Inverse Problems for Elastic Media

Lizabeth Rachele
University at Albany, SUNY

We consider dynamic inverse problems for bounded, three- dimensional isotropic elastic and hyperelastic objects with smoothly varying density and elastic properties. Surface data for the inverse problems is modelled by the hyperbolic Dirichlet-to-Neumann map on a finite time interval.

In the case of isotropic elastodynamics we have shown that the density and elasticity parameters are all determined uniquely by the Dirichlet-to-Neumann boundary data.

We also consider uniqueness for hyperelastic media (e.g. elastodynamics with residual stress).