

Weighted inequalities for the Hardy-type integral operators with variable limits of integrations

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Let $0 < p < \infty$, $\|f\|_p := (\int_0^\infty |f(x)|^p dx)^{1/p}$ and let $v(x) \geq 0$ be a weight. Denote $L_{p,v}$ the weighted Lebesgue space with (quasi) norm $\|f\|_{p,v} := \|fv\|_p$.

We study the integral operators of the form

$$Kf(x) = \int_{a(x)}^{b(x)} k(x,y)f(y)dy,$$

acting from $L_{p,v}$ to $L_{q,w}$.

Some applications for the Geometric mean operators and to the two-sided estimates of the singular numbers for particular cases of the operators K are also given.