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Heegaard Floer homology and the fundamental group

A group is left-orderable if it admits a strict total order of its elements that is invariant under multiplication on the left. As an immediate consequence, left-orderable groups are torsion free. For example, a finite cyclic group cannot be left-ordered; hence the fundamental group of a lens space is not left-orderable. L-spaces provide a generalization of lens spaces in the context of Heegaard Floer homology. These manifolds have simplest possible Heegaard Floer homology, though they need not have cyclic (or even finite) fundamental group. This talk will describe some evidence supporting the conjecture that L-spaces are equivalent to 3-manifolds with non-left-orderable fundamental group.