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Robert Neill Staniunas* (staniurn@dukes.jmu.edu) and **Zev Woodstock** (woodstzc@dukes.jmu.edu). *The Hybrid-Bremmer Series Method for an Inverse Scattering Problem: Convergence, Stability, and Error Characterization.*

We present a series solution for an inverse scattering problem with applications in seismic imaging. Starting with the equation for an acoustic wave propagating in a spatially varying medium, we formulate a forward series solution for the scattered wave, then an analogous inverse series that recovers the spatially varying medium from measurements on the subsurface boundary. We explain both the forward and the inverse problems, and prove convergence, stability and error results for both the forward and the inverse series. (Our analysis is for the one dimensional problem.) (Received September 05, 2014)