

The Decoupled Elastic Waves and Their Applications

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The speaker and her group consider time-harmonic elastic wave scattering governed by the Lamé system. It is known that the elastic wave field can be decomposed into the shear and compressional parts, namely, the pressure and shear waves that are generally coexisting, but propagating at different speeds. They consider the third or fourth kind scatterer and derive two geometric conditions, respectively, related to the mean and the Gaussian curvatures of the boundary surface of the scatterer that can ensure the decoupling of the shear and pressure waves. Then they apply the decoupling results to the uniqueness and stability analysis for inverse elastic scattering problems in determining polyhedral scatterers by a minimal number of far-field measurements.