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Nota di contenuto	Vibrations and Acoustic Radiation of Thin Structures; Contents; Preface; 1 Equations Governing the Vibrations of Thin Structures; 1.1 Introduction; 1.1.1 General Considerations on Thin Structures; 1.1.2 Overview of the Energy Method; 1.2 Thin Plates; 1.2.1 Plate with Constant Thickness; 1.2.2 Plate with Variable Thickness; 1.2.3 Boundary with an Angular Point; 1.3 Beams; 1.4 Circular Cylindrical Shells; 1.5 Spherical Shells; 1.5.1 Approximation of the Strain and Stress Tensors and Application of the Virtual Works Theorem; 1.5.2 Regularity Conditions at the Apexes 1.6 Variational Form of the Equations Governing Harmonic Vibrations of Plates and Shells1.6.1 Variational Form of the Plate Equation; 1.6.2 Variational Form of the Shells Equations; 1.7 Exercises; 2 Vibratory Response of Thin Structures in vacuo: Resonance Modes, Forced Harmonic Regime, Transient Regime; 2.1 Introduction; 2.2 Vibrations of

Constant Cross-Section Beams; 2.2.1 Independent Solutions for the Homogenous Beam Equation; 2.2.2 Response of an Infinite Beam to a Point Harmonic Force; 2.2.3 Resonance Modes of Finite Length Beams
2.2.4 Response of a Finite Length Beam to a Harmonic Force2.3 Vibrations of Plates; 2.3.1 Free Vibrations of an Infinite Plate; 2.3.2 Green's monic Plate Equation and Response of an Infinite Plate to a Harmonic Excitation; 2.3.3 Harmonic Vibrations of a Plate of Finite Dimensions: General Definition and Theorems; 2.3.4 Resonance Modes and Resonance Frequencies of Circular Plates with Uniform Boundary Conditions; 2.3.5 Resonance Modes and Resonance Frequencies of Rectangular Plates with Uniform Boundary Conditions
2.3.6 Response of a Plate to a Harmonic Excitation: Resonance Modes Series Representation2.3.7 Boundary Integral Equations and the Boundary Element Method; 2.3.8 Resonance Frequencies of Plates with Variable Thickness; 2.3.9 Transient Response of an Infinite Plate with Constant Thickness; 2.4 Vibrations of Cylindrical Shells; 2.4.1 Free Oscillations of Cylindrical Shells of Infinite Length; 2.4.2 Green's Tensor for the Cylindrical Shell Equation; 2.4.3 Harmonic Vibrations of a Cylindrical Shell of Finite Dimensions: General Definition and Theorems
2.4.4 Resonance Modes of a Cylindrical Shell Closed by Shear Diaphragms at Both Ends2.4.5 Resonance Modes of a Cylindrical Shell Clamped at Both Ends; 2.4.6 Response of a Cylindrical Shell to a Harmonic Excitation: Resonance Modes Representation; 2.4.7 Boundary Integral Equations and Boundary Element Method; 2.5 Vibrations of Spherical Shells; 2.5.1 General Definition and Theorems; 2.5.2 Solution of the Time Harmonic Spherical Shell Equation; 2.6 Exercises; 3 Acoustic Radiation and Transmission by Thin Structures; 3.1 Introduction
3.2 Sound Transmission Across a Piston in a One-Dimensional Waveguide

Sommario/riassunto

Sound is produced by vibrations and as such can be dampened or augmented based on materials selection. This title looks at the effects of sound and vibration on thin structures and details how damage may be avoided, acoustical effects created, and sound levels controlled.