

SMITH EQUIVALENCE OF REPRESENTATIONS OF FINITE GROUPS

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As in other parts of topology, in the theory of transformation groups a basic task is to classify objects that occur in the subject. For a smooth action of a compact Lie group G on a smooth manifold M , an important related question is to compare the representations of G determined on the tangent spaces $T_a(M)$ and $T_b(M)$ at two fixed points a and b .

In 1960, Paul A. Smith asked whether the tangential representations $T_a(M)$ and $T_b(M)$ are isomorphic to each other in the special case where G is a finite group, M is a sphere, and the fixed point set $M^G = \{a, b\}$.

During the talk, we give a survey of results related to the Smith question. In particular, for a finite simple group G , we describe a necessary and sufficient condition under which the answer is affirmative. We also discuss partial answers for groups such as finite perfect, more generally, nonsolvable groups, and large classes of finite solvable groups.

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