TESTING CAYLEY GRAPH DENSITIES

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Abstract. We present a computer-assisted analysis of combinatorial properties of the Cayley graphs of certain finitely generated groups: Given a group with a finite set of generators, we study the density of the corresponding Cayley graph, that is, the least upper bound for the average vertex degree (= number of adjacent edges) of any finite subgraph. It is known that an m-generated group is amenable if and only if the density of the corresponding Cayley graph equals to $2m$. We test amenable and non-amenable groups, and also groups for which amenability is unknown. In the latter class we focus on Richard Thompsons group F.

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