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Torsion and abelianization in equivariant cohomology

Let X be a topological space upon which a compact connected Lie group G acts. It is well known that the equivariant cohomology $H^*_G(X, Q)$ is isomorphic to the subalgebra of Weyl group invariants of the equivariant cohomology $H^*_T(X, Q)$, where T is a maximal torus of G. We establish a similar relationship for coefficient rings more general than Q.

Our results rely on work of Grothendieck and Demazure concerning the intersection theory of flag varieties and have applications to the cohomology of homogeneous spaces and, potentially, symplectic quotients.

This is a report on joint work with Tara Holm.