Ricardo ESTRADA, Ram P. KANWAL. — **A distributional approach to asymptotics: theory and applications**. — Second edition. — Birkhäuser Advanced Texts. — Un vol. relié, 24×16, de XIV, 451 p. — ISBN 0-8176-4142-4. — Prix: SFr. 158.00. — Birkhäuser, Boston, 2002.

This book is a modern introduction to asymptotic analysis intended not only for mathematicians, but for physicists, engineers, and graduate students as well. Written by two of the leading experts in the field, the text provides readers with a firm grasp of mathematical theory, and at the same time demonstrates applications in areas such as differential equations, quantum mechanics, noncommutative geometry, and number theory. — *Key features of this significantly expanded and revised second edition:* addition of a new chapter and many new sections; wide range of topics covered, including the Cesàro behavior of distributions and their connections to asymptotic analysis, the study of time-domain asymptotics, and the use of series of Dirac delta functions to solve boundary value problems; novel approach detailing the interplay between underlying theories of asymptotic analysis and generalized fuctions; extensive examples and exercises at the end of each chapter; comprehensive bibliography and index.

Peter D. LAX. — **Functional analysis.** — Pure and applied mathematics. — Un vol. relié, 16×24, de XIX, 580 p. — ISBN 0-471-55604-1.— Prix: £66.95. — J. Wiley, Chichester, 2002.

This book combines theories and applications to demonstrate how the functional analytic point of view helps to clarify and solve mathematical problems. The first part describes Banach spaces and their duals, weak sequential and weak topologies, the Krein-Milman theorem, the Gelfand theory of commutative Banach algebras, compact operators, and invariant subspaces. The second part presents trace formulas, the Fredholm determinant and its generalizations, the spectral resolution and representation of selfadjoint operators, the theory of one-parameter semi-groups, scattering theory, and many other topics. The appendices give a functional analytic proof of the Riesz-Kakutani representation theorem and outline compactly the theory of distributions and some of its applications. Numerous exercises and an extensive bibliography are given.

Eugeny SMIRNOV. — **Hausdorff spectra in functional analysis**. — Springer monographs in mathematics. — Un vol. relié, 16×24, de VIII, 209 p. — ISBN 1-85233-571-8. — Prix: €89.95. — Springer, London, 2002.

Self-contained and collating for the first time material that has until now only been published in journals – often in Russian – this book will be of interest to functional analysts, especially those with interests in topological vector spaces, and to algebraists concerned with category theory. The text has been revised and expanded in this English translation of the Russian original, including more background material and fewer references to material in journals.

Théorie des opérateurs

Albrecht BÖTTCHER, Yuri I. KARLOVICH, Ilya M. SPITKOVSKY. — **Convolution operators and factorization of almost periodic matrix functions**. — Operator theory , vol. 131. — Un vol. relié, 17×24, de XI, 462 p. — ISBN 3-7643-6672-9. — Prix: SFr. 168.00. — Birkhäuser, Basel, 2002.

This book is an introduction to convolution operators with matrix-valued almost periodic or semi-almost periodic symbols. The basic tools for the treatment of the operators are Wiener-Hopf factorization and almost periodic factorization. These factorizations are systematically investigated and explicitly constructed for interesting concrete classes of matrix functions. The material covered by the book ranges from classical results through a first comprehensive presentation of the core of the theory of almost periodic factorization up to the latest achievements, such as the construction of factorizations by means of the Portuguese transformation and the solution of corona theorems.

Albrecht Böttcher, Israel Gohberg, Peter Junghanns, (Editors). — **Toeplitz matrices and singular integral equations: the Bernd Silbermann anniversary volume**. — Operator theory: advances and applications, vol. 135. — Un vol. relié, 17×24, de VI, 328 p. — ISBN 3-7643-6877-2. — Prix: SFr. 169.00. — Birkhäuser, Basel, 2002.

This volume, dedicated to Bernd Silbermann on his sixtieth birthday, collects research articles on Toeplitz matrices and singular integral equations written by leading area experts. The subjects of the contributions include Banach algebraic methods, Toeplitz determinants and random matrix theory, Fredholm theory and numerical analysis for singular integral equations, and efficient algorithms for linear systems with structured matrices, and reflect Bernd Silbermann's broad spectrum of research interests. The volume also contains a biographical essay and a list of publications.

Allan M. Krall. — **Hilbert space, boundary value problems and orthogonal polynomials**. — Operator theory: advances and applications, vol. 133. — Un vol. relié, 17×24, de XIV, 352 p. — ISBN 3-7643-6701-6. — Prix: SFr. 192.00. — Birkhäuser, Basel, 2002.

This monograph consists of three parts: the abstract theory of Hilbert spaces, leading up to the spectral theory of unbounded self-adjoined operators; the application to linear Hamiltonian systems, giving the details of the spectral resolution; further applications such as to orthogonal polynomials and Sobolev differential operators. Written in textbook style this up-to-date volume is geared towards graduate and postgraduate students and researchers interested in boundary value problems of linear differential equations or in orthogonal polynomials.

M. W. Wong. — **Wavelet transforms and localization operators**. — Operator theory: advances and applications, vol. 136. — Un vol. relié, 17×24, de VI, 156 p. — ISBN 3-7643-6789-X. — Prix: SFr. 144.00. — Birkhäuser, Basel, 2002.

The focus of this book is on the Schatten-von Neumann properties and the product formulas of localization operators defined in terms of infinite-dimensional and square-integrable representations of locally compact and Hausdorff groups. Wavelet transforms, which are the building blocks of localization operators, are also studied in their own right. Daubechies operators on the Weyl-Heisenberg group, localization operators on the affine group, and wavelet multipliers on the Euclidean space are investigated in detail. The study is carried out in the perspective of pseudo-differential operators, quantization and signal analysis. Although the emphasis is put on locally compact and Hausdorff groups, results in the context of homogeneous spaces are given in order to unify the various localization operators into a single theory. Several new spectral results on pseudo-differential operators in the setting of localization operators are presented for the first time.

Calcul des variations

K.-H. Hoffmann, I. Lasiecka, G. Leugering, J. Sprekels, F. Tröltzsch, (Editors). — **Optimal control of complex structures: International Conference in Oberwolfach, June 4-10, 2000**. — International Series of Numerical Mathematics, vol. 139. — Un vol. relié, 17×24, de VIII, 278 p. — ISBN 3-7643-6682-6. — Prix: SFr. 152.00. — Birkhäuser, Basel, 2002.

Interest in the area of control of systems defined by partial differential equations has increased strongly in recent years. A major reason has been the requirement of these systems for sensible continuum mechanical modeling and optimization or control techniques which account for typical physical phenomena. Particular examples of problems on which substantial progress