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Reproducing kernels for Dunkl polyharmonic polynomials

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Abstract: In this paper, we compute explicitly the reproducing kernel of the space of homogeneous polynomials of degree n and Dunkl polyharmonic of degree m , i.e. $\Delta_k^m u = 0$, $m \in \mathbb{N} \setminus \{0\}$, where Δ_k is the Dunkl Laplacian and we study the convergence of the orthogonal series of Dunkl polyharmonic homogeneous polynomials.

Keywords: Dunkl Laplacian, reproducing kernel

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REFERENCES

- [1] Dunkl C.F., *Differential-difference operators associated to reflection group*, Trans. Amer. Math. Soc. **311** (1989), no. 1, 167–183.
- [2] Dunkl C.F., Xu Y., *Orthogonal Polynomials of Several Variables*, Cambridge Univ. Press, Cambridge, 2001.
- [3] Kuran Ü., *On Brelot-Choquet axial polynomials*, J. London Math. Soc. (2) **4** (1971), 15–26.
- [4] Mejjaoli H., Trimèche K., *On a mean value property associated with the Dunkl Laplacian operator and applications*, Integral Transform. Spec. Funct. **12** (2001), no. 3, 279–302.
- [5] Ren G.B., *Almansi decomposition for Dunkl operators*, Sci. China Ser. A **48** (2005), suppl., 333–342.
- [6] Render H., *Reproducing kernels for polyharmonic polynomials*, Arch. Math. **91** (2008), 136–144.
- [7] Rösler M., *Dunkl operators: theory and applications. Orthogonal polynomials and special functions* (Leuven, 2002), Lecture Notes in Mathematics, 1817, Springer, Berlin, 2003, pp.93–135.
- [8] Rösler M., *Generalized Hermite polynomials and the heat equation for Dunkl operators*, Comm. Math. Phys. **192** (1998), 519–542.
- [9] Trimèche K., *The Dunkl intertwining operator on spaces of functions and distributions and integral representation of its dual*, Integral Transform. Spec. Funct. **12** (2001), no. 4, 349–374.