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**Christopher M Drupieski\*** (c.drupieski@depaul.edu) and **Jonathan R Kujawa** (kujawa@math.ou.edu). *Support varieties and modules of finite projective dimension for modular Lie superalgebras.*

Let  $\mathfrak{g}$  be a finite-dimensional Lie superalgebra over an algebraically closed field  $k$  of characteristic  $p \geq 3$ . Using the cohomology ring of  $\mathfrak{g}$ , one can define for each finite-dimensional  $\mathfrak{g}$ -supermodule  $M$  a corresponding affine algebraic variety  $X_{\mathfrak{g}}(M)$ , called the cohomological support variety of  $M$ . In this talk I'll discuss recent work with Jonathan Kujawa in which we give an explicit 'rank variety' description for  $X_{\mathfrak{g}}(M)$  as a subset of  $X_{\mathfrak{g}} = \{x \in \mathfrak{g}_{\bar{1}} : [x, x] = 0\}$ , the odd nullcone of  $\mathfrak{g}$ . A key tool in our approach is the Clifford filtration on  $\mathfrak{g}$ , which helps us to compare  $X_{\mathfrak{g}}(M)$  to the support variety of a certain related unipotent finite supergroup scheme. As corollaries of our main result, I'll discuss a characterization of when a finite-dimensional  $\mathfrak{g}$ -supermodule is of finite projective dimension, and a positive characteristic analogue of a theorem of Bøgvad concerning a criterion for when the enveloping algebra of  $\mathfrak{g}$  is of finite global dimension. (Received December 18, 2019)