TWO WEIGHTED INEQUALITIES FOR CONVOLUTION MAXIMAL OPERATORS

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Abstract

Let \( \varphi: \mathbb{R} \to [0, \infty) \) an integrable function such that \( \varphi \chi_{(-\infty, 0)} = 0 \) and \( \varphi \) is decreasing in \((0, \infty)\). Let \( \tau_h f(x) = f(x - h) \), with \( h \in \mathbb{R} \setminus \{0\} \) and \( f_R(x) = \frac{1}{R} f\left(\frac{x}{R}\right) \), with \( R > 0 \). In this paper we characterize the pair of weights \((u, v)\) such that the operators \( M_{\tau_h \varphi} f(x) = \sup_{R > 0} |f| * |\tau_h \varphi|_R(x) \) are of weak type \((p, p)\) with respect to \((u, v)\), \( 1 < p < \infty \).

2000 Mathematics Subject Classification. 42B25.

Key words. Weighted inequalities, convolution maximal operators.

∗Supported by CONICET, PICT 98 (Código 03-04186) and Prog. CAI+D - UNL.
†Partially supported by D.G.E.S. grant (PB97-1097), Junta de Andalucía and UNL.