James C. ROBINSON. — **Infinite–dimensional dynamical systems: from basic concepts to actual calculations: an introduction to dissipative parabolic PDEs and the theory of global attractors.** — Cambridge texts in applied mathematics. — Un vol. broché, 15×23, de XVII, 461 p. — ISBN 0-521-63564-0. — Prix: £24.95. — Cambridge University Press, Cambridge, 2001.

This book develops the theory of global attractors for a class of parabolic PDEs that includes reaction-diffusion equations and the Navier-Stokes equations, two examples that are treated in detail. A lengthy chapter on Sobolev spaces provides the framework that allows a rigorous treatment of existence and uniqueness of solutions for both linear time-independent problems (Poisson's equation) and the nonlinear evolution equations, that generate the infinite-dimensional dynamical systems of the title. Attention then turns to the global attractor, a finite-dimensional subset of the infinite-dimensional phase space that determines the asymptotic dynamics. In particular, the concluding chapters investigate in what sense the dynamics restricted to the attractor are themselves "finite-dimensional".

Équations aux différences finies, équations fonctionnelles

Martin BOHNER, Allan PETERSON. — **Dynamic equations on time scales: an introduction with applications.** — Un vol. relié, 18,5×26, de X, 358 p. — ISBN 0-8176-4225-0. — Prix: SFr. 108.00. — Birkhäuser, Boston, 2001.

The study of dynamic equations on a measure chain (time scale) goes back to its founder S. Hilger (1988), and is a new area of still fairly theoretical exploration in mathematics. Motivating the subject is the notion that dynamic equations on measure chains can build bridges between continuous and discrete mathematics. Further, the study of measure chain theory has led to several important applications, e.g., in the study of insect population models, neural networks, heat transfer, and epidemic models. Parts of the book may be used in a special topics seminar at the senior undergraduate or beginning graduate levels. Finally, the work may serve as a reference to stimulate the development of new kinds of equations with potentially new applications.

Analyse de Fourier, analyse harmonique abstraite

Lokenath DEBNATH, (Editor). — **Wavelet transforms and time-frequency signal analysis.** — Un vol. relié, 16,5×24, de XX, 423 p. — ISBN 0-8176-4104-1. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2001.

This volume is designed as a new source for modern topics dealing with wavelets, wavelet transforms, time-frequency signal analysis and other applications for future development of this new, important and useful subject for mathematics, science and engineering. Its main features include: A broad coverage of recent material on wavelet analysis, and time-frequency signal analysis and other applications that are not usually covered in other recent reference books. The material presented in this volume brings together a rich variety of ideas that blend most aspects of the subject mentioned above. This volume brings together a detailed account of major recent developments in wavelets, wavelet transforms, time-frequency signal analysis.

Transformations intégrales, calcul opérationnel

R.B. PARIS, D. KAMINSKI. — **Asymptotics and Mellin-Barnes integrals.** — Encyclopedia of mathematics and its applications, vol. 85. — Un vol. relié, 16×24, de XVI, 422 p. — ISBN 0-521-79001-8. — Prix: £65.00. — Cambridge University Press, Cambridge, 2001.

This work is a comprehensive account of the properties of Mellin-Barnes integrals and their application to problems involving special functions, primarily the determination of asymptotic

expansions. An account of the basic analytical properties of Mellin-Barnes integrals and Mellin transforms and their use in applications ranging from number theory to differential and difference equations is followed by a systematic analysis of the asymptotics of Mellin-Barnes representations of many important special functions, including hypergeometric, Bessel and parabolic cylinder functions. An account of the recent developments in the understanding of the Stokes phenomenon and of hyperasymptotics in the setting of Mellin-Barnes integrals ensues. The book concludes with the application of ideas set forth in the earlier parts of the book to higher-dimensional Laplace-type integrals and sophisticated treatments of Euler-Jacobi series, the Riemann zeta function and the Pearcey integral.

Analyse fonctionnelle

Erik M. ALFSEN, Frederic W. SCHULTZ. — **State spaces of operator algebras: basic theory, orientations and C*-products.** — Mathematics: theory & applications. — Un vol. relié, 16×24, de XII, 350 p. — ISBN 0-8176-3890-3. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2001.

This self-contained work, focusing on the theory of state spaces of C*-algebras and von Neumann algebras, explains how the oriented space geometrically determines the algebra. Key feature include: first and only work devoted to state spaces of operator algebras – contains much material not available in existing books; prerequisites are standard graduate courses in real and complex variables, measure theory, and functional analysis; complete proofs of basic results on operator algebras presented so that no previous knowledge in the field is needed; detailed introduction develops basic tools used throughout the text; numerous chapter remarks on advanced topics of independent interest with references to the literature, or discussion of applications to physics.

Ron BLEI. — **Analysis in integer and fractional dimensions.** — Cambridge studies in advanced mathematics, vol. 71. — Un vol. relié, $16 \times 23,5$, de XIX, 556 p. — ISBN 0-521-65084-4. — Prix: £65.00. — Cambridge University Press, Cambridge, 2001.

The book's focus is on "dimension" as a basic counter of degrees of freedom. This focus leads to precise relations between combinatorial measurement and various indices originating from the classical inequalities of Khintchin, Littlewood and Grothendieck. The basic concepts of fractional Cartesian products and combinatorial dimension are introduced and linked to scales calibrated by harmonic-analytic and stochastic measurements. Topics include the (two-dimensional) Grothendieck inequality and its extensions to higher dimensions, multidimensional measure theory, stochastic models of Brownian motion, degrees of randomness and applications to random walks, and Fréchet measures in stochastic analysis.

A. K. KATSARAS, W. H. SCHIKHOF, L. VAN HAMME, (Editors). — ***p*-adic functional analysis: proceedings of the sixth international conference.** — Lecture notes in pure and applied mathematics, vol. 222. — Un vol. broché, $17,5 \times 25,5$, de VIII, 322 p. — ISBN 0-8247-0611-0. — Prix: US$ 150.00. — Marcel Dekker, New York, 2001.

This volume collects lectures presented at the Sixth International Conference held at the University of Ioannina, Greece, on p-adic functional analysis with applications in the fields of physics, differential equations, number theory, probability theory, dynamical systems, and algebraic number fields – discussing the communication relation $AB - BA = I$ and its central role in quantum mechanics. The book addresses orthogonal and Schauder bases and approximation of p-adic linear forms, describes compact perturbations of p-adic operators, vector measures, probabilistic measures, and nonarchimedean inner products... considers Banach-Stone theorems... reviews ultrametric Hopf algebras and embedding in Lebesgue spaces... and more.