

Topologie générale

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Thomas HULL, (Editor). — **Origami³: third International Meeting of Origami Science, Mathematics, and Education.** — Un vol. broché, 15,5 × 23, de xi, 353 p. — ISBN 156881-181-0. — Prix: US\$ 49.00. — A. K. Peters, Natick, Massachusetts, 2002.

Going beyond folding instructions, Origami³ takes a unique and scholarly look at the implications and applications of this art. This collection demonstrates the diversity of interests that origami inspires, with papers discussing the theoretical and mathematical foundations of paper folding, applicable origami design techniques, and the use of origami as a teaching tool for mathematics and language. From the table of contents: computer tools and algorithms for Origami tessellation design; paper folding constructions in Euclidean geometry: an exercise in thrift; the application of Origami science to map and atlas design; fold paper and enjoy math; Origamics; Origami and the adult ESL learner.

Peter McMULLEN, Egon SCHULTE. — **Abstract regular polytopes.** — Encyclopedia of mathematics and its applications, vol. 92. — Un vol. relié, 16,5 × 24, de xiii, 551 p. — ISBN 0-521-81496-0. — Prix: £ 75.00. — Cambridge University Press, Cambridge, 2002.

Abstract regular polytopes stand at the end of more than two millennia of geometrical research, which began with regular polygons and polyhedra. They are highly symmetric combinatorial structures with distinctive geometric, algebraic, or topological properties, in many ways more fascinating than traditional regular polytopes and tessellations. The rapid development of the subject in the past twenty years has resulted in a rich new theory, featuring an attractive interplay of mathematical areas, including geometry, combinatorics, group theory, and topology. Abstract regular polytopes and their groups provide an appealing new approach to understanding geometric and combinatorial symmetry.

Chris PRITCHARD, (Editor). — **The changing shape of geometry: celebrating a century of geometry and geometry teaching.** — Edited on behalf of the Mathematical Association. — Spectrum series. — Un vol. broché, 17,5 × 24,5, de xvii, 541 p. — ISBN 0-521-53162-4. — Prix: £ 65.00. — Cambridge University Press, Cambridge, 2003.

Celebrating a century of geometry and geometry teaching, this book will give the reader an enjoyable insight into all things geometrical. There is a wealth of popular articles including sections on Pythagoras, the golden ratio and recreational geometry. Historical items, drawn principally from the *Mathematical Gazette*, are authored by mathematicians such as G.H. Hardy, Rouse Ball, Thomas Heath and Bertrand Russell as well as some more recent expositors. Thirty “Desert Island Theorems” from distinguished mathematicians and educationalists give light to some surprising and beautiful results. Contributors include H.S.M. Coxeter, Michael Atiyah, Tom Apostol, Solomon Golomb, Keith Devlin, Nobel Laureate Leon Lederman, Carlo Séquin, Simon Singh, Christopher Zeeman and Pulitzer Prizewinner Douglas Hofstadter. The book also features the wonderful Eyeball Theorems of Peruvian geometer and web designer, Antonio Gutierrez.

Topologie générale

Miroslav HUŠEK, Jan VAN MILL, (Editors). — **Recent progress in general topology II.** — Un vol. relié, 17,5 × 24,5, de xii, 638 p. — ISBN 0-444-50980-1. — Prix: € 150.00. — Elsevier, Amsterdam, 2002.

The book presents surveys describing recent developments in most of the primary subfields of general topology and its applications to algebra and analysis during the last decade. It follows freely the previous edition (North-Holland, 1992), *Open Problems in Topology* (North-Holland, 1990) and *Handbook of Set-Theoretic Topology* (North-Holland, 1984). The book was prepared

in connection with the Prague Topological Symposium, held in 2001. During the last 10 years the focus in general topology changed and therefore the selection of topics differs slightly from those chosen in 1992. The following areas experienced significant developments: topological groups, function spaces, dimension theory, hyperspaces, selections, geometric topology (including infinite-dimensional topology and the geometry of Banach spaces). Of course, not every important topic could be included in this book. Except surveys, the book contains several historical essays written by eminent topologists.

Topologie algébrique

Hans-Joachim BAUES. — **The homotopy category of simply connected 4-manifolds.** — London Mathematical Society lecture note series, vol. 297. — Un vol. broché, 15×23 , de x, 298 p. — ISBN 0-521-53103-9. — Prix: £ 24.95. — Cambridge University Press, Cambridge, 2003.

The homotopy type of a closed simply connected 4-manifold is determined by the intersection form. The homotopy classes of maps between two such manifolds, however, do not coincide with the algebraic morphisms between intersection forms. The problem therefore arises of computing the homotopy classes of maps algebraically and determining the law of composition for such maps. This problem is solved in the book by introducing new algebraic models of a 4-manifold.

Jiří MATOUŠEK. — **Using the Borsuk-Ulam theorem: lectures on topological methods in combinatorics and geometry.** — Universitext. — Un vol. broché, $15,5 \times 23,5$, de xii, 196 p. — ISBN 3-540-00362-2. — Prix: € 39.95. — Springer, Berlin, 2003.

A number of important results in combinatorics, discrete geometry, and theoretical computer science have been proved by surprising applications of algebraic topology. While the results are quite famous, their proofs and the underlying methods are not so widely understood. This textbook explains elementary but powerful topological methods based on the Borsuk-Ulam theorem and its generalizations. It covers many substantial results, sometimes with proofs simpler than those in the original papers. At the same time, it assumes no prior knowledge of algebraic topology, and all the required topological notions and results are gradually introduced. History, additional results, and references are presented in separate sections.

Topologie des variétés, analyse globale et analyse des variétés

Gerhard BURDE, Heiner ZIESCHANG. — **Knots.** — Second revised and extended edition. — De Gruyter studies in mathematics, vol. 5. — Un vol. relié, $18 \times 24,5$, de xii, 559 p. — ISBN 3-11-017005-1. — Prix: € 69.16. — Walter de Gruyter, Berlin, 2003.

This book is an introduction to classical knot theory. Topics covered include: different constructions of knots, knot diagrams, knot groups, fibred knots, characterisation of torus knots, prime decomposition of knots, cyclic coverings and Alexander polynomials and modules together with the free differential calculus, braids, branched coverings and knots, Montesinos links, representations of knot groups, surgery of 3-manifolds and knots. Knot theory has expanded enormously since the first edition of this book published in 1985. A special feature of the second edition is the introduction to two new constructions of knot invariants, namely the Jones and homfly polynomials. The book contains many figures and some tables of invariants of knots and an extensive bibliography. This comprehensive account is an indispensable reference source for anyone interested in both classical and modern knot theory.