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**Christopher M. Drupieski\*** (cdrup@math.uga.edu), Department of Mathematics, University of Georgia, Boyd Graduate Studies Research Center, Athens, GA 30602-7403, and **Daniel K. Nakano** and **Nham Ngo**. *Cohomology rings of infinitesimal unipotent algebraic and quantum groups*. Preliminary report.

Let  $G$  be a simple, simply-connected algebraic group over an algebraically closed field  $k$  of characteristic  $p > 0$ ,  $B$  a Borel subgroup of  $G$ , and  $U$  the unipotent radical of  $B$ . Let  $U_1$  be the first Frobenius kernel of  $U$ , and  $\mathfrak{u}$  the Lie algebra of  $U$ . Friedlander and Parshall observed that for large  $p$ , there exists a filtration on the cohomology ring  $H^*(U_1, k)$  such that the associated graded ring is isomorphic to  $S(\mathfrak{u}^*) \otimes H^*(\mathfrak{u}, k)$ , a polynomial ring tensored with the ordinary Lie algebra cohomology of  $\mathfrak{u}$ . In this talk I will discuss how, for sufficiently large  $p$ , this ring isomorphism can be lifted to  $H^*(U_1, k)$ . This result makes critical use of Kostant's theorem for Lie algebra cohomology. I will also discuss how similar cohomology ring calculations can be carried out for quantum groups. (Received February 14, 2010)