

1. Record Nr.	UNINA9910300388403321
Autore	Cvetcanin Livija
Titolo	Strongly Nonlinear Oscillators : Analytical Solutions / / by Livija Cvetcanin
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2014
ISBN	3-319-05272-1
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (IX, 239 p. 74 illus., 12 illus. in color.)
Collana	Undergraduate Lecture Notes in Physics, , 2192-4791
Disciplina	621.381533
Soggetti	Statistical physics Applied mathematics Engineering mathematics Mathematical physics Physics Vibration Dynamics Applications of Nonlinear Dynamics and Chaos Theory Mathematical and Computational Engineering Mathematical Applications in the Physical Sciences Mathematical Methods in Physics Vibration, Dynamical Systems, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Introduction -- Nonlinear Oscillators -- Pure Nonlinear Oscillator -- Free Vibrations -- Oscillators with Time-Variable Parameters -- Forced Vibrations -- Two-Degree-Of-Freedom Oscillator -- Chaos in Oscillators.
Sommario/riassunto	This book provides the presentation of the motion of pure nonlinear oscillatory systems and various solution procedures which give the approximate solutions of the strong nonlinear oscillator equations. The book presents the original author's method for the analytical solution procedure of the pure nonlinear oscillator system. After an introduction, the physical explanation of the pure nonlinearity and of

the pure nonlinear oscillator is given. The analytical solution for free and forced vibrations of the one-degree-of-freedom strong nonlinear system with constant and time variable parameter is considered. Special attention is given to the one and two mass oscillatory systems with two-degrees-of-freedom. The criteria for the deterministic chaos in ideal and non-ideal pure nonlinear oscillators are derived analytically. The method for suppressing chaos is developed. Important problems are discussed in didactic exercises. The book is self-consistent and suitable as a textbook for students and also for professionals and engineers who apply these techniques to the field of nonlinear oscillations.
