The nonvanishing of Selmer groups for certain symplectic Galois representations

Abstract: Given an automorphic representation $\pi$ of $\text{SO}(n, n + 1)$ with certain nice properties at infinity, one can nowadays attach to $\pi$ a $p$-adic Galois representation $R$ of dimension $2n$. The Bloch–Kato conjectures then predict in particular that if the $L$-function of $R$ vanishes at its central value, then the Selmer group attached to a particular twist of $R$ is nontrivial.

I will explain work in progress proving the nonvanishing of these Selmer groups for such representations $R$, assuming the $L$-function of $R$ vanishes to odd order at its central value. The proof constructs a nontrivial Selmer class using $p$-adic deformations of Eisenstein series attached to $\pi$, and I will highlight the key new input coming from local representation theory which allows us to check the Selmer conditions for this class at primes for which $\pi$ is ramified.

Wednesday, April 12, 2023
2:00–4:00 PM
Temple University
Tuttleman Hall, Room 001A
Informal refreshments at 2:00PM – Talk at 2:30PM