Farman I. MAMEDOV, Firana M. MAMEDOVA

A HARDY TYPE GENERAL INEQUALITY IN $L^{p(\cdot)}(0,1)$ WITH DECREASING EXPONENT

Abstract

We derive a Hardy type inequality

$$\left\| W(.)^{-1}\sigma(.)^{\frac{1}{p(.)}} \int_0^x f(t)dt \right\|_{L^{p(\cdot)}(0,1)} \leq C \left\| \omega(.)^{\frac{1}{p(.)}} f(.) \right\|_{L^{p(\cdot)}(0,1)}, f \geq 0.$$

for the exponent $p:(0,1)\to(1,\infty)$ is a decreasing function on some interval $(0,\epsilon)$, $\epsilon>0$ and $\sigma=\omega(.)^{-\frac{1}{p(.)-1}}\in L^1(0,1)$, $W(x)=\int_0^x \sigma(t)dt$.