

# Philadelphia Area Number Theory Seminar

**Liyang Yang**  
Princeton University

## Relative Trace Formula and $L$ -functions for $GL(n+1) \times GL(n)$

**Abstract:** We will introduce a relative trace formula on  $GL(n+1)$  weighted by cusp forms on  $GL(n)$  over number fields. The spectral side is an average of Rankin-Selberg  $L$ -functions for  $GL(n+1) \times GL(n)$  over the full spectrum, and the geometric side consists of Rankin-Selberg  $L$ -functions for  $GL(n) \times GL(n)$ , and certain explicit meromorphic functions. The formula yields new results towards central  $L$ -values for  $GL(n+1) \times GL(n)$ : the second moment evaluation, and simultaneous nonvanishing in the level aspect. Further applications to the subconvexity problem will be discussed if time permits.

**Wednesday, February 1, 2023**  
3:5 PM

Bryn Mawr College  
Department of Mathematics  
Park Science Center **328**

Informal refreshments at 3PM { Talk at 3:30PM