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*Extensions for finite Chevalley groups and Frobenius kernels.*

Let  $G$  be a semisimple, simply connected algebraic group over a field  $k$  of positive characteristic  $p$ . Associated to such a group are two infinite families of groups: finite Chevalley groups  $G(F_q)$  for  $q = p^r$  and Frobenius kernels  $G_r$ . This talk will discuss techniques and consequences thereof developed to study extensions over finite Chevalley groups and Frobenius kernels by identifying these with direct sums of extension groups over  $G$ . Various vanishing results will be presented, including the vanishing of self-extensions over certain finite Chevalley groups. (Received September 14, 2000)