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Intersection cohomology of universal imploded cross-section

(Joint work with Nan-Kuo Ho)

If G is a compact Lie group, and G acts semifreely on a Hamiltonian G-space, then the preimage of the Lie algebra of the maximal torus contains only finitely many points in each orbit. More generally to get a space with this property we define the imploded cross-section of a Hamiltonian G-space by quotienting each orbit by the commutator subgroup of the stabilizer. The universal imploded cross-section is the imploded cross-section of the cotangent bundle of G – it can be used to construct the imploded cross-section of a general Hamiltonian G-manifold.

For SU(2) the universal imploded cross-section is a complex vector space of dimension 2, so its topology is trivial. In general the universal imploded cross-section is singular, but topological invariants distinguishing it from a point are not known. We compute the intersection cohomology of the universal imploded cross-section of SU(3), and show that it is nontrivial.