

Exponential mixing of geodesic flow for geometrically finite manifolds with cusps

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Let \mathbb{H}^n be the hyperbolic n -space and Γ be a geometrically finite discrete subgroup in $\text{Isom}_+(\mathbb{H}^n)$ with cusps. In the joint work with Jialun Li, we establish exponential mixing of the geodesic flow over the unit tangent bundle $T^1(\Gamma \backslash \mathbb{H}^n)$. Previously, such results were proved by Stoyanov for convex cocompact discrete subgroups and Mohammadi-Oh and Edwards-Oh for Γ with large critical exponent. We obtain our result by constructing a nice coding for the geodesic flow, which in particular satisfies the exponential tail condition, and then proving a spectral bound on the transfer operator building on Dolgopyat's framework. The construction of the coding is partly inspired by the works of Lai-Sang Young and Burns-Masur-Matheus-Wilkinson.