

1040-17-31

Irfan Bagci* (bagci@math.uga.edu), Department of Mathematics, University of Georgia,
Athens, GA 30602. *Cohomology and Support Varieties for Lie superalgebras of type $W(n)$.*

(Joint work with J. Kujawa and D. Nakano)Boe, Kujawa and Nakano recently investigated the relative cohomology for classical Lie superalgebras and developed a theory of support varieties. The dimensions of the support varieties that were constructed realize the combinatorial notions of defect and atypicality due to Kac and Wakimoto . In this paper we calculate the relative cohomology ring of the Cartan type Lie superalgebra $W(n)$ relative to the graded zero component $W(n)_0$ and show that this ring is finitely generated. This allows one to define support varieties for finite-dimensional $W(n)$ -supermodules which are completely reducible over $W(n)_0$. We calculate the support varieties of all simple modules in this category. Remarkably our computations coincide with the prior notions of atypicality for Cartan type superalgebras due to Serganova. (Received January 7, 2008)