FOURIER COEFFICIENTS OF AUTOMORPHIC FORMS AND ARTHUR CLASSIFICATION

BAIYING LIU

Abstract. It is a well-known theorem, due to J. Shalika and I. Piatetski-Shapiro, independently, that any non-zero cuspidal automorphic form on $GL_n(\mathbb{A})$ is generic, i.e. has a non-zero Whittaker-Fourier coefficient. Its proof follows from the Fourier expansion of the cuspidal automorphic form in terms of its Whittaker-Fourier coefficients. In this talk, I will extend this Fourier expansion to the whole discrete spectrum of the space of all square-integrable automorphic forms of $GL_n(\mathbb{A})$ and determine the Fourier coefficients of irreducible non-cuspidal (residual) automorphic representations of $GL_n(\mathbb{A})$ in terms of unipotent orbits. This work is joint with Prof. Dihua Jiang.

Then, I will show that the above result fits into a conjecture of Prof. Dihua Jiang on the relation between the structure of Fourier coefficients and the Arthur parameters of automorphic forms in the discrete spectrum of classical groups, and discuss some recent progress, joint with Prof. Dihua Jiang.