

1. Record Nr.	UNINA9910410004303321
Autore	Awrejcewicz Jan
Titolo	Elastic and Thermoelastic Problems in Nonlinear Dynamics of Structural Members : Applications of the Bubnov-Galerkin and Finite Difference Methods // by Jan Awrejcewicz, Vadim A. Krysko
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-37663-X
Edizione	[2nd ed. 2020.]
Descrizione fisica	1 online resource (615 pages)
Collana	Scientific Computation, , 1434-8322
Disciplina	624.171
Soggetti	Physics Computer mathematics Vibration Dynamical systems Dynamics Numerical and Computational Physics, Simulation Computational Science and Engineering Vibration, Dynamical Systems, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Coupled Thermoelasticity and Transonic Gas Flow -- Estimation of the Errors of the Bubnov-Galerkin Method -- Numerical Investigations of the Errors of the Bubnov-Galerkin Method -- Coupled Nonlinear Thermoelastic Problems -- Theory with Physical Nonlinearities and Coupling -- Nonlinear Problems of Hybrid-Form Equations -- Dynamics of Thin Elasto-Plastic Shells -- Mathematical Model of Cylindrical/Spherical Shell Vibrations -- Scenarios of Transition from Periodic to Chaotic Shell Vibrations -- Mathematical Models of Chaotic Vibrations of Closed Cylindrical Shells -- Chaotic Dynamics of Flexible Closed Cylindrical Nano-Shells Under Local Load -- Contact Interaction of Two Rectangular Plates Made From Different Materials -- Chaotic Vibrations of Flexible Shallow Axially Symmetric Shells -- Chaotic Vibrations of Two Euler-Bernoulli Beams With a Small Clearance -- Unsolved Problems in Nonlinear Dynamics of Thin

Structural Members.

Sommario/riassunto

Adding seven new chapters integrating modern approaches to dynamical systems theory, this revised second edition describes numerical approaches to the nonlinear theory of beams, plates and shells, with an emphasis to the elastic and thermoelastic features. The added chapters discuss in particular how to understand, model, and obtain reliable results while detecting and analysing chaotic dynamics exhibited by thin structural members. The authors attempt to address the large impact of new directions of nonlinear dynamical phenomena in the context of the overall state-of-the art presented in the first book edition. They also present new perspectives of the unsolved problems of thin structural members. The authors made every effort to keep the text intelligible for both practitioners and graduate students, although they offer a rigorous treatment of both purely mathematical and numerical approaches presented so that the reader can understand, analyse and track the nonlinear dynamics of spatial systems (shells) with thermomechanical behaviours. .
