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Altri autori (Persone)	GuranA (Ardeshir) RipocheJean ZieglerFranz
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LOADED CYLINDRICAL SHELLS; 1. Introduction; 2. Scattered Acoustic Field; 3. Shell Displacements; 4. Internal Plate Vibrations; 5. Scattering Form Function; 6. Equivalence of Modal Solution to Wave Decomposition; 7. Contributions Due to Flexural Waves 8. Effects on Compressional and Shear Waves 9. Effects of Internal Plate Resonance; 10. Contributions From Bending Moments; 11. Conclusions; 12. Acknowledgements; 13. References; SCATTERING BY CYLINDRICAL OBJECTS AT OBLIQUE INCIDENCE; 1. Introduction; 2. Resonant Scattering Theory; 2.1 Form Function; 2.2 Breit-Wigner approximation; 3. Sommerfeld-Watson Transformation; 3.1 Transformation of the modal series into an integral; 3.2 Asymptotic expansions of the Bessel function; 3.3 Reflection and refraction of a plane wave at a fluid-fluid plane interface 3.4 Refraction angles and complex wave numbers related to the surface waves 3.5 Singularity calculation; 3.6 Imai separation; 3.6.1 Geometrical waves; 3.6.2 Surface waves; 3.7 Geometrical wave contribution; 3.7.1 Specular reflected wave; 3.7.2 Refracted waves; 3.8 High frequency behavior of the reflection-refraction coefficients; 3.9 Geometrical expansion coefficient; 3.10 Surface wave scattering in region $l > 1$; 3.11 Surface waves scattering in region $l < 1$; 4. Physical Meaning of Resonances; 5. Relation Between EI and k^*l ; 6. Experimental results and comparison; 6.1 Introduction 6.2 Experimental isolation and identification of cylindrical scatterer resonances 6.3 Experiments at small incidence angle; 6.3.1 Case of a solid cylinder; 6.3.2 Case of elastic cylindrical shell; 6.4 Resonance behavior with the incidence angle; 6.4.1 Case of a solid cylinder; 6.4.2 Case of an elastic cylindrical shell; 7. References; NONSPECULAR REFLECTION-TRANSMISSION PHENOMENA OF BOUNDED BEAMS DESCRIBED BY INHOMOGENEOUS PLANE WAVES; 1. Complex critical angles for the reflection coefficient of a plane wave; 2. Numerical example; 2.1 Water/Steel interface 3. Inhomogeneous Plane Wave in Absorptive Media

Sommario/riassunto

The interaction of acoustic fields with submerged elastic structures, both by propagation and scattering, is being investigated at various institutions and laboratories world-wide with ever-increasing sophistication of experiments and analysis. This book offers a collection of contributions from these research centers that represent the present state-of-the-art in the study of acoustic elastic interaction, being on the cutting edge of these investigations. This includes the description of acoustic scattering from submerged elastic objects and shells by the Resonance Scattering Theory of Flax,
