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Nota di contenuto	Resolution and super-resolution in inverse diffraction -- Mathematical programming for positive solutions of ill-conditioned inverse problems -- Inverse scattering for N-body systems with time-dependent potentials -- Inverse scattering approach for stratified chiral media -- Recovery of strongly scattering permittivity distributions from limited backscattered data using a nonlinear filtering technique -- Retrieval of object information from electron diffraction as Ill-posed inverse problems -- A linear method for solving inverse scattering problems in the resonance region -- Numerical methods in inverse obstacle scattering -- An overview of nonlinear diffraction tomography within the bayesian estimation framework -- Application of the approximate inverse to inverse scattering -- Reconstruction of an impenetrable obstacle immersed in a shallow water acoustic waveguide -- Location

and reconstruction of objects using a modified gradient approach -- Generalizations of Karp's theorem to elastic scattering theory -- Inverse obstacle scattering problem based on resonant frequencies -- New developments in the application of inverse scattering to target recognition and remote sensing -- Inverse 3D acoustic and electromagnetic obstacle scattering by iterative adaptation -- An algorithm for 3D ultrasound tomography -- Regularity of an inverse problem in wave propagation -- Developments in numerical methods for transient scattering problems -- A level-set approach for eddy current imaging of defects in a conductive half-space -- An inverse problem for the two-dimensional wave equation in a stratified medium -- On the inverse seismic problem for horizontally layered media: Subsidiary study -- Scattering of guided waves in laterally varying layered media -- Born inversion in realistic backgrounds by means of recursive Green's functions -- Nonlinear inversion of seismic reflection data by simulated annealing -- Asymptotic theory for imaging the attenuation factors Q P and Q S -- An inverse time domain problem for a stratified, biperiodic and 2D medium using an optimization method -- Shape reconstruction of a penetrable homogeneous 3D scattering body via the ICBA -- Program of the Conference of Aix-les-Bains (23–27 sept.1996).

Sommario/riassunto

This book describes the state of the art in the field of modeling and solving numerically inverse problems of wave propagation and diffraction. It addresses mathematicians, physicists and engineers as well. Applications in such fields as acoustics, optics, and geophysics are emphasized. Of special interest are the contributions to two and three dimensional problems without reducing symmetries. Topics treated are the obstacle problem, scattering by classical media, and scattering by distributed media.