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Almost Sure Convergence of Two-Dimensional Distribution Function Under Negative Association

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Abstract

Let $\{X_i,\ i \geq 1\}$ be a sequence of negatively associated and strictly stationary random variables having marginal distribution function F. Suppose $\vartheta_l(r,s) = P(X_1 \leq r, X_{l+1} \leq s) - F(r)F(s)$. We prove an exponential type inequality for estimation of ϑ_l under some conditions on the covariance structure of those variables. We also show the almost sure convergence of an estimator for the infinite sum that defines the covariance function of the limit empirical process.

Keywords: Covariance function, empirical process, exponential inequality, negative association.

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