

Smoothing finite group actions on three-manifolds

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Abstract

There exist continuous finite group actions on three-manifolds which are not smoothable, in the sense that they are not smooth with respect to any smooth structure. For example, Bing constructed an involution of the three-sphere whose fixed set is a wildly embedded two-sphere. However, one can still ask whether every continuous finite group action on a three-manifold can be uniformly approximated by a smooth action. We outline an approach to answering this question in the affirmative, based on the author's work on the Hilbert–Smith conjecture in dimension three.