Title: Convergence rates in the strong law of large numbers for negatively orthant dependent random variables with general moment conditions

Author(s): Pingyan Chen, Xiaolin Li and Soo Hak Sung

Let \( \{a_n, n \geq 1\} \) be a sequence of real numbers with \( 0 < a_n/n^{1/p} \uparrow \) for some \( 1 \leq p < 2 \), and let \( \{X, X_n, n \geq 1\} \) be a sequence of identically distributed negatively orthant dependent random variables. In this paper, it is shown that \( \sum_{n=1}^{\infty} n^{r-1} \times P(|X| > a_n) < \infty \) is equivalent to \( \sum_{n=1}^{\infty} n^{r-2} P(\max_{1 \leq m \leq n} |S_m - mEXI(|X| \leq a_n)| > \varepsilon a_n) < \infty, \forall \varepsilon > 0 \), where \( r \geq 1 \) and \( S_n = \sum_{k=1}^{n} X_k \).

Address:
Pingyan Chen
Department of Mathematics
Jinan University
Guangzhou, 510630
P. R. China

Address:
Xiaolin Li
Department of Statistics
Jinan University
Guangzhou, 510630
P. R. China

Address:
Soo Hak Sung
Department of Applied Mathematics
Pai Chai University
Daejeon, 35345
South Korea