JOSEF GREILHUBER, MIT

Geometry from eigenfunction triple products II

A manifold is uniquely determined by its spectrum along with the integrals of eigenfunction triple products. In this two-part talk, joint with Romain Speciel, we show that one can detect real analyticity and flatness of a Riemannian metric from this data. In the second talk, we describe how the structural properties along geodesics obtained in Part I imply flatness and real-analyticity of the underlying manifold. Flatness is deduced from an integrality argument akin to those encountered in the representation theory of compact Lie groups, while real-analyticity follows from a surprising application of the three lines lemma from one-dimensional complex analysis.