SPEAKER: Baiying Liu (University of Minnesota)

TITLE: On Special Nilpotent Orbits and Fourier Coefficients for Automorphic Forms on Symplectic Groups

ABSTRACT: Fourier coefficients play an important role in the study of automorphic forms. For classical groups, there is a general framework of attaching Fourier coefficients to nilpotent orbits which are parametrized by partitions. In the first part of the talk, I will show that for any irreducible automorphic representation π of symplectic groups G, a partition $\underline{p}$ providing non-vanishing Fourier coefficients implies that $\underline{p}^G$, the symplectic expansion of $\underline{p}$ also provides non-vanishing Fourier coefficients. An immediate corollary is that for symplectic groups "top orbits are special".

For any irreducible cuspidal automorphic representation π of symplectic groups or their double covers, in 2003, Ginzburg, Rallis and Soudry found a maximal even symplectic partition $\underline{p}(\pi)$ providing non-vanishing Fourier coefficients with respect to certain characters $\psi_{\underline{p}(\pi),\underline{a}}$, where $\underline{a} \subset F^*/(F^*)^2$. In the second part of the talk, I will show that the Levi subgroup of the stabilizer of any such character is anisotropic. This result has been used to show some special properties of certain cuspidal automorphic representations when F is a totally imaginary number field.

This is a joint work with Prof. Dihua Jiang.