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*The Factorization Method for a Defective Region in an Anisotropic Material.*

In this presentation we consider the inverse acoustic or electromagnetic scattering problem of reconstructing possibly multiple defective penetrable regions in a known anisotropic material of compact support. We develop the factorization method for a non-absorbing anisotropic background media containing penetrable defects. In particular, under appropriate assumptions on the anisotropic material properties of the media we develop a rigorous characterization for the support of the defective regions from the given far field measurements. Finally we present some numerical examples in the two dimensional case to demonstrate the feasibility of our reconstruction method including examples for the case when the defects are voids (i.e. subregions with refractive index the same as the background outside the inhomogeneous hosting media). (Received October 22, 2014)