CALCULATION OF THE MULTIPLICITY MATRIX ASSOCIATED TO THE INFINITESIMAL PARAMETER OF THE CUBIC UNIPOTENT ARTHUR PARAMETER

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Abstract. This is a continuation of the talk from last week on admissible representations of p-adic G(2) associated to cubic unipotent Arthur parameters.

We have seen how the subregular unipotent orbit in the L-group for split G(2) determines a unipotent Arthur parameter and thus an unramified infinitesimal parameter $\lambda : W_F \to {}^LG(2)$. Using the Voganish conjectures (`https://arxiv.org/abs/1705.01885v4`) we find that there are exactly 8 admissible representations with infinitesimal parameter λ. Last week Qing Zhang interpreted λ as a Langlands parameter for the split torus in p-adic G(2) and worked out the corresponding quasi-character $\chi : T(F) \to \mathbb{C}^*$ using the local Langlands correspondence. We expect that all admissible representations in the composition series of $Ind_{B(F)}^{G(2,F)} \chi$ have infinitesimal parameter λ; we wonder if not all 8 admissible representations arise in this way.

In this talk I will calculate the multiplicity matrix that describes how these 8 admissible representations are related to 8 standard modules with infinitesimal parameter λ, assuming the Kazhdan-Lusztig conjecture as in appears in Section 10.2.3 of the preprint above. To make this calculation I will use the Decomposition Theorem to calculate the stalks of all simple H_λ-equivariant perverse sheaves on the mini-Vogan variety V_λ, following the strategy explained in Section 10.3.3 of the preprint.

Date: 2018 November 29, 10:00 MST.