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**Christopher P. Bendel** and **Daniel K. Nakano\*** (nakano@math.uga.edu), Department of Mathematics, University of Georgia, Athens, GA 30602, and **Brian J. Parshall, Cornelius Pillen, Leonard L. Scott** and **David Stewart**. *Bounding Extensions for Finite Groups and Frobenius Kernels*.

Let  $G$  be a simple, simply connected algebraic group defined over an algebraically closed field  $k$  of positive characteristic  $p$ . Let  $\sigma : G \rightarrow G$  be a strict endomorphism (i.e., the subgroup  $G(\sigma)$  of  $\sigma$ -fixed points is finite). Also, let  $G_\sigma$  be the scheme-theoretic kernel of  $\sigma$ , an infinitesimal subgroup of  $G$ . In this talk we show that the degree  $m$  cohomology  $H^m(G(\sigma), L)$  of any irreducible  $kG(\sigma)$ -module  $L$  is bounded by a constant depending on the root system  $\Phi$  of  $G$  and the integer  $m$ . A similar result holds for the degree  $m$  cohomology of  $G_\sigma$ . These bounds are actually established for the degree  $m$  extension groups  $\text{Ext}_{G(\sigma)}^m(L, L')$  between irreducible  $kG(\sigma)$ -modules  $L, L'$ , with again a similar result holding for  $G_\sigma$ . In these  $\text{Ext}^m$  results, of interest in their own right, the bounds depend also on  $L$ , or, more precisely, on length of the  $p$ -adic expansion of the highest weight associated to  $L$ . All bounds are independent of the characteristic  $p$ . (Received September 02, 2012)