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Descrizione fisica	1 online resource (XXII, 471 p. 71 illus., 39 illus. in color.)
Collana	Studies in Systems, Decision and Control, , 2198-4182 ; ; 69
Disciplina	620
Soggetti	Vibration Dynamical systems Dynamics Ergodic theory Statistical physics Applied mathematics Engineering mathematics Mathematical physics Vibration, Dynamical Systems, Control Dynamical Systems and Ergodic Theory Complex Systems Mathematical and Computational Engineering Mathematical Applications in the Physical Sciences Statistical Physics and Dynamical Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Part I Applied Methods of Modern Algebra and Analysis -- Convergence Almost Everywhere of Orthorecursive Expansions in Functional Systems -- Billiard Systems as the Models for the Rigid Body Dynamics -- Uniform Global Attractors for Nonautonomous Evolution Inclusions -- The Past, Present and Future of Optimal Connections Theory -- Generalised Pisot Numbers and Matrix Decomposition -- On the Periodicity of Continued Fractions in Hyperelliptic Fields -- Part II Discrete and Continuous Dynamical Systems -- Characterization of

Pullback Attractors for Generalized Processes -- Graduation of Life Tables: a Review and a Proposal Using Dynamical Systems -- A Nonautonomous Model for Immune Response to Virus in Fluctuating Environments -- Some Aspects Concerning the Dynamics of Stochastic Chemostats -- Higher-order Cahn-Hilliard Models with a Logarithmic Nonlinear Term -- Dynamical Systems Generated by Thue-Morse, Fibonacci and Shapiro Chains -- On Uniform Global Attractor for Non-Autonomous Reaction-Diffusion System with Caratheodory's Nonlinearity -- Part III Fundamental and Computational Mechanics -- Two Thermodynamic Laws as the Forth and the Fifth Integral Postulates of Continuum Mechanics -- Flow Control Near a Square Prism with the Help of Frontal Flat Plates -- Long-time Behavior of State Functions for Badyko Models -- Part IV Optimization, Control and Decision Making -- On Approximate Regulator in Linear-Quadratic Problem with Distributed Control -- Approximate Optimal Control for Parabolic-Hyperbolic Equations with Nonlocal Boundary Conditions and General Quadratic Quality Criterion -- The Optimal Control Problem with Minimum Energy for One Nonlocal Distributed System -- On Optimal L1-Control in Coefficients for a Degenerate Elliptic Equation: Optimality Conditions -- Estimation of Consistency of Fuzzy Pairwise Comparison Matrices using a Defuzzification Method.

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### Sommario/riassunto

Focused on recent advances, this book covers theoretical foundations as well as various applications. It presents modern mathematical modeling approaches to the qualitative and numerical analysis of solutions for complex engineering problems in physics, mechanics, biochemistry, geophysics, biology and climatology. Contributions by an international team of respected authors bridge the gap between abstract mathematical approaches, such as applied methods of modern analysis, algebra, fundamental and computational mechanics, nonautonomous and stochastic dynamical systems on the one hand, and practical applications in nonlinear mechanics, optimization, decision making theory and control theory on the other. As such, the book will be of interest to mathematicians and engineers working at the interface of these fields. .

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