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**Juhyung Lee\*** ([juhylee@math.okstate.edu](mailto:juhylee@math.okstate.edu)), MS438 OSU, Stillwater, OK 74078. *A realization of an irreducible unitary representation.*

To give a realization of an irreducible unitary representation of  $G = GL(2n, R)$ , we use the usual  $G$ -invariant Hermitian form coming from the standard  $G$ -intertwining operator between degenerate principal series representations. It is known that the zeta distribution is given by the  $G$ -intertwining operator and has a meromorphic continuation to all of  $\mathbf{C}$ . The formula for the Fourier transformation of  $|\det(x)|^{-t}$ , as a distribution, gives a functional equation between the zeta distributions which is known as the Fundamental Theorem of Prehomogeneous vector spaces.

To show that the Hermitian form is positive definite, we need to extend the formula, which is well-known for Schwartz functions, to the larger class of functions in the  $\bar{N}$ -picture for a degenerate principal series representation. However, there is no range where both integrals converge (except the  $n=1$  case). Therefore, we extend the notion of the zeta distributions so that they have meromorphic continuations for functions in the  $\bar{N}$ -picture and the functional equation holds as meromorphic functions. The functional equation between the meromorphic family of zeta distributions can be used to construct the inner product on the  $\bar{N}$ -picture explicitly. (Received September 20, 2010)