Minimal nilpotent Hessenberg varieties

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Motivated by the prospect of connections to the minimal nilpotent orbit, H. Abe and I introduced and studied the class of minimal nilpotent Hessenberg varieties. As is true of the general nilpotent Hessenberg variety, these varieties are often singular and reducible. However, in contrast to the general case, minimal nilpotent Hessenberg varieties are invariant under the full maximal torus T.

In this seminar, I will discuss aspects of the topology and geometry of a minimal nilpotent Hessenberg variety. Firstly, I will develop two presentations of its T-equivariant cohomology ring. Secondly, I will present a combinatorial procedure for determining Poincaré polynomials and irreducible components in Lie type A.

This represents joint work with H. Abe.