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Abstract

We consider an inverse problem for the wave equation in noisy acoustic waveguides. The question is how to locate sound sources or scatterers given measurements of the time traces of the acoustic pressure at a remote array of transducers. The sound speed in the waveguide has rapid fluctuations which are not known to detail and are modeled as random processes. The main goal of the study is to understand the effect of these fluctuations on the imaging process and to develop statistically stable imaging strategies.