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An ABV-packet for a General Linear Group with Two Representations

It is known that not all ABV-packets are Arthur packets, and in particular, that Arthur packets for general linear groups are singletons. My research project concerns, what is believed to be, the smallest known example of an ABV-packet for a general linear group that is not a singleton, and hence is not of Arthur type. Specifically, I will be completing a calculation with C.Cunningham which shows that there is an irreducible admissible representation π of p-adic $GL(16)$ with the property that its ABV-packet contains exactly one other irreducible representation, π' .

The main tool we are using to calculate the ABV-packet for p-adic $GL(16)$ is the functor Ev which is built from Deligne's vanishing cycles functor. In this talk, I will illustrate the methods used to compute this functor. In particular, we will discuss geometric techniques used to calculate perverse sheaves and their microlocal vanishing cycles on quiver representation varieties of type A.