

Dissertation Defense

Complex iso-length-spectral arithmetic hyperbolic 3-manifolds

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Abstract

The (real-)length spectrum of a compact hyperbolic 3-manifold is the set of lengths of all closed geodesics along with the multiplicity of each length. A closed geodesic also has an imaginary part that represents the twist encountered by traveling once around the closed geodesic. So, the complex length of a closed geodesic is $\ell + it$, where ℓ is the length of the closed geodesic and t is twist with $0 \leq t < 2\pi$. The complex length spectrum of a compact hyperbolic 3-manifold is the set of complex lengths of all closed geodesics along with the multiplicity of each length. Two compact hyperbolic 3-manifolds are called iso-length-spectral if their length spectra are the same. Also, two compact hyperbolic 3-manifolds are called complex iso-length-spectral if their complex length spectra are the same. The aim of this talk is to investigate if iso-length-spectral arithmetic hyperbolic 3-manifolds are complex iso-length-spectral. Arithmetic hyperbolic 3-manifolds are a class of hyperbolic 3-manifolds where arithmetic data about the manifolds tells us a great deal of information about the manifolds.

Friday, November 11th, 2011, 2:00 pm
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