Reconstructing the wave speed and the source

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Abstract

We are concerned with the inverse problem of recovering the unknown wave speed and also the source in a multidimensional wave equation. We show that the wave speed coefficient can be reconstructed from the observations of the solution taken at a single point. For the source, we may need a sequence of observation points due to the presence of multiple spectrum and nodal lines. This new method, based on spectral estimation techniques, leads to a simple procedure that delivers both uniqueness and reconstruction of the coefficients at the same time.

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