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The Spherical Transform Associated with the Generalized Gelfand Pair $(U(p,q), H_n)$**,** $p+q=n$

We denote by H_n the $2n + 1$-dimensional Heisenberg group and study the spherical transform associated with the generalized Gelfand pair $(U(p,q) \ltimes H_n, U(p,q))$, $p+q = n$, which is defined on the space of Schwartz functions on H_n, and we characterize its image. In order to do that, since the spectrum associated to this pair can be identified with a subset Σ of the plane, we introduce a space $\mathcal{H}_n$ of functions defined on $\mathbb{R}^2$ and we prove that a function defined on Σ lies in the image if and only if it can be extended to a function in $\mathcal{H}_n$. In particular, the spherical transform of a Schwartz function f on H_n admits a Schwartz extension on the plane if and only if its restriction to the vertical axis lies in $\mathcal{S}(\mathbb{R})$.

Keywords: Heisenberg group, spherical transform.

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