On automorphic descent from GL(7) to G2

Abstract:

In this talk, I will introduce the functorial descent from cuspidal automorphic representations $\pi$ of $GL(7)(A)$ with $L^S(s, \pi, \wedge^3)$ having a pole at $s=1$ to the split exceptional group $G_2(A)$, using Fourier coefficients associated to two nilpotent orbits of $E_7$. We show that one descent module is generic, and under mild assumptions on the unramified components of $\pi$, it is cuspidal and having $\pi$ as a weak functorial lift of each irreducible summand. However, we show that the other descent module supports not only the non-degenerate Whittaker integral on $G_2(A)$, but also every degenerate Whittaker integral. Thus it is generic, but not cuspidal. This is a new phenomenon, compared to the theory of functorial descent for classical and $GSpin$ groups. This work is joint with Joseph Hundley.