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**Shintani Functions for the Holomorphic Discrete Series Representation of  $GSp_4(\mathbb{R})$**

Let  $\pi$  be the holomorphic discrete series representation of  $GSp_4(\mathbb{R})$  and  $\eta$  the discrete series representation of  $(GL_2 \times_{GL_1} GL_2)(\mathbb{R})$ . We prove the uniqueness and an explicit formula of the Shintani functions for  $(\pi, \eta)$ . As their application, we evaluate a local zeta integral of Murase-Sugano type, which turns out to be a quotient of the  $L$ -factors associated with  $\pi$  and  $\eta$ .

**Keywords:** Shintani functions, automorphic L-functions, zeta integrals.

**MSC:** 11F70; 11F46, 22E50