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Benjamin J Wyser* (bwyser@math.uga.edu), 30. *Equivariant Cohomology Class Formulas for K -Orbit Closures in the Flag Variety*. Preliminary report.

Let G be a simple complex algebraic group of classical type. Let K be a symmetric subgroup of G , i.e. the fixed points of an involution of G . The geometry of K -orbit closures on the flag variety G/B is related to the representation theory of a corresponding real form of the group G .

We describe ongoing work on finding formulas for the T -equivariant cohomology classes of these orbit closures in the various classical cases. (Here, T is a maximal torus of the group K .) In the case of a closed K -orbit, one can compute the restriction of the class to each T -fixed point of G/B , and then use this information to try to "guess" a formula. If a formula is guessed correctly, then the Equivariant Localization Theorem gives an easy proof of its correctness.

With formulas for the closed orbits in hand, one can obtain formulas for the remaining orbits by moving up the weak closure order applying (suitably scaled) "Demazure operators".

This problem is a generalization of the analogous problem for Schubert varieties. The latter problem turns out to be the universal case for finding cohomology class formulas for certain types of degeneracy loci. Time permitting, we will discuss possible connections between the K -orbit picture and degeneracy loci. (Received September 22, 2010)