Quasiconformal homogeneity of hyperbolic manifolds

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007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm, 300 Kemeny Hall)

Abstract

A hyperbolic manifold M is K-quasiconformally homogeneous ($0 \leq K < \infty$) if for all $x, y \in M$ there exists a K-quasiconformal self-mapping of M that maps x to y. Here, quasiconformal mappings are generalization of conformal mappings (which are mappings that preserve angles and hence map infinitesimal circles to infinitesimal circles.) Informally, a quasiconformal map can be thought of as a map that has a bit more flexibility than a conformal map, namely it is allowed to take infinitesimal circles to infinitesimal ellipses. The constant K measures the degree of distortion allowed under the mapping.

After carefully defining the concept of quasiconformal homogeneity we will discuss geometric, topological and analytic properties of quasiconformally homogeneous hyperbolic manifolds. We will explain how rigidity phenomena in dimensions three and above allow us to classify all quasiconformally homogeneous hyperbolic manifolds in those dimensions, and the implications of the lack of such rigidity in dimension two. If time permits we will then focus on planar domains and their homogeneity properties.

This talk should be accessible to graduate students.

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