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The Euler characteristic of complete intersections in reductive groups

There is a beautiful explicit formula for the Euler characteristic of complete intersections in a complex torus (due to Bernstein and Khovanskii). E.g. the Euler characteristic of the zero set of a generic Laurent polynomial with a given Newton polytope is equal up to a sign to the volume of the polytope. I will present an extension of these results to complete intersections in an arbitrary complex reductive group. Hypersurfaces defining a complete intersection are assumed to be generic hyperplane sections corresponding to different representations of the group. Then the Euler characteristic is expressed in terms of the weight polytopes of these representations. E.g. for zero-dimensional complete intersections, my formula coincides with the formula of Kazarnovskii and Brion.

My approach is based on computation of the Chern classes for regular compactifications of reductive groups. Such compactifications are the closest relatives of toric varieties. To compute the intersection indices of the Chern classes with hyperplane sections in a regular compactification I use the algorithm of De Concini and Procesi.