Howe correspondence between Harish-Chandra series

Abstract:

Let $F_q$ be a finite field with $q$ elements and odd characteristic. A pair $(G, G_t)$ of mutually centralized reductive subgroups of $\text{Sp}_{2n}(F_q)$ is called a reductive dual pair. By means of the Weil representation of $\text{Sp}_{2n}(F_q)$, Roger Howe introduced a correspondence $\Theta: R(G) \to R(G_t)$ between the category of complex representations of these subgroups. Here we discuss how this correspondence relates the Harish-Chandra series of $G$ to those of $G_t$. If time allows, we will discuss how this correspondence can be expressed as a correspondence between unipotent Harish-Chandra series.