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A Paley-Wiener Theorem for the Bessel Laplace Transform, I: the case $SU(n, n)/SL(n, \mathbb{C}) \times \mathbb{R}_+^*$

Let $\mathfrak{q}$ be the tangent space to the noncompact causal symmetric space

$$SU(n, n)/SL(n, \mathbb{C}) \times \mathbb{R}_+^*$$

at the origin. In this paper we give an explicit formula for the Bessel functions on $\mathfrak{q}$. We use this result to prove a Paley-Wiener theorem for the Bessel Laplace transform on $\mathfrak{q}$. Further, a flat analogue of the Abel transform is defined and inverted.

Keywords: Non-compactly causal symmetric spaces, multivariable Bessel function, Paley-Wiener theorem, Abel transform.

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