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On Weighted Inequalities with Geometric Mean Operator Generated by the Hardy-type Integral Transform

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Abstract: The generalized geometric mean operator

$$G_K f(x) = \exp \frac{1}{K(x)} \int_0^x k(x, y) \log f(y) dy,$$

with $K(x) := \int_0^x k(x, y) dy$ is considered. A characterization of the weights $u(x)$ and $v(x)$ so that the inequality

$$\left(\int_0^\infty (G_K f(x))^q u(x) dx \right)^{1/q} \leq C \left(\int_0^\infty f(x)^p v(x) dx \right)^{1/p}, \quad f \geq 0,$$

holds is given for all



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