1012-20-94   **Christopher P. Bendel** and **Daniel K. Nakano*** (`nakano@math.uga.edu`), Department of
Mathematics, University of Georgia, Athens, GA 30602, and **Brian J Parshall** and **Cornelius
Pillen**. *Cohomology for quantum groups.*

The main purpose of this talk is to demonstrate how to compute cohomology for quantum groups when l<h which extends
earlier results by Ginzberg and Kumar. This computation entails many beautiful results:

1) Realization of the "restricted nullcone" due to Carlson, Lin, Nakano and Parshall

2) Combinatorics involving the decomposition of the exterior algebra via the Steinberg representation. Our decomposition results makes use of MAGMA computations on root systems for exceptional Lie algebras.

3) Powerful vanishing results on line bundle cohomology proved via complex algebraic geometry (i.e. Grauert-Riemenschnieder theorem).

4) Normality results on the closures of nilpotent orbits due to Kraft-Procesi, Sommers, Broer, Kumar-Lauritzen-Thomsen.

Our results show that the cohomology ring is finitely generated. This allows us to define support varieties and compute the support varieties for quantum Weyl modules in the case when (l,p)=1 where p is any bad prime for the underlying root system. (Received September 12, 2005)