

Eleutherius Symeonidis

The Poisson integral for a ball in spaces of constant curvature

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Abstract: We present explicit expressions of the Poisson kernels for geodesic balls in the higher dimensional spheres and real hyperbolic spaces. As a consequence, the Dirichlet problem for the projective space is explicitly solved. Comparison of different expressions for the same Poisson kernel lead to interesting identities concerning special functions.

Keywords: Poisson integral, Poisson kernel, Dirichlet problem, harmonic function, Riemannian manifold, hypergeometric function

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