

ON NON-UNIFORM BERRY–ESSEEN BOUNDS FOR TIME SERIES

Moritz Jirak

Abstract: Given a stationary sequence $\{X_k\}_{k \in \mathbb{Z}}$, non-uniform bounds for the normal approximation in the Kolmogorov metric are established. The underlying weak dependence assumption includes many popular linear and nonlinear time series from the literature, such as ARMA or GARCH models. Depending on the number of moments p , typical bounds in this context are of the size $\mathcal{O}(m^{p-1}n^{-p/2+1})$, where we often find that $m = m_n = \log n$. In our setup, we can essentially improve upon this rate by the factor $m^{-p/2}$, yielding a bound of $\mathcal{O}(m^{p/2-1}n^{-p/2+1})$. Among other things, this allows us to recover a result from the literature, which is due to Ibragimov.

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