

SHARP INEQUALITIES FOR THE SQUARE FUNCTION OF  
A NONNEGATIVE MARTINGALE

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*Abstract:* We determine the optimal constants  $C_p$  and  $C_p^*$  such that the following holds: if  $f$  is a nonnegative martingale and  $S(f)$  and  $f^*$  denote its square and maximal functions, respectively, then

$$\|S(f)\|_p \leq C_p \|f\|_p, \quad p < 1,$$

and

$$\|S(f)\|_p \leq C_p^* \|f^*\|_p, \quad p \leq 1.$$

**2000 AMS Mathematics Subject Classification:** Primary: 60G42; Secondary: 60G46.

**Keywords and phrases:** Martingale, square function, maximal function.

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