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Arthur parameters and orbits with singular closure

Building on the work of Zelevinsky, and the cases for real and complex groups, David Vogan proposed a p -adic Kazhdan-Lusztig hypothesis: The dimensions of stalks of perverse sheaves on the "Vogan variety" V_λ of Langlands parameters having infinitesimal parameter λ , should coincide with multiplicities of irreducible representations of infinitesimal parameter λ in standard representations. Moreover, Vogan defined what we call ABV-packets in terms of the microlocal geometry of V_λ , and proposed that these coincide with Arthur's A -packets.

In this talk, I will discuss recent work with collaborators that, if G is a p -adic group for which the p -adic Kazhdan-Lusztig hypothesis holds, then the forward direction of the Gross-Prasad conjecture holds: An L -packet $\Pi_\phi(G)$ contains a generic representation if and only if $L(s, \phi, \text{Ad})$ is regular at $s = 1$. I will also discuss an analogous result for ABV-packets, and implications for Shahidi's enhanced genericity. Finally, I will discuss some results towards showing that Arthur parameters of classical groups and $\text{GL}(n)$ are associated to orbits of singular closure in their Vogan variety, and counter-examples for non-classical groups.