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Julianna Tymoczko* (julianna-tymoczko@uiowa.edu), Department of Mathematics, 14 MacLean Hall, University of Iowa, Iowa City, IA 52245. *Generalizing Springer's representation to Hessenberg varieties.*

Hessenberg varieties are a natural family of subvarieties of the flag variety which share some important structure with the flag variety, including in some cases an action of the full torus. We will show that the cohomology of the Hessenberg varieties carries one of the permutation actions of the full flag variety. In a loose sense (which we will make precise), this representation generalizes Springer's representation. We will also discuss some amazing combinatorial conjectures and properties about these representations. Much of this work is joint with others, including Robert MacPherson (IAS) and Nicholas Teff (U of Iowa). (Received August 30, 2011)