

1067-17-1186

Christopher Martin Drupieski* (cdrup@math.uga.edu), Department of Mathematics,
University of Georgia, Boyd Graduate Studies Research Center, Athens, GA 30602-7403.

Cohomology rings for quantized enveloping algebras. Preliminary report.

Let \mathfrak{g} be a simple complex Lie algebra, and let $U_q = U_q(\mathfrak{g})$ be the associated quantized enveloping algebra (quantum group). It is a well-known theorem, first observed in the context of Lie groups, that the homology and cohomology algebras for \mathfrak{g} are exterior algebras over graded subspaces with odd gradation. Moreover, the algebras are dual via Poincaré duality. In recent years, a number of authors have studied the homological properties of noetherian Hopf algebras, and have shown, for example, that the homology and cohomology groups for U_q also satisfy Poincaré duality, but until now there have been no explicit calculations of the cohomology groups in question. In this talk I will discuss how cohomology for the quantum group U_q can be related to cohomology for the Lie algebra \mathfrak{g} in order to obtain explicit results. I will also discuss how results for the mod p cohomology of \mathfrak{g} can be used to obtain explicit results on the cohomology of quantum groups at a p -th root of unity. (Received September 19, 2010)