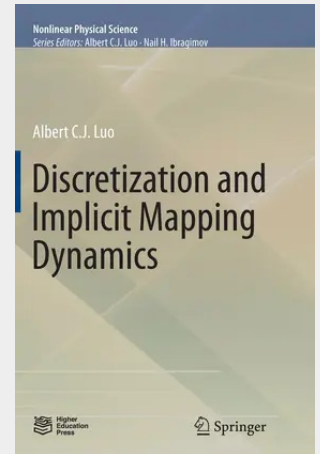


Discretization and Implicit Mapping Dynamics

This unique book presents the discretization of continuous systems and implicit mapping dynamics of periodic motions to chaos in continuous nonlinear systems. The stability and bifurcation theory of fixed points in discrete nonlinear dynamical systems is reviewed, and the explicit and implicit maps of continuous dynamical systems are developed through the single-step and multi-step discretizations. The implicit dynamics of period-m solutions in discrete nonlinear systems are discussed. The book also offers a generalized approach to finding analytical and numerical solutions of stable and unstable periodic flows to chaos in nonlinear systems with/without time-delay. The bifurcation trees of periodic motions to chaos in the Duffing oscillator are shown as a sample problem, while the discrete Fourier series of periodic motions and chaos are also presented. The book offers a valuable resource for university students, professors, researchers and engineers in the fields of applied mathematics, physics, mechanics, control systems, and engineering.

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53,49 €

49,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783662517093

Medium: Buch

ISBN: 978-3-662-51709-3

Verlag: Springer

Erscheinungstermin: 23.10.2016

Sprache(n): Englisch

Auflage: Softcover Nachdruck of the original 1. Auflage 2015

Serie: Nonlinear Physical Science

Produktform: Kartoniert

Gewicht: 5444 g

Seiten: 310

Format (B x H): 155 x 235 mm

