Nonlinear Dynamics [Between Linear and Impact Limits /

Pilipchuk, Valery N.

Springer Berlin Heidelberg, 2010

Engineering Physics Mechanics Vibration Engineering Vibration, Dynamical Systems, Control Complexity Mechanics

Monografía

Nonlinear Dynamics represents a wide interdisciplinary area of research dealing with a variety of (QA(B(3L (Bunusual(QA(B(3M (Bphysical phenomena by means of nonlinear differential equations, discrete mappings, and related mathematical algorithms. However, with no real substitute for the linear superposition principle, the methods of Nonlinear Dynamics appeared to be very diverse, individual and technically complicated. This book makes an attempt to find a common ground for nonlinear dynamic analyses based on the existence of strongly nonlinear but quite simple counterparts to the linear models and tools. It is shown that, since the subgroup of rotations, harmonic oscillators, and the conventional complex analysis generate linear and weakly nonlinear approaches, then translations and reflections, impact oscillators, and hyperbolic (Clifford(QA(B(3I(Bs) algebras must give rise to some (QA(B(3L(Bquasi impact(QA(B(3M (Bmethodology. Such strongly nonlinear methods are developed in several chapters of this book based on the idea of non-smooth time substitutions. Although most of the illustrations are based on mechanical oscillators, the area of applications may include also electric, electro-mechanical, electrochemical and other physical models generating strongly anharmonic temporal signals or spatial distributions. Possible applications to periodic elastic structures with non-smooth or discontinuous characteristics are outlined in the final chapter of the book

https://rebiunoda.pro.baratznet.cloud:28443/OpacDiscovery/public/catalog/detail/b2FpOmNlbGVicmF0aW9uOmVzLmJhcmF0ei5yZW4vMTE3NjIzOTE=

Título: Nonlinear Dynamics Recurso electrónico] Between Linear and Impact Limits by Valery N. Pilipchuk

Editorial: Berlin, Heidelberg Springer Berlin Heidelberg 2010

Descripción física: 360p. digital

Mención de serie: Lecture Notes in Applied and Computational Mechanics 1613-7736 52

Documento fuente: Springer eBooks

Contenido: Part 1 Introduction -- Part 2 Smooth Oscillating Processes -- Part 3 Nonsmooth Processes as Asymptotic Limits -- Part 4 Nonsmooth Temporal Transformations (NSTT) -- Part 5 Sawtooth Power Series -- Part 6 NSTT for Linear and Piecewise-Linear Systems -- Part 7 Periodic and Transient Nonlinear Dynamics under Discontinuous Loading -- Part 8 Strongly Nonlinear Vibrations -- Part 9 Strongly Nonlinear Waves -- Part 10 Impact Modes and Parameter Variations -- Part 11 Principal Trajectories of Forced Vibrations -- Part 12 NSTT and

Shooting Method for Periodic Motions -- Part 13 Essentially Non-periodic Processes -- Part 14 Spatially-Oscillating Structures

Restricciones de acceso: Acceso restringido a miembros del Consorcio de Bibliotecas Universitarias de Andalucía

Detalles del sistema: Modo de acceso: World Wide Web

Fuente de adquisición directa: Springer

ISBN: 9783642127991 9783642127984 ed. impresa)

Entidades: SpringerLink (Online service)