

An Inverse Scattering Problem for a Partially Coated Buried Obstacle

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Abstract

We consider an inverse scattering problem for a perfect conductor that is partially coated by dielectric. We investigate a method for determining the shape of the object from the Cauchy data of the total field measured on the boundary of a domain containing the object in its interior. We then give a variational characterization of the supreme of the surface impedance and validate the method with some numerical examples. Applications are given to the target identification of a buried partially coated perfect conductor from a knowledge of the electric and magnetic field on the surface of the earth.