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THE BOUNDEDNESS OF B-RIESZ POTENTIAL IN WEIGHTED B-MORREY SPACES

Abstract

We consider the generalized shift operator, associated with the Bessel (Hankel) differential operator $B = \frac{\partial^2}{\partial x^2} + \frac{\gamma}{x}\frac{\partial}{\partial x}$, $\gamma > 0$. *The fractional maximal operator* $M_{\alpha,\gamma}$ *(fractional B-maximal operator) and the Riesz potential* $I_{\alpha,\gamma}$ *(B-Riesz potential), associated with the generalized shift operator are investigated. At first, we prove that the fractional B-maximal operator* $M_{\alpha,\gamma}$ *is bounded from the weight B-Morrey space* $\mathcal{L}_{p,\lambda,|\cdot|^\beta,\gamma}$ *to* $\mathcal{L}_{q,\lambda,|\cdot|^\beta,\gamma}$, *where* $1/p-1/q = \alpha/(1+\gamma-\lambda)$, $1 < p < (1+\gamma)/\alpha$, *for all* $1 \le p < \infty$ *and* $0 \le \lambda < 1+\gamma$.

We study the B-Riesz potential in the weight B-Morrey space. We prove that B-Riesz potential $I_{\alpha,\gamma}$, $0 < \alpha < 1+\gamma$ *is bounded from the weight B-Morrey space* $\mathcal{L}_{p,\lambda,|\cdot|^\beta,\gamma}$ *to* $\mathcal{L}_{q,\lambda,|\cdot|^\beta,\gamma}$, *where* $1/p-1/q = \alpha/(1+\gamma-\lambda)$, $1 < p < (1+\gamma)/\alpha$, *for all* $1 \le p < \infty$ *and* $0 \le \lambda < 1+\gamma$.