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Kapitel: Equations aux différences finies, équations fonctionnelles

text is divided into two parts: continuous systems using differential equations and discrete dynamical systems. Differential equations are used to model examples taken from various topics such as mechanical systems, interacting species, electronic circuits, chemical reactions, and meteorology. The section on continuous systems ends with a study of limit cycles and the second part of Hilbert's 16th problem. Part II deals with both real and complex dynamical systems.

Alistair I. MEES, (Editor). — **Nonlinear dynamics and statistics.** — Un vol. relié, 16×24, de XXII, 473 p. — ISBN 0-8176-4163-7. — Prix: SFr. 168.00. — Birkhäuser, Boston, 2001.

This book brings together different approaches to nonlinear time series analysis in order to begin a synthesis that will lead to better theory and practice in all the related areas. This book describes the state of the art in nonlinear dynamical reconstruction theory. The chapters are based upon a workshop held at the Isaac Newton Institute, Cambridge University, UK, in late 1998. The book's chapters present theory and methods topics by leading researchers in applied and theoretical nonlinear dynamics, statistics, probability, and systems theory. Professionals, researchers, and advanced graduates in nonlinear dynamics, probability, optimization, and systems theory will find the book a useful resource and guide to current developments in the subject.

Anthony N. MICHEL, Kaining WANG, Bo HU. — **Qualitative theory of dynamical systems: the role of stability preserving mappings.** — Second edition, revised and expanded. — Pure and applied mathematics, vol. 239. — Un vol. relié, 15,5×23,5, de XV, 707 p. — ISBN 0-8247-0526-2. — Prix: US$ 195.00. — Marcel Dekker, New York, 2001.

This reference/text illuminates the most important results of the Lyapunov and Lagrange stability theory for a general class of dynamical systems by developing topics in a metric space independently of equations, inequalities, or inclusions; applies the general theory to specific classes of equations; and presents new and expanded data on the stability analysis of hybrid dynamical systems and dynamical systems with discontinuous dynamics. The second edition includes detailed case studies of single- and multirate digital feedback control systems... pulse width-modulated feedback control systems... variable structure systems with applications to recurrent artificial neural networks... linear systems under state saturation constraints... switched systems... systems with impulsive dynamics... and more.

Equations aux différences finies, équations fonctionnelles

David L. JAGERMAN. — **Difference equations with applications to queues.** — Pure and applied mathematics, vol. 233. — Un vol. relié, 16×23,5, de XI, 246 p. — ISBN 0-8247-0388-X. — Prix: US$ 135.00. — Marcel Dekker, New York, 2000.

This monograph presents a theory of difference and functional equations with continuous argument based on a generalization of the Riemann integral introduced by N. E. Nörlund, allowing differentiation with respect to the independent variable and permitting greater flexibility in constructing solutions and approximations, solving the nonlinear first order equation by a variety of methods, including an adaptation of the Lie-Gröbner theory. *Difference Equations with Applications to Queues* shows that the homogeneous sum admits exponential eigenfunctions with explicitly defined eigenvalues; illustrates the value of representations for practical computations; studies the linear difference equation with polynomial coefficients; obtains a singular perturbation solution for the processor-sharing queue; extends the Euler–Maclaurin representation for the Nörlund sum to the complex plane; gives a theory of the differential–difference equation pioneered by C. Truesdell; ... and more!