## Orbit graphs of associated varieties

ABSTRACT: Let  $\pi$  be an irreducible Harish-Chandra (g, K)-module, and denote its associated variety by  $AV(\pi)$ . By a famous result of David Vogan, if  $AV(\pi)$  is reducible, then each irreducible component must have a boundary component of codimension one. Thus we are interested in the codimension one adjacency of nilpotent orbits for a symmetric pair (G, K).

In this talk, we introduce orbit graphs based on the codimension one adjacency condition and also define the associated graph for  $\pi$ . We study its combinatorial structure for classical symmetric pairs as well as representation theoretic meanings.

One of our main results states that, in the case of indefinite unitary group U(p,q), for each connected component of the orbit graph there is an irreducible Harish-Chandra module  $\pi$  whose associated graph is exactly equal to it.

This is a joint work with Peter Trapa and Akihito Wachi.