

Conformal Mapping and Inverse Scattering

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In a series of papers over the last decade Akduman, Haddar and Kress have developed a conformal mapping technique for the inverse problem to recover a perfectly conducting or a nonconducting inclusion in a homogeneous background medium from Cauchy data for the Laplace equation on the accessible exterior boundary. In this talk we will present recent work with Haddar using this conformal mapping approach to solve inverse scattering problems, i.e., inverse boundary value problems for the Helmholtz equation for low frequencies via an iterative procedure. We describe the foundations of this new method including a convergence result and exhibit its feasibility via numerical examples.