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Nota di contenuto	VIBRO-IMPACT DYNAMICS; Contents; Preface; 1 Introduction; 1.1 Discrete and Discontinuous Systems; 1.1.1 Discrete Dynamical Systems; 1.1.2 Discontinuous Dynamical Systems; 1.2 Fermi Oscillators and Impact Problems; 1.3 Book Layout; 2 Nonlinear Discrete Systems; 2.1 Definitions; 2.2 Fixed Points and Stability; 2.3 Stability Switching Theory; 2.4 Bifurcation Theory; 3 Complete Dynamics and Fractality; 3.1 Complete Dynamics of Discrete Systems; 3.2 Routes to Chaos; 3.2.1 One-Dimensional Maps; 3.2.2 Two-Dimensional Systems; 3.3 Complete Dynamics of the Henon Map; 3.4 Similarity and Multifractals 3.4.1 Similar Structures in Period Doubling3.4.2 Fractality of Chaos via PD Bifurcation; 3.4.3 An Example; 3.5 Complete Dynamics of Logistic Map; 4 Discontinuous Dynamical Systems; 4.1 Basic Concepts; 4.2 G-Functions; 4.3 Passable Flows; 4.4 Non-Passable Flows; 4.5 Grazing Flows; 4.6 Flow Switching Bifurcations; 5 Nonlinear Dynamics of Bouncing Balls; 5.1 Analytic Dynamics of Bouncing Balls; 5.1.1 Periodic Motions; 5.1.2 Stability and Bifurcation; 5.1.3 Numerical Illustrations; 5.2 Period-m Motions; 5.3 Complex Dynamics; 5.4 Complex Periodic Motions; 6 Complex Dynamics of Impact Pairs 6.1 Impact Pairs6.2 Analytical, Simplest Periodic Motions; 6.2.1

Asymmetric Period-1 Motion; 6.2.2 Stability and Bifurcation; 6.2.3 Numerical Illustrations; 6.3 Possible Impact Motion Sequences; 6.4 Grazing Dynamics and Stick Motions; 6.5 Mapping Structures and Periodic Motions; 6.6 Stability and Bifurcation; 7 Nonlinear Dynamics of Fermi Oscillators; 7.1 Mapping Dynamics; 7.2 A Fermi Oscillator; 7.2.1 Absolute Description; 7.2.2 Relative Description; 7.3 Analytical Conditions; 7.4 Mapping Structures and Motions; 7.4.1 Switching Sets and Generic Mappings; 7.4.2 Motions with Mapping Structures 7.4.3 Periodic Motions and Local Stability 7.5 Predictions and Simulations; 7.5.1 Bifurcation Scenario; 7.5.2 Analytical Prediction; 7.5.3 Numerical Simulations; Appendix 7.A; References; Index

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Sommario/riassunto

Presents a systematic view of vibro-impact dynamics based on the nonlinear dynamics analysis. Comprehensive understanding of any vibro-impact system is critically impeded by the lack of analytical tools viable for properly characterizing grazing bifurcation. The authors establish vibro-impact dynamics as a subset of the theory of discontinuous systems, thus enabling all vibro-impact systems to be explored and characterized for applications. Vibro-impact Dynamics presents an original theoretical way of analyzing the behavior of vibro-impact dynamics that can be exte

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