CONVOLUTION INEQUALITIES IN WEIGHTED LORENTZ SPACES: CASE $0 < q < 1$

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Abstract. Let $g$ be a fixed nonnegative radially decreasing kernel $g$. In this paper, boundedness of the convolution operator $T_g f := f * g$ between the weighted Lorentz spaces $\Gamma^q(w)$ and $\Lambda^p(v)$ is characterized in the case $0 < q < 1$. The conditions are sufficient if the kernel $g$ is just a general measurable function.

Furthermore, the largest rearrangement-invariant (quasi-)space $Y$ is found such that the Young-type inequality
\[ \| f * g \|_{\Gamma^q(w)} \leq C \| f \|_{\Lambda^p(v)} \| g \|_Y \]
holds for all $f \in \Lambda^p(v)$ and $g \in Y$.


Keywords and phrases: Convolution, Young inequality, Lorentz spaces, weights.

REFERENCES

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