

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

1003-20-611            **George J McNinch\***, Department of Mathematics, Tufts University, 503 Boston Ave, Medford, MA 02155. *Nilpotent orbits over ground fields of good characteristic.*

Let  $G$  be a semisimple  $K$ -group, where  $K$  is any field whose characteristic is “very good” for  $G$ . If  $X$  is a nilpotent element of  $\text{Lie}(G)$ , a precise form of the Hilbert-Mumford criteria for instability – due to Kempf and Rousseau – associates to  $X$  certain cocharacters of  $G$  which serve in many ways as a useful substitute for  $\text{sl}(2)$ -triples. Premet used these cocharacters to give recently a conceptual proof of the Bala-Carter theorem in good characteristic. The talk will discuss some further recent application of these ideas; for example, they yield a proof that nilpotent orbital integrals converge in case  $K$  is a field of formal series with finite field of constants. (Received September 24, 2004)