

November 15: Ben Harris (MIT), “Fourier Transforms of Nilpotent, Coadjoint Orbits and Wave Front Cycles of Tempered Representations.”

Suppose π is an irreducible, admissible representation of a reductive Lie group with character Θ_π . By results of Barbasch-Vogan and Schmid-Vilonen, the leading term of Θ_π at one is an integral linear combination of Fourier transforms of nilpotent, coadjoint orbits.

The first half of this talk will be about understanding Fourier transforms of nilpotent, coadjoint orbits. I will state the most powerful theorem in the subject due to Rossmann and Wallach. Then I will explicitly write down Fourier transforms of nilpotent, coadjoint orbits for $\mathrm{GL}(n, \mathbb{R})$.

The second half of this talk will be about understanding which orbits occur in leading terms of characters. In particular, I will state a conjecture of David Vogan about which orbits occur in leading terms of tempered characters. If time permits, I will give some hint as to how one direction of this conjecture is proved. This will consist of giving an analogue of Kirillov’s dimension formula for tempered representations of reductive Lie groups.