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An example of Vogan's geometric description of Arthur packets for p -adic groups

In 1992, David Vogan conjectured how one might use techniques from microlocal geometry to study Arthur packets of irreducible admissible representations of connected reductive groups over local fields. Shortly after, Adams, Barbasch and Vogan proved this conjecture for reductive groups over Real numbers. By contrast, Vogan's conjecture remains open for reductive groups over p -adic fields. In this talk we give a precise statement of Vogan's conjecture for Arthur packets of admissible representations of p -adic groups and the stable distributions attached to them by Arthur's work; this version of the conjecture makes no mention of microlocal geometry. Then we give an example of this conjecture, involving 15 representations of p -adic $SO(7)$, both split and anisotropic forms, and confirm the conjecture in this case. This is joint work with Andrew Fiori, James Mracek, Ahmed Moussaoui and Bin Xu.