1. Record Nr.	UNINA9910299886203321
Titolo	Nonlinear Approaches in Engineering Applications : Energy, Vibrations, and Modern Applications / / edited by Liming Dai, Reza N. Jazar
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-69480-4
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XXVI, 456 p. 257 illus., 170 illus. in color.)
Disciplina	620
Soggetti	Computational complexity
	Vibration
	Dynamical systems
	Dynamics
	System theory
	Statistical physics
	Complexity
	Vibration, Dynamical Systems, Control
	Complex Systems
	Applications of Nonlinear Dynamics and Chaos Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Section 1: Energy Applications.- Nonlinear Behaviour Diagnosis for Horizontal Axis Wind Turbine Blades Subjected to Inconstant Wind Excitations.- Concentrated solar power plants capacity factors: A review.- Section 2: Vibrations and Automotive Applications.- Vibration Analysis of Oscillators with Generalized Inertial and Geometrical Nonlinearities.- Quarter Car Suspension Model with Provision for Loss of Contact with The Road.- Friction Coefficient of Pneumatic Tires and Bitumen Roads.- Solutions for Path Planning using Spline Parameterization.- Section 3: Modern Engineering Applications. - Diagnosis of nonlinear stochastic dynamics of active slider in nanometer spacing.- Formation Control of Nonholonomic Mobile Robots using an Acoustic Sensor.- Nonlinear Size-dependent Instability

of Hybrid FGM Nanoshells -- Section 4: Analytical-Numerical Analysis Applications.- An exact solution technique for impact oscillators.- A semi-analytical solution for bending of nonlinear magnetostrictive beams.- Limted Data Modelling Approaches for Engineering Applications.- Theoretical and Numerical Investigation of The Elastic-Plastic Behavior of Thick-walled Cylinders.- A Complex Variable Method to Predict an Aerodynamics of Arbitrary Shape Ballistic Projectiles.- Extension of substructuring technique in the nonlinear domain -- Index.

Sommario/riassunto	This book analyzes the updated principles and applications of nonlinear approaches to solve engineering and physics problems. The knowledge on nonlinearity and the comprehension of nonlinear approaches are inevitable to future engineers and scientists, making this an ideal book for engineers, engineering students, and researchers in engineering, physics, and mathematics. Chapters are of specific interest to readers who seek expertise in optimization, nonlinear analysis, mathematical modeling of complex forms, and non-classical engineering problems. The book covers methodologies and applications from diverse areas such as vehicle dynamics, surgery simulation, path planning, mobile robots, contact and scratch analysis at the micro and nano scale, sub-structuring techniques, ballistic projectiles, and many more. Explores the nonlinear approaches that open avenues to better, safer, cheaper, and more cost-effective consumption of power and raw materials; Exposes readers to a broad range of practical topics and approaches; Contains a strong emphasis on application, physical meaning, and the methodologies of the approaches discussed.