Spherical Functions on
\( \text{SO}_0(p, q)/\text{SO}(p) \times \text{SO}(q) \)

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Abstract. An integral formula is derived for the spherical functions on the symmetric space \( G/K = \text{SO}_0(p, q)/\text{SO}(p) \times \text{SO}(q) \). This formula allows us to state some results about the analytic continuation of the spherical functions to a tubular neighbourhood of the subalgebra \( a \) of the abelian part in the decomposition \( G = KAK \). The corresponding result is then obtained for the heat kernel of the symmetric space \( \text{SO}_0(p, q)/\text{SO}(p) \times \text{SO}(q) \) using the Plancherel formula.

In the Conclusion, we discuss how this analytic continuation can be a helpful tool to study the growth of the heat kernel.