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*Filtrations and bases of the cohomology rings of regular nilpotent Hessenberg varieties*

Hessenberg varieties are a class of subvarieties of the flag variety which are of interest in algebraic and symplectic geometry, combinatorics, and representation theory, among others. Their cohomology rings have been actively studied in recent years due in part to their connection with the well-known Stanley-Stembridge conjecture in combinatorics. I will very briefly recall some of this historical context, and then describe a filtration of the cohomology ring of regular nilpotent Hessenberg varieties. As corollaries, we obtain a natural monomial basis for this cohomology ring, and we also derive, in principle, all linear relations among the (images of the) Schubert classes. This is joint work with T. Horiguchi, S. Murai, M. Precup, and J. Tymoczko.