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**Inverse acoustic and electromagnetic scattering theory. 4th expanded edition.** (English)

[Zbl 1425.35001](#)

[Applied Mathematical Sciences](#) 93. Cham: Springer (ISBN 978-3-030-30350-1/hbk; 978-3-030-30351-8/ebook). xvii, 518 p. (2019).

Publisher's description: The inverse scattering problem is central to many areas of science and technology such as radar, sonar, medical imaging, geophysical exploration and nondestructive testing. This book is devoted to the mathematical and numerical analysis of the inverse scattering problem for acoustic and electromagnetic waves. In this fourth edition, a number of significant additions have been made including a new chapter on transmission eigenvalues and a new section on the impedance boundary condition where particular attention has been made to the generalized impedance boundary condition and to nonlocal impedance boundary conditions. Brief discussions on the generalized linear sampling method, the method of recursive linearization, anisotropic media and the use of target signatures in inverse scattering theory have also been added.

For the first, second and third editions see [[Zbl 0760.35053](#); [Zbl 0893.35138](#); [Zbl 1266.35121](#)].

**MSC:**

- [35-02](#) Research exposition (monographs, survey articles) pertaining to partial differential equations
- [35P25](#) Scattering theory for PDEs
- [35J05](#) Laplace operator, Helmholtz equation (reduced wave equation), Poisson equation
- [35R30](#) Inverse problems for PDEs
- [45A05](#) Linear integral equations
- [65M30](#) Numerical methods for ill-posed problems for initial value and initial-boundary value problems involving PDEs
- [78A45](#) Diffraction, scattering

Cited in **27** Documents

**Keywords:**

[Helmholtz equation](#); [Maxwell equations](#); [inverse obstacle problem](#); [inverse medium problem](#); [uniqueness](#); [reconstruction methods](#)

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