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BOUNDS FOR $\mathbb{E}\,|S_n|^Q$ FOR SUBORDINATED LINEAR PROCESSES WITH APPLICATION TO M-ESTIMATION

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Abstract: Let $X_j = \sum_{r=0}^{\infty} A_r Z_{j-r}$ be a one-sided m-dimensional linear process, where (Z_n) is a sequence of i.i.d. random vectors with zero mean and finite covariance matrix. The aim of this paper is to prove the moment inequalities of the form

$$\mathbb{E}\,|S_n|^Q \leq Cn^{Q/2} \tag{1}$$

for the sum

$$S_n = \sum_{j=1}^{n} \big(G(X_j) - \mathbb{E}G(X_j)\big), \tag{2}$$

where G is a real function defined on $\mathbb{R}^m$. The form of the constant C in (1) plays an important role in applications concerning the problems of M-estimation, especially the Ghosh representation.

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