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## STRUCTURAL ENGINEERING / EARTHQUAKE ENGINEERING

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[\[PDF \(1793K\)\]](#) [\[References\]](#)**A 3D LINEARIZED INVERSE SCATTERING METHOD FOR SCATTERERS IN A TWO LAYERED MEDIUM**Kazushi KIMOTO<sup>1)</sup> and Sohichi HIROSE<sup>1)</sup>

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This paper presents a 3D linearized inverse scattering method for shape reconstruction of obstacles in a two layered medium. The problem here is to estimate the shape of an obstacle embedded in the bottom layer, using scattered waves observed at points in the top layer. Wave sources are assumed to be acoustic monopoles settled in the top layer. For this situation, two inversion formulas based on the Born and the Kirchhoff approximations are proposed with the help of the Green's function for the layered medium. In numerical examples, the two inversion formulae are tested for reconstruction of spherical and spheroidal rigid scatterers from simulated wave data. It is shown that an illuminated side of the scatterers is well reconstructed by the proposed methods.

**Key Words:** ultrasonic testing, linearized inverse scattering analysis, layered Medium, aperture limitation

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