

Calcul des variations

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from the lectures presented during the conference. The first paper gives an account of the life of Alexits and his work in function theory (by F. Móricz and K. Tandori). It is followed by three invited papers (by Bl. Sendov, H. Triebel, S. Yano). These as well as the subsequent contributed papers were thoroughly refereed according to the strict standards of international periodicals. All contributed papers are original works not published elsewhere.

Vern PAULSEN. — **Completely bounded maps and operator algebras.** — Cambridge studies in advanced mathematics, vol. 78. — Un vol. relié, 16×24, de XII, 300 p. — ISBN 0-521-81669-6. — Prix: £ 47.50. — Cambridge University Press, Cambridge, 2003.

In this book the reader is provided with a tour of the principal results and ideas in the theories of completely positive maps, completely bounded maps, dilation theory, operator spaces, and operator algebras, together with some of their main applications. The author assumes only that the reader has a basic background in functional analysis and C^* -algebras, and the presentation is self-contained and paced appropriately for graduate students new to the subject. The book could be used as a text for a course or for independent reading; with this in mind, many exercises are included. Experts will also want this book for their library, since the author presents new and simpler proofs of some of the major results in the area, and many applications are also included.

Théorie des opérateurs

Sergio ALBEVERIO, Michael DEMUTH, Elmar SCHROHE, Bert-Wolfgang SCHULZE, (Editors). — **Parabolicity, Volterra calculus, and conical singularities.** — A volume of *Advances in partial differential equations*. — Operator theory: advances and applications, vol. 138. — Un vol. relié, 17×24, de IX, 358 p. — ISBN 3-7643-6906-X. — Prix: SFr. 160.00. — Birkhäuser, Basel, 2003.

This volume highlights the analysis on noncompact and singular manifolds within the framework of the cone calculus with asymptotics. — *Contents*: Thomas Krainer: Volterra families of pseudodifferential operators. — Thomas Krainer: The calculus of Volterra Mellin pseudodifferential operators with operator-valued symbols. — Thomas Krainer and Bert-Wolfgang Schulze: On the inverse of parabolic systems of partial differential equations of general form in an infinite space-time cylinder. — Ingo Witt: On the factorization of meromorphic Mellin symbols. — David Kapanadze, Bert-Wolfgang Schulze, and Ingo Witt: Coordinate invariance of the cone algebra with asymptotics.

Calcul des variations

Gianni DAL MASO, Franco TOMARELLI, (Editors). — **Variational methods for discontinuous structures.** — International Workshop at Villa Erba (Cernobio), Italy, July 2001. — Progress in nonlinear differential equations and their applications, vol. 51. — Un vol. relié, 16×24, de X, 185 p. — ISBN 3-7643-6913-2. — Birkhäuser, Basel, 2002.

This volume contains the proceedings of the International Workshop on Variational Methods for Discontinuous Structures, held at Villa Erba Antica (Cernobio), on the Lago di Como, July 4-6, 2001. Some of the talks were devoted to differential or variational modelling of image segmentation, occlusion and textures synthesizing in image analysis, variational description of micro-magnetic materials, dimension reduction and structured deformations in elasticity and plasticity, phase transitions, irrigation and drainage, evolution of crystalline shapes. In most cases theoretical and numerical analysis of these models were provided. Other talks were dedicated to specific problems of the calculus of variations: variational theory of weak or

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.