September 4, 2013: David Vogan (MIT), *Leading terms of characters.*

Joint work with Pavle Pandzić and Salah Mehdi.

The most interesting and fundamental invariant of a finite-dimensional group representation is its dimension: the value of its character at the identity element. If G is a real reductive group, then a typical representation π of G is infinite-dimensional, and its character Θ_π is a generalized function on G, lacking a well-defined value at the identity.

Harish-Chandra's theory of invariant eigendistributions nevertheless provides something exactly like a Taylor expansion for Θ_π. The leading term is no longer an integer (the dimension), but it *is* an integer linear combination of certain standard distributions (the Fourier transforms of symplectic measures on nilpotent coadjoint orbits). These integer coefficients can be thought of as generalizations of the dimension to infinite-dimensional representations. I will discuss an interpretation of the integers (in terms of Dirac operators) in some very special cases.