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Inverse scattering analysis

by means of volume integral equation method in an elastic half space

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A method for an inverse scattering analysis is developed in this article by means of the fast volume integral equation method (Touhei, 2011). The purpose of this research reconstruct a fluctuation of the wave fields which is embedded in an elastic half space by using a volume integral equation. The reconstruction of the fluctuation of the wave fields use an incident waves which are generated by a point source and a scattered waves which are observed at the free surface. The property of this formulation is the directly representation of the relationship between the wave fields and the fluctuation of the wave fields. The Tikhonov regularization method is employed to the volume integral equation for inverse scattering analysis because of improvement of the convergence properties by the Bi-CGSTAB method.

Keywords: Volume integral equation, Elastic half space, Generalized Fourier transform, Tikhonov regularization method ,