

# Analyse de Fourier, analyse harmonique abstraite

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differential equations, and connections have been made to other topics such as numerical methods, cellular automata and mathematical physics. This volume is comprised of state-of-the-art articles from almost all the leading workers in this important and rapidly developing area, making it a necessary resource for all researchers interested in discrete integrable systems or related subjects.

### *Approximations et développements en série*

N.K. GOVIL, R.N. MOHAPATRA, Z. NASHED, A. SHARMA, J. SZABADOS, (Editors). — **Approximation theory: in memory of A.K. Varma.** — Pure and applied mathematics, vol. 212. — Un vol. relié, 16×23,5, de xxii, 517 p. — ISBN 0-8247-0185-2. — Prix: US\$195.00. — Marcel Dekker, Inc., New York, 1998.

This work honors A.K. Varma's indelible contributions to the field of approximation theory with a collection of over 30 carefully selected papers by 45 internationally distinguished mathematicians, reflecting his lifelong passion for investigating subjects such as interpolation by polynomials and splines, quadrature formulae, order of pointwise and uniform approximation of finitely differentiable functions by polynomials, and Bernstein and Markov type inequalities in  $L^p$  and uniform metrics.

### *Analyse de Fourier, analyse harmonique abstraite*

Christian BLATTER. — **Wavelets: a primer.** — Un vol. relié, 16×23,5, de x, 202 p. — ISBN 1-56881-095-4. — Prix: US\$32.00. — A.K. Peters, Natick, 1998.

The wavelet transform, with its many applications, has become a major new mathematical technique. It has stimulated research unparalleled since the invention of the Fast Fourier Transform (FFT) and opened new avenues of application in signal processing, image compression, radiology, cardiology, and many other areas. This book grew out of a short course for mathematics students at the ETH in Zürich; it provides a solid, yet accessible, mathematical foundation for those interested in learning about wavelets and pursuing the broad range of applications for which the wavelet transform has proved successful.

C. GASQUET, P. WITOMSKI. — **Fourier analysis and applications: filtering, numerical computation, wavelets.** — Translated by R. Ryan. — Texts in applied mathematics, vol. 30. — Un vol. relié, 16×24, de xviii, 442 p. — ISBN 0-387-98485-2. — Prix: DM 98.00. — Springer, New York, 1999.

The object of this text, which focuses on Fourier analysis, signal analysis, and filters, is twofold. On the one hand, it conveys to the mathematician a rigorous presentation illustrated with important practical applications of the theory, including a discussion of the Fast Fourier Transform. On the other hand it imparts to the physicist and engineer a body of theory in which the well-known formulae find their justification. There is a systematic development of fundamental concepts, such as the Lebesgue integration and theory of distributions, which allows one to establish precise relations among several domains: Fourier transform and convolution; filtering and sampling; and time-frequency analysis (Gabor transforms and wavelets).

Abdul J. JERRI. — **The Gibbs phenomenon in Fourier analysis, splines and wavelet approximations.** — Mathematics and its applications, vol. 446. — Un vol. relié, 16,5×24,5, de xxvii, 336 p. — ISBN 0-7923-5109-6. — Prix: Dfl. 300.00. — Kluwer Academic Publishers, Dordrecht, 1998.

This is the first book dedicated to covering the basic elements of the Gibbs phenomenon as it appears in various applications where functions with jump discontinuities are represented. It

is presented with detailed analysis and illustrations combined with historical information. The author covers the appearance of the Gibbs phenomenon in Fourier analysis, orthogonal expansions, integral transforms, splines and wavelet approximations. Methods of reducing, or filtering out, such phenomena that cover all the above function representations are also addressed. The book includes a thorough bibliography of some 350 references.

### *Transformations intégrales, calcul opérationnel*

M.W. WONG. — **Weyl transforms.** — Universitext. — Un vol. relié,  $16 \times 24$ , de VIII, 158 p. — ISBN 0-387-98414-3. — Prix: DM 89.00. — Springer, New York, 1998.

The functional analytic properties of Weyl transforms as bounded linear operators on  $L^2(\mathbf{R}^n)$  are studied in terms of the symbols of the transforms. The boundedness, the compactness, the spectrum, and the functional calculus of the Weyl transform are proved in detail. New results and techniques on the boundedness and compactness of the Weyl transforms in terms of the symbols in  $L^r(\mathbf{R}^{2n})$  and in terms of the Wigner transforms of Hermite functions are given. Background materials are given in adequate detail to enable a graduate student to proceed rapidly from the very basics to the frontier of research in an area of operator theory.

### *Equations intégrales*

Donal O'REGAN and Maria MEEHAN. — **Existence theory for nonlinear integral and integrodifferential equations.** — Mathematics and its applications, vol. 445. — Un vol. relié,  $16,5 \times 24,5$ , de 218 p. — ISBN 0-7923-5089-8. — Prix: Dfl. 190.00. — Kluwer Academic Publishers, Dordrecht, 1998.

This book presents an up-to-date account of many topics of current interest in the theory of nonlinear ordinary differential equations. They include fixed point theory, periodic problems, lower and upper surfaces, positive and semi-positive problems, singular equations, limit circle problems, finite and infinite interval problems, and impulsive differential equations. In addition many important applications are presented to complement the theory.

### *Analyse fonctionnelle et théorie des opérateurs*

Ernst ALBRECHT, Martin MATHIEU, (Editors). — **Banach algebras '97.** — Proceedings of the 13<sup>th</sup> International Conference on Banach Algebras, held at the Heinrich Fabri Institute of the University of Tübingen in Blaubeuren, July 20 — August 3, 1997. — Un vol. relié,  $18 \times 24,5$ , de IX, 566 p. — ISBN 3-11-015466-8. — Prix: DM 328.00. — Walter de Gruyter, 1998.

This volume contains refereed research articles on Banach algebras and related areas by speakers at the 13<sup>th</sup> International Conference on Banach algebras 1997. Particular topics include algebraic structure of Banach algebras, dual Banach algebras and invariant subspaces, automatic continuity, local spectral theory, algebras of analytic functions, amenability and Banach homology as well as applications in harmonic analysis. Some papers discuss the interplay with Fredholm theory, differential and pseudo-differential operators, several variable spectral theory or nonassociative normed algebras. This book is of interest to researchers and graduate students in functional analysis, algebra, and topology.

Sergey BAGDASAROV. — **Chebyshev splines and Kolmogorov inequalities.** — Operator theory: advances and applications, vol. 105. — Un vol. relié,  $17,5 \times 24$ , de XIII, 205 p. — ISBN 3-7643-5984-6. — Prix: SFr. 148.00. — Birkhäuser Verlag, Basel, 1998.

This monograph describes advances in the theory of extremal problems in classes of functions defined by a majorizing modulus of continuity  $\omega$ . In particular, an extensive account