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George J. McNinch* (mcninchg@member.ams.org), Department of Math, Tufts University, 503 Boston Ave, Medford, MA 02155. *Nilpotent centralizers and Springer's isomorphisms.*

This talk reports on joint work with Donna Testerman (EPFL). Let G be a semisimple algebraic group over a field K whose characteristic is very good for G , and let σ be any G -equivariant isomorphism from the nilpotent variety to the unipotent variety; the map σ is known as a Springer isomorphism. Let $y \in G(K)$, let $Y \in \text{Lie}(G)(K)$, and write $C_y = C_G(y)$ and $C_Y = C_G(Y)$ for the centralizers. One of our results shows that the center of C_y and the center of C_Y are smooth group schemes over K . The existence of a Springer isomorphism is used to treat the crucial cases where y is unipotent and where Y is nilpotent.

Now suppose G to be quasisplit, and write C for the centralizer of a rational *regular* nilpotent element. We obtain a description of the normalizer $N_G(C)$ of C , and we show that the automorphism of $\text{Lie}(C)$ determined by the differential of σ at zero is a scalar multiple of the identity; these results verify observations of J-P. Serre. (Received February 5, 2008)