

Scattering rigidity versus lens rigidity

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Abstract

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. I will discuss the subtle difference between these two types of rigidities and prove that they are equivalent for two-dimensional SGM (no conjugate points and no trapped geodesics) manifolds with boundaries.