

**Meeting:** 1003, Atlanta, Georgia, SS 8A, AMS Special Session on Modular Representation Theory of Finite and Algebraic Groups, I

1003-16-679      **Eric Friedlander** and **Julia Pevtsova\*** (julia@darkwing.uoregon.edu). *“Rank Varieties” for finite group schemes.*

I shall present joint work with E. Friedlander in which we investigate representation-theoretic properties of a cohomological support variety of a module for a finite group scheme over a field of positive characteristic. Generalizing the original construction of a rank variety for an elementary abelian  $p$ -group due to J. Carlson, we introduce the “representation-theoretic” support space  $\Pi(G)$  of a finite group scheme  $G$ , and further associate to a module  $M$  a geometric invariant  $\Pi(G)_M$  inside  $\Pi(G)$ .

As our construction works for any module, not necessarily finite dimensional, we do not always get a variety despite the title of the talk. Nonetheless, we provide the ambient space  $\Pi(G)$  with a scheme structure defined in terms of endomorphism rings in quotient categories of the stable module category of  $G$ . We show that the resulting scheme is isomorphic to the homogeneous prime ideal spectrum of the cohomology ring  $H^*(G, k)$ . For a finite dimensional module  $M$ , this isomorphism restricts further to an isomorphism between  $\Pi(G)_M$  and the cohomological support scheme of  $M$ . (Received September 27, 2004)