Some new approaches to the Hilbert-Smith Conjecture

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Abstract

The Hilbert-Smith Conjecture states that if a compact group acts effectively on a manifold, then it is a Lie group. It is known that the conjecture is true for manifolds of dimensions one, two, and three. It is unknown for manifolds of any other dimension.

This conjecture is related to Hilbert's Fifth Problem and is the last unsolved vestige of that famous problem. This talk will cover some of the rich history involved with many exciting discoveries covering more than a century. We will also cover some recent developments in the continuing assault on this problem.