1.	Record Nr.	UNINA9910808419503321
	Autore	Glebov Sergey G.
	Titolo	Nonlinear equations with small parameter . Volume 1 Oscillations and resonances / / Sergey G. Glebov, Oleg M. Kiselev, Nikolai N. Tarkhanov
	Pubbl/distr/stampa	Berlin, [Germany] ; ; Boston, [Massachusetts] : , : De Gruyter, , 2017 ©2017
	ISBN	3-11-038272-5 3-11-033568-9
	Descrizione fisica	1 online resource (340 pages)
	Collana	De Gruyter Series in Nonlinear Analysis and Applications, , 0941-813X ; ; Volume 23/1
	Classificazione	SK 520
	Disciplina	531.32
	Soggetti	Oscillations
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Frontmatter -- Preface -- Contents -- Introduction -- 1 Asymptotic expansions and series -- 2 Asymptotic methods for solving nonlinear equations -- 3 Perturbation of nonlinear oscillations -- 4 Nonlinear oscillator in potential well -- 5 Autoresonances in nonlinear systems -- 6 Asymptotics for loss of stability -- 7 Systems of coupled oscillators -- Bibliography -- Index
	Sommario/riassunto	This two-volume monograph presents new methods of construction of global asymptotics of solutions to nonlinear equations with small parameter. These allow one to match the asymptotics of various properties with each other in transition regions and to get unified formulas for the connection of characteristic parameters of approximate solutions. This approach underlies modern asymptotic methods and gives a deep insight into crucial nonlinear phenomena in the natural sciences. These include the outset of chaos in dynamical systems, incipient solitary and shock waves, oscillatory processes in crystals, engineering applications, and quantum systems. Apart from being of independent interest, such approximate solutions serve as a foolproof basis for testing numerical algorithms. This first volume presents asymptotic methods in oscillation and resonance problems described by ordinary differential equations, whereby the second volume will be devoted to applications of asymptotic methods in waves

and boundary value problems. Contents Asymptotic expansions and series Asymptotic methods for solving nonlinear equations Nonlinear oscillator in potential well Autoresonances in nonlinear systems Asymptotics for loss of stability Systems of coupled oscillators