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Slope detection and toroidal 3-manifolds

The L-space Conjecture says that for a prime 3-manifold, properties NLS (not being an L-space), LO (having left-orderable fundamental group), and CTF (admitting a co-orientable taut foliation), are equivalent.

We investigate these properties for toroidal 3-manifolds through the notion of slope detection. We show that all toroidal integer homology spheres are LO, and that the n-fold cyclic branched covers of a prime satellite knot are NLS and LO, and are CTF if its companion is fibered. We also prove a partial extension of the latter result to links and confirm a folklore conjecture that prime satellite links are never quasi-alternating.

This is joint work with Steve Boyer and Cameron Gordon.