introductory chapters, and an effort is made to present complete proofs of all theorems. Included are examples, illustrations, bibliographical references at the end of each chapter, and a comprehensive index. *Topics covered include:* Generalized solutions. Non-divergence equations. The cross-sections of Monge-Ampère. Convex solutions of $D^2u = 1$ in $\mathbf{R}^n$. Regularity theory. $W^{2,p}$ estimates.

Anatoly N. KOCHUBEI. — **Pseudo-differential equations and stochastics over non-Archimedean fields**. — Pure and applied mathematics, vol. 244. — Un vol. relié, $16 \times 23,5$, de XI, 316 p. — ISBN 0-8247-0655-2. — Prix: US\$165.00. — Marcel Dekker, New York, 2001.

This state-of-the-art reference provides comprehensive coverage of the most recent developments in the theory of non-Archimedean pseudo-differential equations and its applications to stochastic and mathematical physics – offering current methods of construction for stochastic processes in the field of p-adic numbers and related structures. The book examines elliptic and hyperbolic equations associated with p-adic quadratic forms... Green functions and their asymptotics... the Cauchy problem for the p-adic Schrödinger equation... spectral theory... Fourier transform, fractional differentiation operators, and analogs of the symmetric stable process... and more.

Victor P. PIKULIN, Stanislav I. POHOZAEV. — **Equations in mathematical physics: a practical course.** — Translated from the Russian by Andrei Iacob. — Un vol. relié, 17×24, de VIII, 206 p. — ISBN 3-7643-6501-3. — Prix: SFr. 148.00. — Birkhäuser, Basel, 2001.

Many physical processes in fields such as mechanics, thermodynamics, electricity, magnetism or optics are described by means of partial differential equations. The aim of the present book is to demonstrate the basic methods for solving the classical linear problems in mathematical physics of elliptic, parabolic and hyperbolic type. In particular, the methods of conformal mappings, Fourier analysis and Green's functions are considered, as well as the perturbation method and integral transformation method, among others. Every chapter contains concrete examples with a detailed analysis of their solution. The book is intended as a textbook for students in mathematical physics, but will also serve as a handbook for scientists and engineers.

Systèmes dynamiques et théorie ergodique

Jürgen MOSER. — **Stable and random motions in dynamical systems.** — With a new foreword by Philip J. Holmes. — Hermann Weyl Lectures, The Institute for Advanced Study. — Princeton landmarks in mathematics. — Un vol. broché, $15,5 \times 23,5$, de XII, 198 p. — ISBN 0-691-08910-8. — Prix: US\$14.95. — Princeton University Press, Princeton, 2001.

For centuries, astronomers have been interested in the motions of the planets and in methods to calculate their orbits. Since Newton, mathematicians have been fascinated by the related N-body problem. They seek to find solutions to the equations of motion for N masspoints interacting with an inverse-square-law force and to determine whether there are quasi-periodic orbits or not. Attempts to answer such questions have led to the techniques of nonlinear dynamics and chaos theory. In this classic work, the author presents a succinct account of two pillars of the theory: stable and chaotic behavior. He discusses cases in which N-body motions are stable, covering topics such as Hamiltonian systems, the (Moser) twist theorem, and aspects of Kolmogorov-Arnold-Moser theory. He then explores chaotic orbits, exemplified in a restricted three-body problem, and describes the existence and importance of homoclinic points. This book is indispensable for mathematicians, physicists, and astronomers interested in the dynamics of few- and many-body systems and in fundamental ideas and methods for their analysis.

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