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pseudospectra, numerical ranges and their limiting sets; spotlights Moore-Penrose inverses and regularization of matrices and operators; surveys finite sections of Toeplitz operators, ... and more!

## ***Théorie des opérateurs***

Ravi P. AGARWAL, Maria MEEHAN, Donal O'REGAN. — **Fixed point theory and applications.** — Cambridge tracts in mathematics, vol. 141. — Un vol. relié,  $16 \times 23,5$ , de x, 170 p. — ISBN 0-521-80250-4. — Prix: £37.50. — Cambridge University Press, Cambridge, 2001.

This book provides a clear exposition of the flourishing field of fixed point theory. Starting from the basics of Banach's contraction theorem, most of the main results and techniques are developed: fixed point results are established for several classes of maps and the three main approaches to establishing continuation principles are presented. The theory is applied to many areas of current interest in analysis. Topological considerations play a crucial role, including a final chapter on the relationship with degree theory. The very extensive bibliography and close to 100 exercises mean that it can be used both as text and as a comprehensive reference work, currently the only one of its type.

D. ALPAY, V. VINNIKOV, (Editors). — **Operator theory, system theory and related topics: the Moshe Livšic anniversary volume.** — Operator theory advances and applications, vol. 123. — Un vol. relié,  $17,5 \times 24$ , de x, 567 p. — ISBN 3-7643-6523-4. — Prix: SFr. 228.00. — Birkhäuser, Basel, 2001.

The present selection of refereed papers is dedicated to Moshe Livšic on the occasion of his eightieth anniversary. It covers many areas of operator theory and its applications, reflecting the breadth and the profound impact of his work. In particular, some of his most recent ideas on 2D-systems are presented. Other contributions cover important avenues of modern operator theory in such fields as interpolation theory (also in the so-called nonstationary setting), direct and inverse problems for the string equation and for nonselfadjoint differential operators, operator models and function theory. The volume will appeal to a wide audience of pure and applied mathematicians, electrical engineers and theoretical physicists.

H. BART, I. GOHBERG, A.C.M. RAN, (Editors). — **Operator theory and analysis: the M.A. Kaashoek Anniversary Volume.** — Workshop in Amsterdam, November 12-14, 1997. — Operator theory, vol. 122. — Un vol. relié,  $17,5 \times 24$ , de xxxix, 433 p. — ISBN 3-7643-6499-8. — Prix: SFr. 198.00. — Birkhäuser, Basel, 2001.

The workshop focused on areas in mathematical and functional analysis where the ideas and results of M.A. Kaashoek played an important role. The papers of this volume cover a wide range of topics centered around factorization of matrix valued functions, interpolation theory, and spectral theory. Other papers deal with canonical systems of differential equations, operators in indefinite inner product spaces, and the effect of small delays on stability and control of partial differential equations. The book starts with biographical material and a list of publications of M.A. Kaashoek.

J. ELSCHNER, I. GOHBERG, B. SILBERMANN, (Editors). — **Problems and methods in mathematical physics: the Siegfried Prössdorf Memorial Volume.** — Proceedings of the 11<sup>th</sup> Conference on Problems and Methods in Mathematical Physics (TMP), Chemnitz (Germany), March 25-28, 1999. — Operator theory: advances and applications, vol. 121. — Un vol. relié,  $17,5 \times 24$ , de viii, 523 p. — ISBN 3-7643-6477-7. — Prix: SFr. 198.00. — Birkhäuser, Basel, 2001.

The main part of the book comprises original research papers. The topics range from integral and pseudodifferential equations, boundary value problems, operator theory, boundary element

and wavelet methods, approximation theory and inverse problems to various concrete problems and applications in physics and engineering, and reflect Prössdorf's broad spectrum of research activities. The volume also contains articles describing the life and achievements of Siegfried Prössdorf and includes a list of his publications. The book is addressed to a wide audience in the mathematical and engineering sciences.

Juan GIL, Daniel GRIESER, Matthias LESCH, (Editors). — **Approaches to singular analysis: a volume of advances in partial differential equations.** — Operator theory advances and applications, vol. 125. — Un vol. relié, 17,5×24, de vi, 256 p. — ISBN 3-7643-6518-8. — Prix: SFr. 128.00. — Birkhäuser, Basel, 2001.

The purpose of this publication is to present, in one book, various approaches to analytic problems that arise in the context of singular spaces. It is based on the Workshop "Approaches to Singular Analysis" which was held at the Humboldt University Berlin in April 1999. The book contains articles by workshop participants as well as invited contributions. The former are expanded versions of talks given at the workshop; they offer introductions to various pseudodifferential calculi and discussions of relations between them. In addition, a limited number of invited papers from mathematicians who have made significant contributions to this field are included.

## *Calcul des variations*

John CAGNOL, Michael P. POLIS, Jean-Paul ZOLÉSIO, (Editors). — **Shape optimization and optimal design: proceedings of the IFIP Conference.** — Lecture notes in pure and applied mathematics, vol. 216. — Un vol. broché, 18×26, de 442 p. — ISBN 0-8247-0556-4. — Prix: US\$ 185.00. — Marcel Dekker, New York, 2001.

Based on selected papers presented at the 19<sup>th</sup> International Federation for Information Processing WG 7.2 and 7.4 Conference, held recently in Cambridge, England, and written by more than 25 specialists in various disciplines, this book illustrates boundary controllability of thermoelastic plates... shape derivative computations using a combinatorial strength approach to differential and intrinsic tangential differential calculus... Eulerian derivatives for noncylindrical functionals... shape gradients in singular geometries, such as cracks... effective quasioptimal control methods for nonstationary Navier-Stokes equations... sharp functional techniques in steady viscous flows... novel analyses of oxygen sensor models... and more.

## *Géométrie*

Roger FENN. — **Geometry.** — Springer undergraduate mathematics series. — Un vol. broché, 17×23,5, de xii, 313 p. — ISBN 1-85233-058-9. — Prix: DM 59.00. — Springer, London, 2000.

Geometry is probably the most accessible branch of mathematics, and can provide an easy route to understanding some of the more complex ideas that mathematics can present. This book is intended to introduce readers to the major geometrical topics taught at undergraduate level, in a manner that is both accessible and rigorous. The author uses world measurement as a synonym for geometry — hence the importance of numbers, coordinates and their manipulation — and has included over 300 exercises, with answers to most of them. The text includes such topics as: Coordinates. — Euclidean plane geometry. — Complex numbers. — Solid geometry. — Conics and quadratic surfaces. — Spherical geometry. — Quaternions.