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Wouter Van Limbeek*, Dept of Math, Univ of Chicago, 5734 S University Ave, Chicago, IL 60615. *Symmetry gaps in Riemannian geometry and minimal orbifolds.*

In 1893 Hurwitz showed that a hyperbolic surface of genus at least 2 has isometry group of order at most $84(g-1)$. Do such bounds on the order of isometry groups exist more generally? It was conjectured by Farb-Weinberger that this is the case for certain aspherical manifolds. In this spirit we prove that the size of the isometry group of an arbitrary closed manifold is bounded in terms of certain geometric quantities (such as curvature and volume), unless the manifold admits an action by a compact connected Lie group. We give two applications of this result: First we characterize locally symmetric spaces among all Riemannian manifolds, and secondly, we generalize results of Kazhdan-Margulis and Gromov on the existence of minimal quotients of locally symmetric spaces and negatively curved manifolds. (Received January 19, 2015)