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**Irfan Bagci\*** ([bagci@math.uga.edu](mailto:bagci@math.uga.edu)), Department of Mathematics, University of Georgia,  
Athens, GA. *Cohomology and Support Varieties for  $W(n)$ .*

(Joint work with Jonathan Kujawa and Daniel Nakano) Boe, Kujawa and Nakano recently investigated 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 talk we will 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 will allow us 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 August 27, 2008)