

1. Record Nr.	UNINA9910300400603321
Autore	Luo Albert C. J
Titolo	Discretization and Implicit Mapping Dynamics // by Albert C. J. Luo
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2015
ISBN	3-662-47275-9
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (316 p.)
Collana	Nonlinear Physical Science, , 1867-8459
Disciplina	515.35
Soggetti	Nonlinear optics Difference equations Functional equations Multibody systems Vibration Mechanics, Applied Nonlinear Optics Difference and Functional Equations Multibody Systems and Mechanical Vibrations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Nonlinear Discrete Systems -- Discretization of Continuous Systems -- Implicit Mapping Dynamics -- Periodic Flows in Continuous Systems -- Periodic Motions to Chaos in Duffing Oscillator.
Sommario/riassunto	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.
