

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

1003-22-1504 **Joseph A. Fox*** (joe.fox@wmich.edu), Western Michigan University, Department of Mathematics, Kalamazoo, MI 49008. *A Classification of Nilpotent Orbits in Infinitesimal Symmetric Spaces*. Preliminary report.

Let G be a reductive algebraic group over an algebraically closed field of characteristic $p > 2$, and let $\theta \in \text{Aut}(G)$ be an involution with fixed-point subgroup $K = G^\theta$. The Lie algebra $\mathfrak{g} = \text{Lie}(G)$ decomposes as a direct sum $\mathfrak{g} = \mathfrak{k} \oplus \mathfrak{p}$, where $\mathfrak{k} = \text{Lie}(K)$, and \mathfrak{p} identifies with the tangent space at the identity to the symmetric space G/K . The adjoint action of G on \mathfrak{g} restricts to an action of K on \mathfrak{p} . There are connections between the geometry of the K -variety $\mathcal{N}(\mathfrak{p})$, which consists of the nilpotent elements of \mathfrak{p} , and the representation theories of G , K , \mathfrak{g} , and \mathfrak{p} (for example, in the theory of support varieties). In this talk, we discuss a classification of the K -orbits in $\mathcal{N}(\mathfrak{p})$ when p is a good prime. This classification is motivated by the one given by Pommerening (recently reworked by Premet) for G -orbits in $\mathcal{N}(\mathfrak{g})$. (Received October 05, 2004)