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Christopher M. Drupieski* (cdrup@math.uga.edu), University of Georgia, Department of Mathematics, Boyd Graduate Studies Research Center, Athens, GA 30602. *Projective modules for Frobenius kernels and finite groups of Lie type*. Preliminary report.

Let G be a semisimple simply-connected algebraic group over an algebraically closed field of characteristic $p > 0$. Let $r \geq 1$ and set $q = p^r$. Let M be a finite-dimensional rational G -module. In this talk we will show that if M is projective when considered as a module over the r -th Frobenius kernel G_r of G , then M is also projective when considered as a module over the finite subgroup $G(\mathbb{F}_q)$ of \mathbb{F}_q -rational points in G . (A well-known example of a module M satisfying this property is the Steinberg module St_r .) This result generalizes previous work of Lin and Nakano, who established the result in the case $r = 1$, and is also related to recent work of Friedlander on Weil restriction and support varieties. The proof we will present in this talk is entirely non-geometric, so is interesting even for the previously-established case when $r = 1$. (Received January 14, 2012)