

NONSMOOTHABLE GROUP ACTIONS ON SPIN 4-MANIFOLDS

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In this talk, we call a locally linear action of a group on a topological manifold *nonsmoothable* if the action is not smooth with respect to any possible smooth structure. We restrict our attention to actions of the cyclic groups of odd prime order which are homologically trivial and pseudofree. A. L. Edmonds constructed such actions on all simply connected 4-manifolds. In this talk we show that there is a family of locally linear actions constructed by Edmonds's method which are nonsmoothable.

Theorem. *Let X be a closed, simply connected, spin topological 4-manifold not homeomorphic to either S^4 or $S^2 \times S^2$. Then, for any sufficiently large prime number p , there exists a homologically trivial, pseudofree, locally linear action of \mathbb{Z}_p on X which is nonsmoothable.*

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