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**Leonard L. Scott\*** (lls21@virginia.edu). *Some cohomology of finite and algebraic groups.*

This talk involves joint work with several authors, especially Brian Parshall and David Stewart. I will review the theory of “generic cohomology” and a new, sharper form of it called “shifted generic cohomology”. It focuses on cohomology with irreducible coefficients, and is defined for any algebraic group  $G$ . For a given Lie rank and cohomology degree  $m$ , with the exception of finitely many finite fields  $F$ , it computes the cohomology of the finite group of Lie type  $G(F)$  with coefficients in any absolutely irreducible  $G(F)$  module (over a field of the same characteristic as that of  $F$ ) in terms of the cohomology of  $G$  with irreducible coefficients in a related irreducible rational  $G$ -module—for which stronger methods are available. Indeed, the older theory of “generic cohomology” already has striking applications to finite groups, when coupled with the algebraic groups theory surrounding the Lusztig conjecture and Kazhdan-Lusztig polynomials. As time permits, I will illustrate with some computer calculations of Frank Luebeck, confirmed by my undergraduate student Tim Sprowl, which, together with observations of Bob Guralnick, have overturned a 1961 conjecture on maximal subgroups of finite groups. (Received September 13, 2012)