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Kapitel: Equations aux dérivées partielles

operators and extensions of the operational method of Da Prato and Grisvard. It introduces the semigroups of weak type generated by multivalued linear operators for the first time and includes classical results pertaining to linear operators, evolution equations, and interpolation theory. It presents recent results on the regularity of semigroups generated by second order degenerate parabolic operators in various function spaces.

Arkadii Kh. GEILIG, Alexander N. CHURILOV. — **Stability and oscillations of nonlinear pulse-modulated systems.** — Un vol. relié, 16×24, de XVI, 362 p. — ISBN 0-8176-3987-X. — Prix : SFr. 128.00. — Birkhäuser, Boston, 1998.

The mathematical methods for studying stability and oscillations in control systems with various types of pulse modulation (pulse-width, pulse-frequency, combined and phases in different modifications) are treated comprehensively in this new book. The original approaches developed by the authors are of particular interest. They include the averaging methods which enable the reader to extend pulse-modulated systems, to absolute stability theory and the fixed-point approach for study of forced oscillations.

Michael I. GIL'. — **Stability of finite and infinite dimensional systems.** — The Kluwer international series in engineering and computer science. — Un vol. relié, 16×24, de XVIII, 354 p. — ISBN 0-7923-8221-8. — Prix : Dfl. 330.00. — Kluwer Academic Publishers, Boston, 1998.

The aim of the book is to provide new tools for specialists in control system theory, stability theory of ordinary and partial differential equations, and differential-delay equations. This is the first book that gives a systematic exposition of the approach to stability analysis which is based on estimates for matrix-valued and operator-valued functions, allowing us to investigate various classes of finite and infinite dimensional systems from the unified viewpoint. This book contains solutions to the problems connected with the Aizerman and generalized Aizerman conjectures and presents fundamental results by A.Yu. Levin for the stability of nonautonomous systems having variable real characteristic roots.

A.A. MARTYNYUK. — **Stability by Liapunov's matrix function method with applications.** — Pure and applied mathematics, vol. 214. — Un vol. relié, 16×23,5, de X, 276 p. — ISBN 0-8247-0191-7. — Prix : US$ 150.00. — Marcel Dekker, Inc., New York, 1998.

The book models the stability of actual objects using ordinary differential equations, singularly perturbed systems, and high-dimensional stochastic systems... tests the multistability of motion in large-scale systems using matrix-valued functions...details the classic direct Liapunov method and its variants... compares scalar, vector, and matrix-valued Liapunov functions...proposes a new generalization of the matrix-valued auxiliary function... formulates the criteria of motion stability using special matrices... extends auxiliary functions to make the direct Liapunov method more powerful... etc.

Equations aux dérivées partielles

Joachim ESCHER, Gieri SIMONETT, (Editors). — **Topics in nonlinear analysis: the Herbert Amann anniversary volume.** — Progress in nonlinear differential equations and their applications, vol. 35. — Un vol. relié, 16×24, de IX, 744 p. — ISBN 3-7643-6016-X. — Prix : SFr. 188.00. — Birkhäuser Verlag, Basel, 1999.

Herbert Amann's work is distinguished and marked by great lucidity and deep mathematical understanding. The present collection of 31 research papers reflects his interest and lasting

influence in various fields of analysis such as degree and fixed point theory, nonlinear elliptic boundary value problems, abstract evolutions equations, quasilinear parabolic systems, fluid dynamics, Fourier analysis, and the theory of function spaces. Contributors are A. Ambrosetti, S. Angenent, W. Arendt, M. Badiale, T. Bartsch, Ph. Bénilan, Ph. Clément, E. Fasangova, M. Fila, D.de Figueiredo, K. Gripenberg, G. Da Prato, E.N. Dancer, D. Daners, E. DiBenedetto, D.J. Diller, J. Escher, G.P. Galdi, Y. Giga, T. Hagen, D.D. Hai, M. Hieber, H. Hofer, C. Imbusch, K. Ito, P. Krejči, S.-O. Londen, A. Lunardi, T. Miyakawa, P. Quittner, J. Prüss, V.V. Pukhnachov, P.J. Rabier, P.H. Rabinowitz, M. Renardy, B. Scarpellini, B.J. Schmitt, K. Schmitt, G. Simonett, H. Sohr, V.A. Solonnikov, J. Sprekels, M. Struwe, H. Triebel, W. von Wahl, M. Wiegner, K. Wysocki, E. Zehnder and S. Zheng.

Bengt FORNBERG. — **A practical guide to pseudospectral methods.** — Cambridge monographs on applied and computational mathematics, vol. 1. — Un vol. broché, 15.5×23, de X, 231 p. — ISBN 0-521-64564-6. — Prix: £40.00. — Cambridge University Press, Cambridge, 1999.

During the last two decades, pseudospectral methods have emerged as alternatives to better known computational procedures, such as finite difference and finite element methods of numerical solution. These areas include computational fluid dynamics, wave motion, and weather forecasting. This book explains how, when and why this pseudospectral approach works. In order to make the subject accessible to students as well as researchers and engineers, the subject is presented using illustrations, examples, heuristic explanations, and algorithms rather than rigorous theoretical arguments. A key theme of the book is to establish and exploit the close connection that exists between pseudospectral and finite difference methods.

Paul KOOSIS. — **Introduction to H_p spaces.** — Second edition, corrected and augmented. — With two appendices by V.P. HAVIN. — Cambridge tracts in mathematics, vol. 115. — Un vol. relié, 15.5×23.5, de XIV, 287 p. — ISBN 0-521-45521-9. — Prix: £45.00. — Cambridge University Press, Cambridge, 1999.

The first edition of this well-known book was noted for the clear and accessible exposition of the basic theory of Hardy spaces from the concrete point of view (in the unit circle and the half plane). The intention was to give the reader, assumed to know basic real analysis, a secure foothold in the basic theory, and the ability to understand its applications in other areas. For this reason, emphasis is placed on methods and the ideas behind them rather than on the accumulation of as many results as possible. Computations are done in detail and there are many diagrams. The second edition retains that intention, but the coverage has been extended. The author has included two appendices by V.P. Havin, on Peter Jones' interpolation formula, and Havin's own proof of the weak sequential completeness of $L_1/H_1(0)$.

Systèmes dynamiques et théorie ergodique

Renato FERES. — **Dynamical systems and semisimple groups: an introduction.** — Cambridge tracts in mathematics, vol. 126. — Un vol. relié, 16×23.5, de XVI, 245 p. — ISBN 0-521-59162-7. — Prix: £35.00. — Cambridge University Press, Cambridge, 1998.

This book comprises a systematic, self-contained introduction to the Margulis-Zimmer theory and provides an entry into current research. The author develops in a detailed and self contained way the main results on Lie groups, Lie algebras, and semisimple groups, including basic facts normally covered in first courses on manifolds and Lie groups plus topics such as integration of infinitesimal actions of Lie groups. He then derives the basic structure theorems