Minsky, Yair N.

On rigidity, limit sets, and end invariants of hyperbolic 3-manifolds. (English) Zbl 0808.30027

J. Am. Math. Soc. 7, No. 3, 539-588 (1994).

W. P. Thurston has conjectured that the class of geometrically tame hyperbolic manifolds is the class of hyperbolic manifolds which can be understood completely from topological data. Minsky's fine paper addresses Thurston's ending lamination conjecture, which states that, for homeomorphic geometrically tame hyperbolic manifolds, the ending laminations and Riemann surfaces at infinity suffice to determine the manifold uniquely up to isometry. The author establishes this result for a large subclass of the geometrically tame hyperbolic manifolds, namely those satisfying two conditions: (C1) The fundamental group cannot be split nontrivially as a free product and (C2) There is a positive lower bound on the injectivity radius at each point. The theorem follows in the tradition of the great rigidity theorems of Mostow for cocompact hyperbolic actions, Prasad for finite volume hyperbolic actions, Bers- Kra-Marden-Maskit et.al. for geometrically finite hyperbolic actions, and Sullivan for finitely generated Kleinian groups. The analysis leads to a number of other beautiful results, such as a generalization of the Thurston-Cannon result on 2-sphere-filling group invariant Peano curves, a result which has never before appeared in print. He also proves that many singly degenerate Kleinian groups have locally connected limit sets, a result also previously claimed by Thurston and Cannon, but which has never appeared.

Reviewer: J.W.Cannon (Provo)

MSC:

30F40	Kleinian groups (aspects of compact Riemann surfaces and uniformization)
57M50	General geometric structures on low-dimensional manifolds
57M60	Group actions on manifolds and cell complexes in low dimensions
30F60	Teichmüller theory for Riemann surfaces
30C62	Quasiconformal mappings in the complex plane

Keywords:

3-manifold; rigidity; limit sets; laminations; ends; hyperbolic manifolds; hyperbolic actions

Full Text: DOI