Noncommutative dimension associated with limit sets of Fuchsian groups. (English summary)


The Hecke groups are the one parameter family of Fuchsian groups generated by

\[ z \mapsto -\frac{1}{z} \text{ and } z \mapsto z + \lambda, \]

where \( \lambda \geq 2 \) or \( \lambda = 2 \cos(\pi/q) \) with \( q \geq 3 \). When \( \lambda > 2 \), the corresponding Hecke groups are the second kind of Fuchsian groups. In this paper the authors are mainly interested in the range \( \lambda > 2 \) in order to get limit sets with Hausdorff dimension less than 1. They construct an algebraic dynamical system for a piecewise monotone map, and characterize its noncommutative dimension which is also shown to be equal to the Hausdorff dimension of the invariant set associated to the map. Then, a method is derived to determine the Hausdorff dimension of limit sets of Hecke groups. It is shown that the limit sets of these Hecke groups are Cantor sets with nontrivial Hausdorff dimension.

{For the entire collection see MR2093669 (2005d:00013)}

Reviewed by Nihal Yılmaz Özgür

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