BOUNDDEDNESS OF GENERALIZED HARDY OPERATORS ON WEIGHTED AMALGAM SPACES

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Abstract. Let $T_{\phi}^{-}$ be the operator defined by

$$T_{\phi}^{-} f(x) = \int_{-\infty}^{x} \phi(x - y) f(y) dy,$$

where $\phi$ is a positive function on $(0, \infty)$ verifying $\phi(a + b) \approx \phi(a) + \phi(b)$.

In this paper, we characterize the pairs $(u, v)$ of positive measurable functions such that $T_{\phi}^{-}$ maps the weighted amalgam $(L^p(v), \ell^q)$ in $(L^p(u), \ell^q)$ for all values of $p, q, \overline{p}, \overline{q}$ with $1 < p, q, \overline{p}, \overline{q} < \infty$.

As particular cases, we characterize some higher order Hardy inequalities in weighted amalgams.


Keywords and phrases: amalgams, generalized Hardy operators, Hardy operators, weighted inequalities, weights.

REFERENCES