Théorie des ensembles

Michael HUTH, Mark RYAN. — **Logic in computer science: modelling and reasoning about systems.** — Un vol. broché, 17×25, de XVIII, 387 p. — ISBN 0-521-65602-8. — Prix: £60.00. — Cambridge University Press, Cambridge, 2000.

Recent years have seen the development of powerful tools for verifying hardware and software systems. Students need a basic formal training that allows them to gain sufficient proficiency in using logic-based verification methods. This book addresses these needs by providing a sound basis in logic and an introduction to the logical frameworks used in modelling, specifying and verifying computer systems. It provides a simple and clear presentation, covering propositional and predicate logic and some specialized logics used for reasoning about the correctness of computer systems. The authors introduce a carefully chosen core of essential terminology: further technicalities are introduced only where they are required by the applications.

W. Hugh WOODIN. — **The axiom of determinacy, forcing axioms, and the nonstationary ideal.** — De Gruyter series in logic and its applications, vol. 1. — Un vol. relié, 18×24,5, de VI, 934 p. — ISBN 3-11-015708-X. — Prix: DM 298.00. — Walter de Gruyter, Berlin, 1999.

This volume presents a detailed account of a new method for obtaining models of set theory, using models of determinacy. The primary application is the identification of a canonical model of set theory in which the continuum hypothesis is false. Such models have been sought for in the 35 years since Cohen's discovery of the method of forcing. The new model belongs to a large class of similarly obtained models. The basic machinery for the analysis of these models is developed in some detail through the study of the canonical model of several of the related models. A number of applications in combinatorial set theory are discussed. This is a research monograph, the results being presented have not been published elsewhere.

Théorie des ensembles

András HAJNAL, Peter HAMBURGER. — **Set theory.** — Translated by Attila Máté. — London Mathematical Society student texts, vol. 48. — Un vol. broché, 15×23, de VIII, 316 p. — ISBN 0-521-59667-X. — Prix: £16.95 (relié: £45.00). — Cambridge University Press, Cambridge, 1999.

This is a classic introduction to set theory in three segments. The first part gives a general introduction to set theory, suitable for undergraduates; complete proofs are given and no background in logic is required. Exercises are included, and the more difficult ones are supplied with hints. An appendix to the first part gives a more formal foundation to axiomatic set theory, supplementing the intuitive introduction given in the first part. The final part gives an introduction to modern tools of combinatorial set theory. This part contains enough material for a graduate course of one or two semesters. The subjects discussed include stationary sets, (Δ-systems, partition relations, set mappings, measurable and real-valued measurable cardinals. Two sections give an introduction to modern results on exponentiation of singular cardinals, and certain deeper aspects of the topics are developed in advanced problems.

M. HOLZ, K. STEFFENS, E. WEITZ. — **Introduction to cardinal arithmetic.** — Birkhäuser advanced texts. Basler Lehrbücher. — Un vol. relié, 17×24, de VI, 304 p. — ISBN 3-7643-6124-7. — Prix: SFr. 88.00. — Birkhäuser, Basel, 1999.

This book is an introduction to modern cardinal arithmetic in the frame of the axioms of Zermelo-Fraenkel set theory together with the axiom of choice. A first part describes the

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.