

Chanillo, Sagun; Wheeden, Richard L.

Some weighted norm inequalities for the area integral. (English) Zbl 0598.34019
Indiana Univ. Math. J. 36, 277-294 (1987).

We derive the weighted norm inequality

$$\left(\int_{\mathbb{R}^n} S(f)(x)^p w(x) dx\right)^{1/p} \leq c(p, n) \left(\int_{\mathbb{R}^n} |f(x)|^p w^*(x) dx\right)^{1/p}, \quad 1 < p \leq 2,$$

where $S(f)$ is the classical Poisson area integral of f and w^* is the Hardy-Littlewood maximal function of w . We also show that the inequality fails for $p > 2$ and derive a replacement result for this case. Results are also considered for area integrals formed with approximations to the identity which are Schwartz functions ϕ . In this way, we extend a result of Chang, Wilson and Wolff for the case when $p = 2$ and ϕ has compact support.

MSC:

[34L99](#) Ordinary differential operators

Cited in **1** Review
Cited in **18** Documents

Keywords:

weighted norm inequality; Hardy-Littlewood maximal function; area integrals; Schwartz functions; Littlewood-Paley theory

Full Text: [DOI](#)