Speaker: David Soudry

Title: On Rankin-Selberg integrals for classical groups

Abstract: I will survey the structure of families of global integrals of Rankin-Selberg type, which were predicted to represent partial L-functions for pairs of irreducible, automorphic, cuspidal representations (π, τ) on (G, GL_n), where G is a classical group. I will focus on split orthogonal groups. In the global integrals, we integrate a Fourier coefficient "of Bessel type" applied to a cusp form on G against an Eisenstein series on a related classical group H, induced from a maximal parabolic subgroup, or vice versa. These integrals are "Eulerian" and depend on a "Bessel model" of π, with respect to a given cuspidal representation σ on a classical group G', which figure out in the parabolic data of the Eisenstein series. They global integrals contain the ones studied by Shahidi (Langlands-Shahidi method) and they also contain the integrals studied by Gelbart, Piatetski-Shapiro; Ginzburg; Soudry; Kaplan, where σ is trivial. These cases require that π is generic (i.e. has a global Whittaker model). Ginzburg, Piatetski-Shapiro and Rallis computed the unramified local integrals in the "spherical case", that is when G' is the stabilizer in G of an anisotropic vector. In the talk, I will present the calculation of the unramified local integrals at all cases. It is done by "analytic continuation" from the generic cases above. With the Eisenstein series normalized, we get the local L-function $L(\pi \times \tau, s)$. The global integrals above are useful in locating poles of L-functions of representations π with a given type of Bessel models. In the generic case, one family has been crucial in the proof of the weak functorial lift to $GL(N)$ by Cogdell, Kim, PS, Shahidi; another family has been crucial in the automorphic descent (from $GL(N)$ to G) by Ginzburg, Rallis, Soudry.