1176-17-61 **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 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 January 11, 2022)