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NORM INEQUALITIES FOR DUNKL-TYPE FRACTIONAL INTEGRAL AND FRACTIONAL MAXIMAL OPERATORS IN THE DUNKL-FOFANA SPACES

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Abstract. We establish some new properties of the Dunkl-Wiener amalgam spaces defined on the real line. These results allow us to obtain the boundedness of Dunkl-type fractional integral and fractional maximal operators in the Dunkl-Fofana spaces.

1. Introduction

Let us start with some notations that will be used throughout this paper. Let $k > -\frac{1}{2}$ be a fixed number and μ be the weighted Lebesgue measure on $\mathbb{R}$, given by

$$d\mu(x) = \left(2^{k+1}\Gamma(k+1)\right)^{-1} |x|^{2k+1}\, dx.$$

For $1 \leq p \leq \infty$, we denote by $L^p(\mu)$ the Lebesgue space associated with the measure μ, while $L^{p,\infty}(\mu)$ is the weak $L^p(\mu)$-space. We denote by $L^0(\mu)$ the complex vector space of equivalence classes (modulo equality μ-almost everywhere) of complex-valued functions μ-measurable on $\mathbb{R}$. For $f \in L^p(\mu)$, $\|f\|_p$ stands for the classical norm of f. For any subset A of $\mathbb{R}$, χ_A denotes the characteristic function of A. For $x \in \mathbb{R}$ and for $r > 0$, we set

$$B(x, r) = \{y \in \mathbb{R} : \max\{0, |x| - r\} < |y| < |x| + r\}$$

if $x \neq 0$ and

$$B_r = B(0, r) = (-r, r).$$

The letter C will be used for non-negative constants not depending on the relevant variables, and this constant may change from one occurrence to another.

The study of the boundedness properties of certain integral type operators in the topological vector spaces where they act is an important problem in harmonic analysis. Many useful results concerning this topic, which were established in classical Fourier

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