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Publication

A new approach to solve the inverse scattering problem for waves: combining the TRAC and the Adaptive Inversion methods

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 2821666

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Year 2013

Title A new approach to solve the inverse scattering problem for waves: combining the TRAC and the Adaptive Inversion methods

Journal Inverse problems

Volume 29

Number 8

Pages / Article-Number 085009

The aim of this paper is to propose a new method to solve the inverse scattering problem. This method works directly in the time-dependent domain, using the wave equation and proceeds in two steps. The first step is the time-reversed absorbing condition (TRAC) method to reconstruct and regularize the signal and to reduce the computational domain. The second step is the adaptive inversion method to solve the inverse problem from the TRAC data, by using basis and mesh adaptation. This strategy allows us to recover the position, the shape and the properties of the scatterer in a precise and robust manner.

Publisher IOP Publishing

ISSN/ISBN 0266-5611

edoc-URL <http://edoc.unibas.ch/39365/>

Full Text on edoc No;

Digital Object Identifier DOI 10.1088/0266-5611/29/8/085009

ISI-Number WOS:000322735500009

Document type (ISI) Article