

Géométrie

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lower-dimensional structures, optimal transport problems with free Dirichlet regions, higher order variational problems, symmetrization in the BV framework. This volume contains contributions by 12 of the 16 speakers invited to deliver lectures in the workshop.

Géométrie

Pascal DUPONT. — **Introduction à la géométrie : géométrie linéaire et géométrie différentielle.** — Bibliothèque des universités – Mathématiques. — Un vol. broché, 18×25 , de 691 p. — ISBN 2-8041-4072-5. — Prix : € 64.95. — De Boeck Université, Bruxelles, 2002.

Cet ouvrage présente trois importantes structures géométriques : espaces affines, espaces euclidiens, espaces projectifs et quatre types d'êtres géométriques fondamentaux : quadriques, courbes, surfaces, arcs riemanniens. Les trois premiers chapitres abordent les sous-espaces, les transformations préservant la structure, l'introduction des coordonnées. Le chapitre quatre étudie les quadriques d'un point de vue affine, puis euclidien, puis projectif. Une attention particulière est accordée aux coniques aussi qu'aux quadriques de l'espace tridimensionnel. Dans les trois derniers chapitres, le principal outil de travail est le calcul différentiel. Courbes et surfaces sont étudiées d'abord pour leurs propriétés affines et ensuite pour leurs propriétés métriques. Le dernier chapitre n'introduit pas vraiment la géométrie riemannienne, mais familiarise le lecteur à son langage et à son mode de pensée. Chaque notion est illustrée de multiples exemples et contre-exemples. Plus de 600 exercices et problèmes, la plupart avec solutions sont proposés.

Werner FENCHEL, Jakob NIELSEN. — **Discontinuous groups of isometries in the hyperbolic plane.** — Edited by ASMUS L. SCHMIDT. — De Gruyter studies in mathematics, vol. 29. — Un vol. relié, $18 \times 24,5$, de XXI, 364 p. — ISBN 3-11-017526-6. — Prix : € 78.50. — Walter de Gruyter, Berlin, 2003.

This is an introductory textbook on isometry groups of the hyperbolic plane. Interest in such groups dates back more than 120 years. Examples appear in number theory (modular groups and triangle groups), the theory of elliptic functions, and the theory of linear differential equations in the complex domain (giving rise to the alternative name Fuchsian groups). The current book is based on what became known as the famous Fenchel-Nielsen manuscript. Jakob Nielsen (1890-1959) started this project well before World War II, and his interest arose through his deep investigations on the topology of Riemann surfaces and from the fact that the fundamental group of a surface of genus greater than one is represented by such a discontinuous group. Werner Fenchel (1905-1988) joined the project later and overtook much of the preparation of the manuscript. The present book is special because it avoids the use of matrices to represent Moebius maps.

Greg N. FREDERICKSON. — **Dissections: plane and fancy.** — Un vol. broché, $17,5 \times 23,5$, de XI, 310 p. — ISBN 0-521-52582-9 (relié : 0-521-57197-9). — Prix : £ 16.95 (relié : £ 32.50). — Cambridge University Press, Cambridge, 2002.

Can you cut an octagon into 5 pieces and rearrange them into a square? How about turning a star into a pentagon? These are just two of the many challenges of geometric dissections, the mathematical art of cutting figures into pieces that can be rearranged to form other figures, using as few pieces as possible. This book shows you many ingenious ways to solve these problems and the beautiful constructions you can create. Through the ages, geometric dissections have fascinated puzzle fans and great mathematicians alike. Here you will find dissections known to Plato alongside exciting new discoveries. The author poses puzzles for you to solve, but this is much more than a puzzle book. He explains solution methods carefully: new and old types of slides, strips, steps, tessellations, and exploration of star and polygon structures. You need only a basic knowledge of high school geometry.

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