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Equivariant Cohomology of Weighted Flag Varieties.

The nilpotent cone of a finite dimensional representation V of a reductive algebraic group G plays a key role in many areas of current interest; e.g., geometric invariant theory, infinite dimensional representations of real reductive groups, and representations of Weyl groups. Let χ be a cocharacter of G such that the image S acts with all positive weights. If V is irreducible and G is connected one may consider the orbit Z through extremal weight vectors. Following Ian Grojnowski and first published by Corti-Reid (2002), we consider the weighted flag variety $X = S \backslash Z$, which generalizes weighted projective space and all G/P .

Abe-Matsumura (2014) studied the T -equivariant cohomology of X for $G = GL(n, C)$ such that V corresponds to a fundamental weight, and Azam-Nazir-Qureshi (2018) more generally for the same group and any V . We study all G and V . A key fact we use is that X is rationally smooth, which enables us to explicitly describe equivariant Schubert classes via Poincare duality. We obtain a presentation of T -equivariant cohomology which generalizes the classical equivariant Borel presentation of T -equivariant cohomology of G/P . (Received September 21, 2021)