

Mathilde Gerbelli-Gauthier

Counting non-tempered automorphic forms using endoscopy

Abstract :

In this talk, we consider the limit multiplicity question (and some variants) : how many automorphic forms of fixed infinity-type and level  $N$  are there as  $N$  grows? The question is well-understood when the archimedean representation is a discrete series, and we focus on non-tempered cohomological representations on unitary groups. Using an inductive argument which relies on the stabilization of the trace formula and the endoscopic classification, we give asymptotic counts of multiplicities, and prove the Sarnak-Xue conjecture at split level for (almost!) all cohomological representations of unitary groups. Additionally, for some representations, we derive an average Sato-Tate result in which the measure is the one predicted by functoriality. This is joint work with Rahul Dalal.