## Abstract

Lagrange's four-square theorem states that every natural number can be represented as a sum of four non-negative integer squares. The number of such representations is expressed as the Fourier coefficients of modular forms. As an extension, Fourier coefficients of automorphic representations play an important role in number theory and representation theory such as the Gan-Gross-Prasad Conjecture. In this talk, we will report our results on the local aspect of the Fourier coefficients. This is a joint project with Dihua Jiang, Dongwen Liu, and Zhicheng Wang.