professional. Numerous end-of-chapter exercises, a good bibliography and overall index at the end of the book are also included, as well as Maple worksheets that are easily downloadable from this website or from the author's website at www.business.mcmaster.ca/msis/profs/parlar, or from the Birkhäuser site.

Systèmes, contrôle optimal

Goong CHEN, Irena LASIECKA, Jianxin ZHOU, (Editors). — **Control of nonlinear distributed parameter systems.** — Lecture notes in pure and applied mathematics, vol. 218. — Un vol. broché, 18×25,5, de XII, 357 p. — ISBN 0-8247-0564-5. — Prix: US$150.00. — Marcel Dekker, New York, 2001.

This book investigates control laws, stability and optimization, and feedback syntheses for systems defined by partial differential equations... chronicles advances in "smart" materials, developing methodology for nonlinear distributed parameter systems (DPS), and in dynamical systems... illuminates the effects of chaotic behavior on linear wave equations... articulates the theory and method for attaining dual control of nonconvex DPS... explains how to achieve bilinear control for semilinear parabolic equations... details modeling, synthesis, and simulation techniques for static buckling and optional control of beams, rods, and nonlinear infinite dimensional systems... and much more.

Panagiotis D. CHRISTOFIDES. — **Nonlinear and robust control of PDE systems: methods and applications to transport-reaction processes.** — Systems & control. — Un vol. relié, 16×24, de XV, 248 p. — ISBN 0-8176-4156-4. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2001.

Beginning with an introduction to control of PDE systems, the book discusses nonlinear and robust control of hyperbolic and parabolic PDEs with fixed spatial domains, and parabolic PDEs with time-dependent spatial domains. The synthesis of the controllers is performed by using geometric and Lyapunov-based control techniques. The book includes comparisons of the methods followed for controller synthesis with other approaches and discussions of practical implementation issues that can help researchers and engineers understand the development and application of the methods in greater depth.

Fritz COLONIUS, Uwe HELMKE, Dieter PRÄTZEL-WOLTERS, Fabian WIRTH, (Editors). — **Advances in mathematical systems theory.** — A volume in honor of Diederich Hinrichsen. — Systems & control: foundations & applications. — Un vol. relié, 16×24, de XXX, 296 p. — ISBN 0-8176-4162-9. — Prix: SFr. 168.00. — Birkhäuser, Boston, 2000.

The new edited book focuses on the contemporary developments and results in mathematical systems theory and control. The book includes invited peer-reviewed, authoritative expositions and surveys of these fields, presented by leading international researchers. A key theme of the book is the stability and robustness of linear and nonlinear systems using the concepts of stability radii and spectral value sets. Chapters survey recent advances in linear and nonlinear systems theory, including parameterization problems and behaviors of linear systems. In addition, the volume examines controllability and stabilization of infinite-dimensional systems (allowing for hysteresis nonlinearities) with functional analytic and algebraic approaches.

Zoran GAJIĆ, Myo-Taeg LIM. — **Optimal control of singularly perturbed linear systems and applications: high-accuracy techniques.** — Control engineering series. — Un vol. relié, 16×24, de XIV, 309 p. — ISBN 0-8247-8976-8. — Prix: US$150.00. — Marcel Dekker, New York, 2001.

Constructing a unique method applicable to a number of challenging real-world control systems, this book reveals how to achieve high accuracy using slow-fast time scales for determinis-

tic and stochastic, continuous- and discrete-time, linear-quadratic optimal control, and filtering problems... illustrates high-gain feedback and cheap control engineering problems, sampled data systems, and H optimization with helpful case studies... demonstrates theoretical results from examples in the aerospace, chemical, electrical, and automotive industries... simplifies hardware implementation of optimal controllers and filters...considers the eigenvector approach for the algebraic Riccati equations... identifies unsolved discrete-time domain and finite horizon optimization problems for future research... and more.

Harry G. KWATNY, Gilmer L. BLANKENSHIP. — **Nonlinear control and analytical mechanics: a computational approach.** — Control engineering. — Un vol. relié, 16,5 × 24, de XV, 317 p. + 1 CD-ROM. — ISBN 0-8176-4147-5. — Prix: SFr. 108.00. — Birkhäuser, Boston, 2000.

This book features an integrated treatment of nonlinear control and analytical mechanics and a set of symbolic computing software tools for modeling and control systems design. The integrated approach provides a rich set of models and control design examples that are of contemporary and practical interest to engineers. By simultaneously considering both mechanics and control, the engineer achieves a better appreciation of the underlying geometric ideas and constructions that are common to both. This book highlights and utilizes the computational infrastructure common to both modern analytical mechanics and nonlinear control. To achieve the full benefits of the concepts now available, symbolic, as well as numerical, computing techniques must be exploited.

Marcio S. DE QUEIROZ, Darren M. DAWSON, Siddharth P. NAGARKATTI, Fumin ZHANG. — **Lyapunov-based control of mechanical systems.** — Control engineering. — Un vol. relié, 16 × 24, de XIII, 316 p. — ISBN 0-8176-4086-X. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2000.

This is a text/reference on advanced nonlinear controllers for mechanical systems that are based on Lyapunov-type design and stability analysis methodology. The presentation illustrates, in a unified framework, how recent Lyapunov-based techniques can be used to solve a variety of nonlinear control problems for mechanical systems. The foundations of the Lyapunov-based approach are established in a thorough manner, including necessary math background materials. In the first portion of the book, solutions are provided to some tracking problems for rigid mechanical systems, i.e., systems modeled by ordinary differential equations. The second portion addresses problems of setpoint/vibration control of flexible mechanical systems, i.e., systems modeled by partial differential equations. By covering theory and applications, the book addresses both ODE-based and PDE-based mechanical systems and presents results for many useful real-time experiments and computer simulations.

Information, communication, circuits

D.R. HANKERSON, D.G. HOFFMAN, D.A. LEONARD, C.C. LINDNER, K.T. PHELPHS, C.A. RODGER, J.R. WALL. — **Coding theory and cryptography: the essentials.** — Second edition, revised and expanded. — Pure and applied mathematics, vol. 234. — Un vol. relié, 16 × 23,5, de X, 350 p. — ISBN 0-8247-0465-7. — Prix: US$85.00. — Marcel Dekker, New York, 2000.

This highly successful textbook, proven by the authors in a popular two-quarter course, presents coding theory, construction, encoding, and decoding of specific code families in an "easy-to-use" manner appropriate for students with only a basic background in mathematics—offering revised and updated material on the Berlekamp-Massey decoding algorithm and convolutional