Nilpotent Orbits and Whittaker Functions for Derived Functor Modules of $\text{Sp}(2, \mathbb{R})$

Takuya Miyazaki

Abstract. We study the moderate growth generalized Whittaker functions, associated to a unitary character $\psi$ of a unipotent subgroup, for the non-tempered cohomological representation of $G = \text{Sp}(2, \mathbb{R})$. Through an explicit calculation of a holonomic system which characterizes these functions we observe that their existence is determined by the including relation between the real nilpotent coadjoint $G$-orbit of $\psi$ in $\mathfrak{g}^*_0$ and the asymptotic support of the cohomological representation.