ORTHOGONAL POLYNOMIALS FOR A FAMILY OF PRODUCT WEIGHT FUNCTIONS ON THE SPHERES

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ABSTRACT. Based on the theory of spherical harmonics for measures invariant under a finite reflection group developed by Dunkl recently, we study orthogonal polynomials with respect to the weight functions $|x_1|^{p_1} \cdots |x_d|^{p_d}$ on the unit sphere $S^{d-1}$ in $\mathbb{R}^d$. The results include explicit formulae for orthonormal polynomials, reproducing and Poisson kernel, as well as intertwining operator.

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