

1. Record Nr.	UNINA9911004830503321
Titolo	Acoustic interactions with submerged elastic structures . Part I Acoustic Scattering and resonances // editors, Ardeshir Guran, Jean Ripoche, Franz Ziegler ; with a foreword by Hans A. Bethe
Pubbl/distr/stampa	Singapore, : World Scientific, 1996
ISBN	9789812830593 9812830596 9781615830435 161583043X
Descrizione fisica	1 online resource (369 p.)
Collana	Series on stability, vibration, and control of systems. Series B ; ; v. 5
Altri autori (Persone)	GuranA (Ardeshir) RipocheJean ZieglerFranz
Disciplina	534.2 620.2/5 620.25
Soggetti	Underwater acoustics Elastic analysis (Engineering)
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 and indexes.
Nota di contenuto	Preface; Contents; THE RESONANCES: FROM NUCLEAR PHYSICS TO UNDERWATER ACOUSTICS; 1. Frequency Spectra of Acoustic Vibrations; 2. Level Spectra of Nuclear States; 3. Nuclear Vibrations; 4. Nuclear Excitations: the Breit-Wigner Resonance Formula; 5. Acoustic Resonance Scattering Theory; 6. The Method of Isolation and Identification of Resonances (MIIR); 7. Bistatic Scattering: Regge Trajectories; 8. Conclusions; 9. References; RST AND PERIPHERAL WAVES; 1. Introduction; 2. Modern State of RST; 3. Modal Resonances and Peripheral Waves; 3.1 Normal and Peripheral Waves 3.2 Eigenfrequencies and Modal Resonances3.3 Modal Resonances of Franz Waves; 3.4 Modal Resonances With the Minimal Halfwidth; 3.5 Lamb-Type Peripheral Waves and Whispering Gallery Waves; 3.6 Hidden Resonances; 3.7 Helical Peripheral Waves; 3.8 Acoustic Spectrogram; 4. Conclusions; 5. References; ACOUSTIC SCATTERING FROM INTERNALLY

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 Waves9. 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 waves3.5 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 $I >$; 3.11 Surface waves scattering in region $<$; 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 resonances6.3 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,