

# Analyse fonctionnelle et théorie des opérateurs

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which has been developed and used in fields as diverse as special functions, differential equations, probability theory, representation theory, measure theory, Hopf algebras, and quantum groups. Other timely topics include the harmonic analysis of analytic functions, ergodic theory and wavelets.

Sundaram THANGAVELU. — **Harmonic analysis on the Heisenberg group.** — Progress in mathematics, vol. 159. — Un vol. relié, 16×24, de XII, 191 p. — ISBN 0-8176-4050-9. — Prix: SFr. 88.00. — Birkhäuser, Boston, 1998.

This monograph deals with various aspects of harmonic analysis on the Heisenberg group, which is the most commutative among the non-commutative Lie groups, and hence gives the greatest opportunity for generalizing the remarkable results of Euclidean harmonic analysis. The aim of this text is to demonstrate how the standard results of Abelian harmonic analysis take shape in the non-Abelian setup of the Heisenberg group. Several results in this monograph appear for the first time in book form, and some theorems have not appeared elsewhere. Topics covered include the Plancherel and Paley-Wiener theorems, spectral theory of the sublaplacian, Wiener-Tauberian theorems, Bochner-Riesz means and multipliers for the Fourier transform.

### *Equations intégrales*

Andrei D. POLYANIN and Alexander V. MANZHIROV. — **Handbook of integral equations.** — Un vol. relié, 19×26, de XXVII, 787 p. — ISBN 0-8493-2876-4. — Prix: DM 228.00. — CRC Press, Boca Raton, Florida, distributed by Springer-Verlag, Berlin, 1998.

This book contains more than 2100 integral equations and their solutions and describes new exact solutions to linear and nonlinear equations. Integral equations are considered in relation to various fields of mechanics and theoretical physics, including elasticity, plasticity, hydrodynamics, heat and mass transfer, and electrodynamics. It outlines exact, approximate analytical, and numerical methods for solving linear and nonlinear integral equations and describes symbolic methods, singular integral equations, and translational integral equations. The book includes supplements, featuring properties of elementary and special functions, tables of indefinite and definite integrals, and tables of Laplace, Mellin, and other transforms.

### *Analyse fonctionnelle et théorie des opérateurs*

Sheldon AXLER, John E. MCCARTHY, Donald SARASON. — **Holomorphic spaces.** — Mathematical Sciences Research Institute publications, 33. — Un vol. relié, 16,5×24, de IX, 476 p. — ISBN 0-521-63193-9. — Prix: £35.00. — Cambridge University Press, Cambridge, 1998

This a collection of expository articles arising from MSRI's Fall 1995 program on holomorphic spaces. The opening article gives an overview of several aspects of the subject. The remaining articles, while more specialized, are nevertheless designed to be accessible to the non expert. A range of topics is addressed: Bergman spaces, Hankel operators in various guises, the Dirichlet space, subnormal operators, operators models, interpolation problems, systems theory. The concluding article describes an approach to certain commuting families of nonselfadjoint operators in which operator theory is linked with algebraic geometry.

David E. EVANS, Yasuyuki KAWAHIGASHI. — **Quantum symmetries on operator algebras.** — Oxford mathematical monographs. — Un vol. relié, 16×24, de XXV, 829 p. — ISBN 0-19-851175-2. — Prix: £ 105.00. — Oxford, Oxford University Press, 1998.

This is one of the first books to look at the remarkable connections recently made with knot theory, 3-manifolds, quantum groups and integrable systems in statistical mechanics and

conformal field theory. Focus is particularly put on the combinatorial-algebraic aspects, from the perspective of operator algebras. It will bring the reader to the frontline of research with the minimum of prerequisites from the classical theory.

Ram P. KANWAL. — **Generalized functions: theory and technique.** — Second edition. — Un vol. relié, 19×26, de IX, 462 p. — ISBN 0-8176-4006-1. — Prix: SFr. 168.00. — Birkhäuser, Boston, 1998.

This book contains both the theory and applications of generalized functions with a significant feature being the quantity and variety of applications. Definitions and theorems are stated precisely, but rigor is minimized in favor of comprehension of techniques. This edition has been strengthened in many ways. Various new concepts have been added. Some of the material from the first edition has been reorganized to improve the logical flow of ideas. And the set of examples has been expanded considerably to make more of the ideas concrete in the reader's eye.

Albrecht PIETSCH and Jörg WENZEL. — **Orthonormal systems and Banach space geometry.** — Encyclopedia of mathematics and its applications, vol 70. — Un vol. relié, 16×24, de IX, 553 p. — ISBN 0-521-62462-2. — Prix: £55.00. — Cambridge University Press, Cambridge, 1998.

The book describes the interplay between orthonormal expansions and Banach space geometry. Using harmonic analysis as a starting platform, classical inequalities and special functions are used to study orthonormal systems leading to an understanding of the advantages of systems consisting of characters on compact Abelian groups. Probabilistic concepts such as random variables and martingales are employed and Ramsey's theorem is used to study the theory of super-reflexivity. The text yields a detailed insight into concepts including type and co-type of Banach spaces, B-convexity, super-reflexivity, the vector valued Fourier transform and the unconditionality property for martingale differences (UMD).

L.A. SAKHNOVICH. — **Interpolation theory and its applications.** — Mathematics and its applications, vol. 428. — Un vol. relié, 17×24,5, de XVIII, 197 p. — ISBN 0-7923-4830-3. — Prix: Dfl. 185.00. — Kluwer Academic Publishers, Dordrecht, 1997.

This volume is devoted to the use of the method of operator identities for investigating interpolation and expansion problems. A general interpolation problem comprising both classical and new elements is formulated. The solution of an abstract form of the Potapov inequality enables the description of the set of solutions of the general interpolation problem. Connections between the solved interpolation problem and important problems of analysis, occurring in, for example, spectral theory, nonlinear integrable equations, and generalised stationary processes are then considered.

## *Géométrie*

Izu VAISMAN. — **Analytical geometry.** — Series on university mathematics, vol. 8. — Un vol. relié, 16,5×22,5, de X, 284 p. — ISBN 981-02-3158-X. — Prix: £33.00. — Singapore, World Scientific, 1997.

The author proposes an alternative way of teaching either a first or a second course in geometry, which would develop analytical affine and Euclidean geometry, also including geometric transformations, and give an introduction to projective geometry. Furthermore, in this book the author also intends to advocate a return to the geometric patterns, teach students to perceive geometry as a world in itself, and develop their geometric intuition.