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Isometry Dimension of Finite Groups. Preliminary report.

A set $W \subset R^n$ is said to realize a group G if $Aut(W) \cong G$, where $Aut(W)$ is the group of distance-preserving bijections of W into itself. Albertson and Boutin have shown that any finite group G can be realized by a subset of $\mathbb{R}^{|G|-1}$. Define the isometry dimension of G to be the minimum value of n such that G may be realized by a subset of $\mathbb{R}^n$. We show that the isometry dimension of G is equal to the dimension of a minimal dimensional faithful real representation of G. Using this result, we compute the isometry dimensions of several familes of groups. (Received October 01, 2000)