1. Record Nr. UNINA9910143970503321

Autore	Awrejcewicz J (Jan)
Titolo	Chaos in structural mechanics / / J. Awrejcewicz, V. A. Krysko
Pubbl/distr/stampa	Berlin, Germany : , : Springer, , [2008] ©2008
ISBN	1-281-92068-1 9786611920685 3-540-77676-1
Edizione	[1st ed. 2008.]
Descrizione fisica	1 online resource (423 p.)
Collana	Springer complexity
Disciplina	624.17015118
Soggetti	Chaotic behavior in systems Structural analysis (Engineering) - Mathematical models
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 and index.
Nota di contenuto	Theory of Non-homogeneous Shells -- Static Instability of Rectangular Plates -- Vibrations of Rectangular Shells -- Dynamic Loss of Stability of Rectangular Shells -- Stability of a Closed Cylindrical Shell Subjected to an Axially Non-symmetrical Load -- Composite Shells -- Interaction of Elastic Shells and a Moving Body -- Chaotic Vibrations of Sectoria Shells -- Scenarios of Transition from Harmonic to Chaotic Motion -- Dynamics of Closed Flexible Cylindrical Shells -- Controlling Time-Spatial Chaos of Cylindrical Shells -- Chaotic Vibrations of Flexible Rectangular Shells -- Determination of Three-layered Non-linear Uncoupled Beam Dynamics with Constraints -- Bifurcation and Chaos of Dissipative Non-linear Mechanical Systems of Multi-layer Sandwich Beams -- Nonlinear Vibrations of the Euler-Bernoulli Beam Subjected to Transversal Load and Impact Actions.
Sommario/riassunto	This volume introduces and reviews novel theoretical approaches to modeling strongly nonlinear behaviour of either individual or interacting structural mechanical units such as beams, plates and shells or composite systems thereof. The approach draws upon the well-established fields of bifurcation theory and chaos and emphasizes the notion of control and stability of objects and systems the evolution of which is governed by nonlinear ordinary and partial differential

equations. Computational methods, in particular the Bubnov-Galerkin method, are thus described in detail.