1043-17-53 **University of Georgia VIGRE Algebra Group**, Dept. of Mathematics, University of Georgia, Athens, GA 30602, and **Jonathan Kujawa***, Dept. of Mathematics, University of Oklahoma, Norman, OK 73019. *On Kostant's Theorem for Lie Algebra Cohomology.*

Arguably one of the most beautiful results in Lie algebra cohomology is Kostant's theorem. Let $\mathfrak{g}$ be the Lie algebra of a simple algebraic group and let the ground field have characteristic larger than the Coxeter number of $\mathfrak{g}$ (or zero). With this setup Kostant's theorem provides an explicit description of the cohomology of the nilradical of a Borel subalgebra with coefficents in a simple module of $\mathfrak{g}$.

However, if the characteristic is smaller than the Coxeter number then very little is known about these cohomology groups. We show that in this case one always obtains cohomology not predicted by Kostant's formula. We will also discuss low rank examples calculated using MAGMA and various conjectures and questions raised by these computations. (Received August 12, 2008)