HAOMIN WEN, University of Notre Dame
Lens rigidity and scattering rigidity in two dimensions

Scattering rigidity of a Riemannian manifold allows one to tell the metric of a manifold with boundary by looking at the directions of geodesics at the boundary. Lens rigidity allows one to tell the metric of a manifold with boundary from the same information plus the length of geodesics. There are a variety of results about lens rigidity but very little is known for scattering rigidity. We will discuss the subtle difference between these two types of rigidities and prove that they are equivalent for a large class of two-dimensional Riemannian. In particular, two-dimensional simple Riemannian manifolds (such as the flat disk) are scattering rigid since they are lens/boundary rigid (Pestov–Uhlmann, 2005).