Geometric restrictions on nilpotent orbits associated to distinguished representations of reductive groups.

Abstract:

Let $G$ be a reductive group over a local field, and $H$ be a spherical subgroup. An irreducible representation of $G$ is said to be distinguished by $H$ if it has an $H$-invariant continuous linear functional. The study of distinguished representations is of much current interest, because of their relation to the Plancherel measure on $G/H$ and to periods of automorphic forms.

While a complete classification seems to be out of reach, in a joint work with E. Sayag we established simple geometric necessary conditions for distinction. The conditions are formulated in terms of the nilpotent orbit associated to the representation. In the talk I will focus on the case of real reductive $G$, based on the recent preprint arXiv:2001.11746. Our main tool is the theory of associated varieties of modules over the Lie algebra of $G$. 