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1.5.5 Example: AEFs in the Theory of Composites1.6 Dynamical Edge Effect Method; 1.6.1 Linear Vibrations of a Rod; 1.6.2 Nonlinear Vibrations of a Rod; 1.6.3 Nonlinear Vibrations of a Rectangular Plate; 1.6.4 Matching of Asymptotic and Variational Approaches; 1.6.5 On the Normal Forms of Nonlinear Vibrations of Continuous Systems; 1.7 Continualization; 1.7.1 Discrete and Continuum Models in Mechanics; 1.7.2 Chain of Elastically Coupled Masses; 1.7.3 Classical Continuum Approximation; 1.7.4 ""Splashes"; 1.7.5 Envelope Continualization; 1.7.6 Improvement Continuum Approximations
1.7.7 Forced Oscillations1.8 Averaging and Homogenization; 1.8.1 Averaging via Multiscale Method; 1.8.2 Frozing in Viscoelastic Problems; 1.8.3 The WKB Method; 1.8.4 Method of Kuzmak-Whitham (Nonlinear WKB Method); 1.8.5 Differential Equations with Quickly Changing Coefficients; 1.8.6 Differential Equation with Periodically Discontinuous Coefficients; 1.8.7 Periodically Perforated Domain; 1.8.8 Waves in Periodically Nonhomogenous Media; References; Chapter 2 Computational Methods for Plates and Beams with Mixed Boundary Conditions; 2.1 Introduction
2.1.1 Computational Methods of Plates with Mixed Boundary Conditions2.1.2 Method of Boundary Conditions Perturbation; 2.2 Natural Vibrations of Beams and Plates; 2.2.1 Natural Vibrations of a Clamped Beam; 2.2.2 Natural Vibration of a Beam with Free Ends; 2.2.3 Natural Vibrations of a Clamped Rectangular Plate; 2.2.4 Natural Vibrations of the Orthotropic Plate with Free Edges Lying on an Elastic Foundation; 2.2.5 Natural Vibrations of the Plate with Mixed Boundary Conditions ""Clamping-Simple Support"; 2.2.6 Comparison of Theoretical and Experimental Results
2.2.7 Natural Vibrations of a Partially Clamped Plate

Sommario/riassunto

Covers the theoretical background of asymptotic approaches and its applicability to solve mechanical engineering-oriented problems of plates with mixed boundary conditions Asymptotic Methods in the Theory of Plates with Mixed Boundary Conditions comprehensively covers the theoretical background of asymptotic approaches and its applicability to solve mechanical engineering-oriented problems of structural members, primarily plates (statics and dynamics) with mixed boundary conditions.The first part of this book is devoted to the description of asymptotic method