1033-17-80   **Brian D. Boe*** (`brian@math.uga.edu`), Mathematics Department, University of Georgia, Athens, GA 30602, **Jonathan R. Kujawa** (`kujawa@math.ou.edu`), Mathematics Department, University of Oklahoma, Norman, OK 73019, and **Daniel K. Nakano** (`nakano@math.uga.edu`), Mathematics Department, University of Georgia, Athens, GA 30602. *Cohomology and support varieties for Lie superalgebras II.*

Let $\mathfrak{g} = \mathfrak{g}_{\bar{0}} \oplus \mathfrak{g}_{\bar{1}}$ be a classical Lie superalgebra over $\mathbb{C}$. In earlier work, the authors developed a theory of cohomology and support varieties for $\mathfrak{g}$, and discovered small subalgebras $\mathfrak{e}$ which "detect" the relative cohomology of $\mathfrak{g}$ with respect to $\mathfrak{g}_{\bar{0}}$. The dimension of $\mathfrak{e}$ coincides with the defect of $\mathfrak{g}$, and the support variety over $\mathfrak{e}$ is given by a rank variety construction.

In this talk we will discuss applications of these results. We compute the support varieties of the Kac supermodules for Type I Lie superalgebras, and of the simple supermodules for $\mathfrak{gl}(m|n)$. The latter result verifies for $\mathfrak{gl}(m|n)$ an earlier conjecture of the authors, that the atypicality of a simple supermodule coincides with the dimension of its support variety. Finally, we make connections between the notions of atypicality, defect, and superdimension, and draw parallels with the modular representation theory of finite groups in characteristic two. (Received September 03, 2007)