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Jonathan R Kujawa* (kujawa@math.uga.edu), Math Dept, Boyd Graduate Center, University of Georgia, Athens, GA 30602, and **Brian Boe** and **Daniel K Nakano**. *Support Varieties for Lie Superalgebras*.

Let $\mathfrak{g} = \mathfrak{g}_{\bar{0}} \oplus \mathfrak{g}_{\bar{1}}$ denote a finite dimensional Lie superalgebra over the complex numbers. Let \mathcal{F} denote the category of all finite dimensional \mathfrak{g} -supermodules which are semisimple as $\mathfrak{g}_{\bar{0}}$ -modules. Unlike finite dimensional modules for simple Lie algebras, the category \mathcal{F} has a rich cohomology. Developing tools to study this cohomology is key to understanding the representation theory of \mathfrak{g} . Inspired by their successful use in the context of finite groups and restricted Lie algebras, we define support varieties for supermodules in \mathcal{F} .

We prove that under mild restrictions there is a Lie subsuperalgebra $\mathfrak{e} \subseteq \mathfrak{g}$ which plays a role similar to that of the elementary abelian and defect subgroups for finite groups. We show that the support varieties of \mathfrak{g} and \mathfrak{e} are closely related and that \mathfrak{e} support varieties have many of the desirable properties of a support variety theory. They also have connections to the combinatorics of Lie superalgebras. This work is joint with Brian Boe and Daniel Nakano. This talk is a self-contained sequel to the talk by Brian Boe, also in this session. (Received September 25, 2006)