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**Bobbe J Cooper\*** (bcooper@math.umn.edu). *Support Varieties of Tilting Modules for  $GL_n$ .*

Let  $G$  be a reductive algebraic group scheme defined over the finite field  $F_p$ , with Frobenius kernel  $G_1$ . The tilting modules of  $G$  are defined as rational  $G$ -modules for which both the module itself and its dual have good filtrations. In 1997, J. E. Humphreys conjectured that the support varieties over the Frobenius kernel  $G_1$  of tilting modules with regular highest weight should be given by the Lusztig bijection between cells of the affine Weyl group and nilpotent orbits of  $G$ , when  $p \geq h$ , where  $h$  is the Coxeter number. I will present a conjecture for the support varieties of tilting modules when  $G = GL_n$ . The conjecture is equivalent to Humphreys' conjecture for  $p \geq h = n$  and regular weights, but the formulation allows us to consider small  $p$  or singular weights as well. We will also present results for several infinite classes of tilting modules, including the case  $p = 2$ . In the case  $p = 2$ , this proves the conjecture by S. Donkin for the support varieties of tilting modules. (Received August 26, 2008)