On the restriction of automorphic forms on an orthogonal group to a smaller orthogonal group and the Gross-Prasad conjecture

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In this talk, we consider the restriction of automorphic forms on $\mathrm{SO}(n+1)$ to $\mathrm{SO}(n)$. More precisely, let $f_1 \in \pi_1$ and $f_0 \in \pi_0$ be square-integrable automorphic forms on $\mathrm{SO}(n+1)$ and $\mathrm{SO}(n)$, respectively. Then we formulate a conjecture which relates the inner product $\langle f_1|_{\mathrm{SO}(n)}, f_0 \rangle$ to the L-value $\mathcal{P}(\frac{1}{2})$, where

$$\mathcal{P}(s) = \frac{L(s, \pi_1 \times \pi_0)}{L(s+\frac{1}{2}, \pi_1, \mathrm{Ad})L(s+\frac{1}{2}, \pi_0, \mathrm{Ad})}.$$

Our conjecture can be considered as a refinement of the global Gross-Prasad conjecture.