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Probabilities of moderate deviations for some stationary \( \varphi \)-mixing processes.


Let \( \{X_n, n \geq 1\} \) be a \( \varphi \)-mixing, strictly stationary sequence. The authors prove a moderate deviations result for the normalized partial sums of such sequences. More precisely, if (1) \( \sum \varphi(n)^{1/2} < \infty \), (2) \( \sigma^2 = V(X_1) + 2 \sum_{j=1}^{\infty} \text{Cov}(X_1, X_{1+j}) \neq 0 \), and (3) \( E|X_1|^{c+2+\delta} < \infty \) for some \( \delta > 0 \) and a \( c > 0 \), then

\[
P\left\{ \left( \sum_{i=1}^{n} X_i - nEX_1 \right) / \sigma \sqrt{n} > c \sqrt{\log n} \right\} \sim 1 - \Phi(c \sqrt{\log n}).
\]

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