

Speaker: Ashay Burungale

Title: A local sign decomposition for symplectic self-dual Galois representations of rank two

Abstract: We present a new structure on the first Galois cohomology of families of symplectic self-dual p -adic representations of $G_{\mathbb{Q}_p}$ of rank two. This is a functorial decomposition into free rank one Lagrangian submodules encoding Bloch-Kato subgroups and epsilon factors, mirroring an underlying symplectic structure.

This local sign decomposition has local as well as global applications, including compatibility of the Mazur-Rubin arithmetic local constants and epsilon factors, and new cases of the parity conjecture. It also leads to a formulation and proof of an analogue of Rubin's conjecture over ramified quadratic extensions of $\mathbb{Q}_p$, which initiates an integral Iwasawa theory for CM elliptic curves at primes of additive reduction. (Joint with S. Kobayashi, K. Nakamura, and K. Ota.)