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The L-space conjecture

The L-space conjecture contends that the following three conditions are equivalent for closed, orientable 3-manifolds M : (a) M admits a co-oriented taut foliation, (b) the fundamental group of M admits a left-invariant total order (i.e. it is left-orderable), and (c) the reduced Heegaard Floer homology of M is non-trivial (i.e. M is not a Heegaard Floer L-space). In this talk I will survey what is known about the conjecture and discuss some of the most important open challenges.