1. Record Nr. UNINA9910784729503321

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Titolo	Smooth and nonsmooth high dimensional chaos and the melnikov-type methods [[electronic resource] /] / Jan Awrejcewicz, Mariusz M. Holicke
Pubbl/distr/stampa	New Jersey, : World Scientific, c2007
ISBN	1-281-91872-5 9786611918729 981-270-910-X
Descrizione fisica	1 online resource (318 p.)
Collana	World Scientific series on nonlinear science. Series A ; ; v. 60
Altri autori (Persone)	HolickeMariusz M
Disciplina	003/.857
Soggetti	Chaotic behavior in systems Differentiable dynamical systems Nonlinear oscillators
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 285-289) and index.
Nota di contenuto	Contents; Preface; 1. A Role of the Melnikov-Type Methods in Applied Sciences; 1.1 Introduction; 1.2 Application of the Melnikov-type methods; 2. Classical Melnikov Approach; 2.1 Introduction; 2.2 Geometric interpretation; 2.3 Melnikov's function; 3. Homoclinic Chaos Criterion in a Rotated Froude Pendulum with Dry Friction; 3.1 Mathematical Model; 3.2 Homoclinic Chaos Criterion; 3.3 Numerical Simulations; 4. Smooth and Nonsmooth Dynamics of a Quasi-Autonomous Oscillator with Coulomb and Viscous Frictions; 4.1 Stick-Slip Oscillator with Periodic Excitation 4.2 Analysis of the Wandering Trajectories4.3 Comparison of Analytical and Numerical Results; 5. Application of the Melnikov-Gruendler Method to Mechanical Systems; 5.1 Mechanical Systems with Finite Number of Degrees-of- Freedom; 5.2 2-DOFs Mechanical Systems; 5.3 Reduction of the Melnikov-Gruendler Method for 1-DOF Systems; 6. A Self-Excited Spherical Pendulum; 6.1 Analytical Prediction of Chaos; 6.2 Numerical Results; 7. A Double Self-excited Duffing-type Oscillator; 7.1 Analytical Prediction of Chaos; 7.2 Numerical Simulations; 7.3 Additional Numerical Example 8. A Triple Self-Excited Du ng-type Oscillator8.1 Physical and

	Mathematical Models; 8.2 Analytical Prediction of Homoclinic Intersections; Bibliography; Index
Sommario/riassunto	This book focuses on the development of Melnikov-type methods applied to high dimensional dynamical systems governed by ordinary differential equations. Although the classical Melnikov's technique has found various applications in predicting homoclinic intersections, it is devoted only to the analysis of three-dimensional systems (in the case of mechanics, they represent one-degree-of-freedom nonautonomous systems). This book extends the classical Melnikov's approach to the study of high dimensional dynamical systems, and uses simple models of dry friction to analytically predict the occurren