1. Record Nr. UNINA9910373952303321

Titolo	Nonlinear Dynamics of Structures, Systems and Devices : Proceedings of the First International Nonlinear Dynamics Conference (NODYCON 2019), Volume I / / edited by Walter Lacarbonara, Balakumar Balachandran, Jun Ma, J. A. Tenreiro Machado, Gabor Stepan
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-34713-3
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XXVIII, 592 p. 250 illus., 204 illus. in color.)
Disciplina	531
Soggetti	Condensed matter Mechanics, Applied Solids Nonlinear optics Multibody systems Vibration Dynamics Nonlinear theories Statics Condensed Matter Physics Solid Mechanics Nonlinear Optics Multibody Systems and Mechanical Vibrations Applied Dynamical Systems Mechanical Statics and Structures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Part A: Methods for nonlinear dynamics -- Nonlinear dynamics of multibody systems using an augmented Lagrangian formulation -- Stability boundary approximation of periodic dynamics -- e2-order normal form analysis for a two-degree-of-freedom nonlinear coupled oscillator -- Vibrational mechanics of systems with amplitude and

phase modulation of excitation -- Singular perturbation techniques and asymptotic expansions for some complex enzyme reactions -- A novel two-stage ellipsoid filtering based system modeling algorithm for a Hammerstein nonlinear model with an unknown noise term -- A new method for the frequency response curve and its unstable region of a strongly nonlinear oscillator -- Matrix solitons solutions of the modified Korteweg-de Vries equation -- Part B: Bifurcations and nonsmooth systems -- Bifurcations of limit directions at codimension-2 discontinuities of vector fields -- Boundary layer dynamics of multibody systems involving impact and friction -- Creation of Neimark-Sacker bifurcation for a three-degree-of-freedom vibro-impact system with clearances -- Analogue models of rocking suitcases and snaking trailers -- A theoretical model for vibro-impact dynamics of spur gears with tooth flanks wear -- Stability of coupled and damped Mathieu equations utilizing symplectic properties -- Asymmetry in the basin stability of oscillation death states under variation of environment-oscillator links -- The occurrence of zero-Hopf bifurcation in a generalized Sprott A system -- Part C: Nonlinear phenomena in mechanical systems and structures -- External and internal resonances in a mass-spring-damper system with 3-dof -- Internal resonances in an imperfect circular cylindrical panel -- Weakly nonlinear liquid sloshing-modelling and exploration of response regimes -- Catenary-based nonlinear multimodal theory of cable free vibrations -- Flexural and sway interaction in the nonlinear vibrations of a phenomenological model ofa laterally braced column -- Influences of temperature on dynamic behaviors of suspended cables under primary and sub-harmonic excitations simultaneously -- Analysis of a shape memory Alloy spring system under harmonic excitation -- Vibration of pre-loaded shallow circular arches -- Nonlinear vibration responses of laminated composite cantilever plate in subsonic air flow -- Adaptation of energy dissipation in a laminated module with tunable twin wells -- The Duffing-Mathieu equation arising from dynamics of post-buckled beams -- Resonance-induced energy localization in weakly dissipative anharmonic chains -- Part D: Experimental dynamics, system Identification and monitoring -- Torsional analysis of transmission line cables -- Application of a stochastic version of the restoring force surface method to identify a Duffing oscillator -- Modeling of the hysteretic behavior of wire rope isolators using a novel rate-independent model -- A non-linear model of rubber shear springs validated by experiments -- Operational modal analysis on a six-degree-of-freedom parallel manipulator: reproducibility, excitation & pose dependency -- Shaking table investigation on the masonry structures behaviour to earthquakes with strong vertical component -- Quantifying rate dependence of a nonlinear hysteretic device -- Application of photoelasticity to some nonlinear dynamic problems and stress state analysis in dams: A brief overview inspired by the results of Prof. Vlatko Bri -- Part E: Fluid-structure interaction, multibody system dynamics -- Levitated and parametrically excited sphere dynamics in a single-axis ultrasonic levitator -- Modelling VIV of transversally oscillating rigid structures using nonlinear fluid oscillators -- Asymptotic analysis of a dynamical system for vortex-induced vibration and galloping -- A quasi-steady 3-DoFs sectional aerodynamic model: preliminary results -- Lie group dynamics of multibody system in vortical fluid flow -- Damping models in aircraft flutter analyses -- Dynamic response of a morphing wing -- Helicopter pilot biomechanics by multibody analysis -- Derivation of non-dimensional equation of motion for thin plate in absolute nodal coordinate formulation -- Part F: Turning Processes, Rotating Systems,

and Systems with Time Delays -- Approximated dynamics of chatter in turning processes -- Chaotic dynamics in spinning shafts with non-constant rotating speed described by variant Lyapunov exponents -- Backward Whirl Phenomena in a Jeffcott Rotor System with a Breathing Crack Model -- Proper and Smooth Orthogonal Decompositions for Detection of Inner Race Defects in Rolling Element Bearings with Variable Rotational Speeds -- Effect of the compliance of the part on the double-turning process -- Effect of the regenerative and frictional force on chatter in turning process -- Noise-induced transitions and resonances in a delayed triple-well potential system -- Application of the second dimension reduction method in nonlinear rotor dynamic system -- Vibration analysis of washing machines in the drum plane -- Nonlinear model for wear effects in hydrodynamic bearings applied to rotating systems -- Index.

Sommario/riassunto

This first of three volumes from the inaugural NODYCON, held at the University of Rome, in February of 2019, presents papers devoted to Nonlinear Dynamics of Structures, Systems and Devices. The collection features both well-established streams of research as well as novel areas and emerging fields of investigation. Topics in Volume I include multi-scale dynamics: coexistence of multiple time/space scales, large system dynamics; dynamics of structures/industrial machines/equipment/facilities (e.g., cable transportation systems, suspension bridges, cranes, vehicles); nonlinear interactions: parametric vibrations with single/multi-frequency excitations, multiple external and autoparametric resonances in multi-dof systems; nonlinear system identification: parametric/nonparametric identification, data-driven identification; experimental dynamics: benchmark experiments, experimental methods, instrumentation techniques, measurements in harsh environments, experimental validation of nonlinear models; wave propagation, solitons, kinks, breathers; solution methods for pdes: Lie groups, Hirota’s method, perturbation methods, etc; nonlinear waves in media (granular materials, porous materials, materials with memory); composite structures: multi-layer, functionally graded, thermal loading; fluid/structure interaction; nonsmooth and retarded dynamics: systems with impacts, free play, stick-slip, friction hysteresis; nonlinear systems with time and/or space delays; stability of delay differential equations, differential-algebraic equations; space/time reduced-order modeling: enhanced discretization methods, center manifold reduction, nonlinear normal modes, normal forms; fractional-order systems; computational techniques: efficient algorithms, use of symbolic manipulators, integration of symbolic manipulation and numerical methods, use of parallel processors; and multibody dynamics: rigid and flexible multibody system dynamics, impact and contact mechanics, tire modeling, railroad vehicle dynamics, computational multibody dynamics.