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classical theory developed by Bernstein, Cantor, Hausdorff, König and Tarski between 1870 and 1930. Next, the development in the seventies led by Galvin, Hajnal and Silver is characterized. The third part presents the fundamental investigations in pcf theory which have been worked out by Shelah to answer the questions left open in the seventies. This is the first self-contained introduction to cardinal arithmetic which also includes pcf theory.

Analyse combinatoire

R. BALAKRISHNAN, K. RANGANATHAN. — **A textbook of graph theory.** — Universitext. — Un vol. relié, 16,5×24,5, de XI, 227 p. — ISBN 0-387-98859-9. — Prix: DM 109.00. — Springer, New York, 2000.

This book aims to provide a solid background in the basic topics of graph theory. It covers Dirac's theorem on k-connected graphs, Harary-Nash-Williams' theorem on the hamiltonicity of line graphs, Toida-McKee's characterization of Eulerian graphs, the Tutte matrix of a graph, Fournier's proof of Kuratowski's theorem on planar graphs, the proof of the nonhamiltonicity of the Tutte graph on 46 vertices, and a concrete application of triangulated graphs. The book does not presuppose deep knowledge of any branch of mathematics, but requires only the basics of mathematics. It can be used in an advanced undergraduate course or a beginning graduate course in graph theory.

T. BETH, D. JUNGNICKEL, H. LENZ. — **Design theory.** — Second edition. — Encyclopedia of mathematics and its applications, vol. 69 et vol. 78. — 2 vol. reliés, 16×24, de XIX, XIX, 1100 p. (2 vol.). — ISBN 0-521-44432-2 (vol. 1), 0-521-77231-1 (vol. 2). — Prix: £60.00 chaque vol. — Cambridge University Press, Cambridge, 1999.

Since the first edition there has been extensive development of the theory and this book has been thoroughly rewritten and extended during that time. In particular, the growing importance of discrete mathematics to many parts of engineering and science have made designs a useful tool for applications, and this fact has been acknowledged here with the inclusion of an additional chapter on applications. It is suitable for advanced courses and as a reference work, not only for researchers in discrete mathematics or finite algebra, but also for those working in computer and communications engineering and other mathematically oriented disciplines. Exercises are included throughout, and the book concludes with an extensive and updated bibliography of well over 1800 items.

Louis J. BILLERA, Anders BJÖRNER, Curtis GREENE, Rodica E. SIMION, Richard P. STANLEY, (Editors). — **New perspectives in algebraic combinatorics.** — Mathematical Sciences Research Institute Publications, vol. 38. — Un vol. relié, 16,5×24, de IX, 345 p. — ISBN 0-521-77087-4. — Prix: £32.50. — Cambridge University Press, Cambridge, 1999.

The rich combinatorial problems arising from the study of various algebraic structures are the subject of this book, which represents work done or presented at seminars during the 1996-97 program on combinatorics at the Mathematical Sciences Research Institute. It contains contributions on matroid bundles, combinatorial representation theory, lattice points in polyhedra, bilinear forms, combinatorial differential topology and geometry, Macdonald polynomials and geometry, enumeration of matchings, the generalized Baues problem, and Littlewood-Richardson semigroups.

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.

Ordre, treillis

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