1024-20-166   **Daniel K. Nakano*** (`nakano@math.uga.edu`), Department of Mathematics, University of Georgia, Athens, GA 30602. *On Kostant's Theorem for Lie Algebra Cohomology.* Preliminary report.

Let $\mathfrak{g}$ be a complex simple Lie algebra, $\mathfrak{p}_J$ be a parabolic subalgebra with unipotent radical $\mathfrak{u}_J$ where J denotes a subset of simple roots. Kostant proved a famous theorem which computes the Lie algebra cohomology $H^\bullet(\mathfrak{u}_J, L(\lambda))$ where $L(\lambda)$ is a finite-dimensional $\mathfrak{g}$-module.

Over fields of positive characteristic, Kostant's theorem remains valid as long as the characteristic is greater than or equal to $h-1$ where h is the Coxeter number for the associated root system for $\mathfrak{g}$ and the high weight of $L(\lambda)$ is in the bottom alcove. In this talk, I will provide new insights into Kostant's theorem which will be useful in finding a suitable formulation for small primes. The results presented in this talk were obtained by the University of Georgia VIGRE Algebra Group. (Received January 07, 2007)