

Speaker: Ana Caraiani

Title: Vanishing theorems for the cohomology of Shimura varieties

Abstract: I will survey some vanishing theorems for the mod p cohomology of Shimura varieties. I will mention some p -adic results and some ℓ -adic results, where ℓ is a prime different from p . Both settings rely on the geometry of the Hodge-Tate period morphism. I will highlight the differently flavoured techniques that are needed using the toy model of the modular curve. I will end by discussing joint work in progress with Matteo Tamiozzo in the case of Hilbert modular varieties.

Speaker: Tasho Kaletha

Title: A twisted Yu construction and Harish-Chandra characters

Abstract: In 2001 J.K. Yu gave a general construction of supercuspidal representations of reductive p -adic groups. It was shown by Kim and Fintzen that all supercuspidal representations arise from it when p is not too small. I will discuss a twist of this construction, which resolves a recently discovered error in Yu's paper. I will then discuss the following applications that this twisted construction makes possible: (i) a formula for the Harish-Chandra character of the resulting representations without compactness or shallowness assumptions, (ii) a construction of the local Langlands correspondence for arbitrary supercuspidal parameters when p is not too small, (iii) the proof of endoscopic transfer for regular supercuspidal L-packets. This is joint work, partly in progress, with Fintzen and Spice.

Speaker: Yiannis Sakellaridis

Title: Intersection cohomology & L -functions

Abstract: I will report on ongoing joint work with Jonathan Wang, relating the intersection complex of the arc space of a spherical variety to an unramified local L -function. This is a broad generalization of Tate's thesis ($G = \mathbb{G}_m$, $X = \mathbb{A}^1$), where the local unramified L -factors are represented by the characteristic function of the integers \mathfrak{o} of a non-Archimedean field. For more general groups G and possibly singular spherical G -varieties X , the characteristic function of $X(\mathfrak{o})$ is not the correct object to consider, and has to be replaced by a function obtained as the Frobenius trace of the intersection complex of the arc space of X . In special cases of horospherical, toric, affine homogeneous spherical varieties, or certain reductive monoids, the relation of this function to L -functions was previously described in works of Braverman–Finkelberg–Gaitsgory–Mirković, Bouthier–Ngô and myself. Our current work describes these IC functions in a very general setting, relating the IC function of the arc space to an L -value determined by the geometry of the spherical variety.

Speaker: Eva Viehmann

Title: Newton strata in the weakly admissible locus

Abstract: Given a reductive group G over a p -adic local field and a minuscule cocharacter, Rapoport and Zink constructed an open subspace inside the associated adic flag variety, called p -adic period domain, or weakly admissible locus. These are vast generalizations of Drinfeld upper half spaces. Recently, Caraiani and Scholze defined a Newton stratification on adic flag varieties. The unique open Newton stratum, which coincides with the so-called admissible locus, is contained in the weakly admissible locus, but is in most cases strictly smaller. For the group GL_n , I describe which of the other Newton strata intersect the weakly admissible locus.