story of the search for and discovery of a proof of a formula conjectured in the early 1980s: the number of $n \times n$ alternating sign matrices, objects that generalize permutation matrices. Although it was soon apparent that the conjecture must be true, the proof was elusive. Researchers became drawn to this problem, making connections to aspects of the invariant theory of Jacobi, Sylvester, Cayley, MacMahon, Schur, and Young, to partitions and plane partitions, to symmetric functions, to hypergeometric and basic hypergeometric series, and, finally, to the six-vertex model of statistical mechanics. All these threads are brought together in Zeilberger's 1995 proof of the original conjecture.

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A.M.W. GLASS. — **Partially ordered groups.** — Series in algebra, vol. 7. — Un vol. relié, 16×23, de XIII, 307 p. — ISBN 9810234937. — Prix: £18.00. — World Scientific, Singapore, 1999.

Recently the theory of partially ordered groups has been used by analysts, algebraists, topologists and model theorists. This book presents the most important results and topics in the theory with proofs that rely on (and interplay with) other areas of mathematics. It concludes with a list of some unsolved problems for the reader to tackle. In stressing both the special techniques of the discipline and the overlap with other areas of pure mathematics, the book should be of interest to a wide audience in diverse areas of mathematics. — *Contents:* Definition and examples. — Basic properties. — Values, primes, and polars. — Abelian and normal-valued lattice-ordered groups. — Archimedean function groups. — Soluble right partially ordered groups and generalisations. — Permutations. — Applications. — Completions. — Varieties of lattice-ordered groups. — Unsolved problems.

Théorie des nombres

V.I. BERNIK, M.M. DODSON. — **Metric Diophantine approximation on manifolds.** — Cambridge tracts in mathematics, vol. 137. — Un vol. relié, de IX, 172 p. — ISBN 0-521-43275-8. — Prix: £27.50. — Cambridge University Press, Cambridge, 1999.

This book is concerned with Diophantine approximation on smooth manifolds embedded in Euclidean space, and its aim is to develop a coherent body of theory comparable with that