Determining the topological structure of an orbifold from algebraic information about its group of orbifold diffeomorphisms.

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Abstract

Given a topological space X, one can consider X endowed with many different geometric structures and the subgroup of the homeomorphism group of X that preserves that structure. For example, one might give X a differentiable structure and consider the group of diffeomorphisms of X. The question is: Do algebraic properties of the group of structure preserving automorphisms of X determine the structure? A question of this type is the following: Let M and N be two differentiable manifolds with groups of diffeomorphisms Diff(M) and Diff(N). Suppose there is a group isomorphism I : Diff(M) $\rightarrow$ Diff(N). Is there a diffeomorphism $f : M \rightarrow N$ such that $I(g) = (f \circ g \circ f^{-1})$ for all $g \in$ Diff(M)? An affirmative answer implies in particular that M and N are diffeomorphic. In this talk, I will discuss the analogous question when X carries the structure of an orbifold. The talk will include relevant history, definitions and examples.

This talk should be accessible to graduate students.