The enclosure method for inverse obstacle scattering using a solution of the Maxwell system in time domain

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Abstract

The Enclosure Method which the speaker introduced in 1999 has become a well-known guiding principle for attacking several inverse obstacle problems whose governing equations are given by partial differential equations.

In this talk, first we make a brief review of the previous results obtained by using the Enclosure Method for an inverse obstacle problem whose governing equation is given by the classical wave equation in time domain. Then, we consider an inverse obstacle problem of electromagnetic waves whose governing equation is given by the Maxwell system in time domain. We present some recent results for this problem which are obtained by employing the Enclosure Method. Finally we describe some of the further problems.

AMS: 35R30, 35L50, 35Q61, 78A46, 78M35

KEY WORDS: enclosure method, wave equation, inverse obstacle scattering problem, electromagnetic wave, obstacle, Maxwell's equations, mean value theorem, reflection

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