1043-20-166   **Brian D. Boe*** (`brian@math.uga.edu`), Mathematics Department, University of Georgia, Athens, GA 30602, and **University of Georgia VIGRE Algebra Group**. *Cohomology of quantum groups: An analog of Kostant's Theorem.*

We prove the analog of Kostant's Theorem on Lie algebra cohomology in the context of quantum groups. We prove that Kostant's cohomology formula holds for quantum groups at a generic parameter q, recovering an earlier result of Malikov in the case where the underlying semisimple Lie algebra $\mathfrak{g} = \mathfrak{sl}(n)$. We also show that Kostant's formula holds when q is specialized to an ℓ-th root of unity for odd $\ell \geq h - 1$ (where h is the Coxeter number of $\mathfrak{g}$) when the highest weight of the coefficient module lies in the lowest alcove. This can be regarded as an extension of results of Friedlander-Parshall and Polo-Tilouine on the cohomology of Lie algebras of reductive algebraic groups in prime characteristic. The methods used in the proof closely follow the UGA VIGRE Algebra Group's previous paper "On Kostant's Theorem for Lie algebra cohomology". (Received August 26, 2008)