

Stability for the X-ray Transform on Asymptotically Hyperbolic Manifolds

Speaker: Nikolas Eptaminitakis, Purdue University

Abstract: In this talk we will discuss the stability of the geodesic X-ray transform on functions on simple asymptotically hyperbolic manifolds. Simple asymptotically hyperbolic manifolds are a class of non-compact, simply connected, complete manifolds whose behavior near infinity resembles in many ways that of hyperbolic space. The goal is to establish that small perturbations in the X-ray transform of a function f cannot originate from large perturbations of f , in terms of suitable topologies. In a similar spirit to the work of Stefanov and Uhlmann [2004], which dealt with simple compact manifolds with boundary, we study microlocally the stability of the normal operator of the X-ray transform, which is given by its composition with a backprojection. We will discuss how the normal operator fits within the \mathcal{O} -calculus of Mazzeo and Melrose [1987], which is a natural framework for studying pseudodifferential operators on asymptotically hyperbolic manifolds, and construct a parametrix which eventually leads to the desired stability.