

# Reconstruction of an impenetrable obstacle in anisotropic inhomogeneous background

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## **Abstract**

We are interested in the problem of determining the shape of (sound-soft or impedance) obstacles in the acoustic wave scattering from the knowledge of the (eigenvalues and eigenfunctions) far-field operator. The main idea is to choose suitable incident field according to the (known) anisotropic inhomogeneous background. We usually choose plane wave (which verifies Helmholtz equation) as incident field when the background is isotropic homogeneous. However, some analogue of well-known properties of the far-field pattern of scattered field may not hold with such choice of incident field, for example, the “first reciprocity relation”.

Some part of this talk is related to my work [IMA J. Appl. Math. **86** (2021), no. 2, 320–348] (there is a corrigendum).