Systèmes dynamiques et théorie ergodique

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Denis SERRE. — **Systems of conservation laws 2: geometric structures, oscillations, and initial-boundary value problems.** — Translated by I.N. Sneddon. — Un vol. relié, 18×25,5, de XI, 269 p. — ISBN 0-521-63330-3. — Prix: £45.00. — Cambridge University Press, Cambridge, 2000.

This book sets up the foundations of the modern theory of conservation laws describing the physical models and mathematical methods, leading to the Glimm scheme. The author studies in detail viscous approximations, paying special attention to viscous profiles of shock waves. The maximum principle is considered from the viewpoint of numerical schemes and also in terms of viscous approximation, whose convergence is studied using the technique of compensated compactness. Small waves are studied using geometrical optics methods. Finally, the initial-boundary problem is considered in depth. Throughout the presentation is reasonably self-contained, with large numbers of exercises and full discussion of all the ideas.

Systèmes dynamiques et théorie ergodique

S. MOROSAWA, Y. NISHIMURA, M. TANIGUCHI, T. UEDA. — **Holomorphic dynamics.** — Cambridge studies in advanced mathematics, vol. 66. — Un vol. relié, 16×23,5, de XI, 338 p. — ISBN 0-521-66258-3. — Prix: £45.00. — Cambridge University Press, Cambridge, 2000.

This is a comprehensive introduction to holomorphic dynamics, that is the dynamics induced by the iteration of various analytic maps in complex number spaces. This has been the focus of much attention in recent years, with, for example, the discovery of the Mandelbrot set, and work on chaotic behavior of quadratic maps. The treatment is mathematically unified, emphasizing the substantial role played by classical complex analysis in understanding holomorphic dynamics as well as giving an up-to-date coverage of the modern theory. The authors cover entire functions, Kleinian groups and polynomial automorphisms of several complex variables such as complex Hénon maps, as well as the case of rational functions.

Analyse de Fourier, analyse harmonique abstraite

George BACHMAN, Lawrence NARICI, Edward BECKENSTEIN. — **Fourier and wavelet analysis.** — Universitext. — Un vol. relié, 16,5×24,5, de IX, 505 p. — ISBN 0-387-98899-8. — Prix: DM 119.00. — Springer, New York, 2000.

This book is intended as an introduction to classical Fourier analysis, Fourier series, and the Fourier transform. The topics are developed slowly for the reader who has never seen them before, with a preference for clarity of exposition in stating and proving results. More recent developments, such as the discrete and fast Fourier transforms and wavelets, are covered in the last two chapters. The first three, short, chapters present requisite background material, and these could be read as a short course in functional analysis. The text includes many historical notes to place the material in a cultural and mathematical context.

J.C. VAN DEN BERG. — **Wavelets in physics.** — Un vol. relié, 18,5×25,5 de XXII, 453 p. — Prix: £60.00. — ISBN 0-521-59311-5. — Cambridge University Press, Cambridge, 1999.

This book surveys the application of the recently developed technique of the wavelet transform to a wide range of physical fields, including astrophysics, turbulence, meteorology, plasma physics, atomic and solid state physics, multifractals occurring in physics, biophysics and mathematical physics. New wavelets are being invented regularly, and the researcher can now pick and choose from a steadily growing stock. Each type of wavelet supplies its own kind of "mathematical microscope", the magnification of which can be adjusted at will. The book shows how this new tool can be used not only to refine and speed up previously existing methods, but also to explore new territory.