Abstracts

Electromagnetic Modeling for Microwave Imaging of Cylindrical Buried Inhomogeneities

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Many diagnostic techniques in geophysics and civil engineering are based on the interaction of electromagnetic waves with objects buried in homogeneous or stratified media. Most of the investigations are concerned with the detection of buried objects, but a few papers have dealt with the problem of identifying the objects. The proposed method is based on the integral representation for a plane wave incident on a lossy half-space containing a cylindrical object of arbitrary cross section and electrical properties. The induced current distribution in the object is obtained from the backscattered field measurement in amplitude and phase. In order to improve the spatial resolution of the image, the scattered field is measured for different plane wave incidence and frequencies. Results of numerical simulations concerning the shape and size of the object for different values of soil electromagnetic parameters are presented in this paper.

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