Abstracts

An inverse scattering technique for microwave imaging of binary objects

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In this paper, an inverse scattering method for detecting the location and estimating the shape of two-dimensional homogeneous scattering is presented. It is assumed that the permittivity and conductivity of the scatterer are given. Thus, the method concentrates on reconstructing the domain occupied by the scatterer. The inversion is based on scattered electric far-field measurements and is carried out by a combined finite- element-nonlinear optimization technique. The computational burden is reduced by use of the adjoint-state-vector methodology. Finally, the proposed method is applied to both penetrable and impenetrable scatterers.

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