

1. Record Nr.	UNINA9910784601603321
Autore	Mindlin Raymond D (Raymond David), <1906-1987.>
Titolo	An introduction to the mathematical theory of vibrations of elastic plates [[electronic resource] /] / R.D. Mindlin ; edited by Jiashi Yang
Pubbl/distr/stampa	Hackensack, N.J., : World Scientific, c2006
ISBN	1-281-37323-0 9786611373238 981-277-249-9
Descrizione fisica	1 online resource (212 p.)
Altri autori (Persone)	YangJiashi <1956->
Disciplina	624.1/776
Soggetti	Elastic plates and shells Vibration - Mathematical models Nonlinear theories
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. 175-180) and index.
Nota di contenuto	Contents; Foreword; Preface; Chapter 1: Elements of the Linear Theory of Elasticity; 1.01 Notation; 1.02 Principle of Conservation of Energy; 1.03 Hooke's Law; 1.04 Constants of Elasticity; 1.05 Uniqueness of Solutions; 1.06 Variational Equation of Motion 1.07 Displacement-Equations of Motion Chapter 2: Solutions of the Three-Dimensional Equations; 2.01 Introductory; 2.02 Simple Thickness-Modes in an Infinite Plate; 2.03 Simple Thickness-Modes in an Infinite, Isotropic Plate; 2.04 Simple Thickness-Modes in an Infinite, Monoclinic Plate; 2.05 Simple Thickness-Modes in an Infinite, Triclinic Plate 2.06 Plane Strain in an Isotropic Body 2.07 Equivoluminal Modes; 2.08 Wave-Nature of Equivoluminal Modes; 2.09 Infinite, Isotropic Plate Held between Smooth, Rigid Surfaces (Plane Strain); 2.10 Infinite, Isotropic Plate Held between Smooth, Elastic Surfaces (Plane Strain); 2.11 Coupled Dilatational and Equivoluminal Modes in an Infinite, Isotropic Plate with Free Faces (Plane Strain) 2.12 Three-Dimensional Coupled Dilatational and Equivoluminal Modes in an Infinite Isotropic Plate with Free Faces 2.13 Solutions in Cylindrical Coordinates; 2.14 Additional Boundaries; Chapter 3: Infinite

Power Series of Two-Dimensional Equations; 3.01 Introductory
3.02 Stress-Equations of Motion 3.03 Strain; 3.04 Stress-Strain
Relations; 3.05 Strain-Energy and Kinetic Energy; 3.06 Uniqueness of
Solutions; 3.07 Plane Tensors; Chapter 4: Zero-Order Approximation;
4.01 Separation of Zero-Order Terms from Series
4.02 Uniqueness of Solutions

Sommario/riassunto

This book by the late R D Mindlin is destined to become a classic introduction to the mathematical aspects of two-dimensional theories of elastic plates. It systematically derives the two-dimensional theories of anisotropic elastic plates from the variational formulation of the three-dimensional theory of elasticity by power series expansions. The uniqueness of two-dimensional problems is also examined from the variational viewpoint. The accuracy of the two-dimensional equations is judged by comparing the dispersion relations of the waves that the two-dimensional theories can describe with pr
