

# The Efficiency of some Nonparametric Rank-Based Competitors to Correlogram Methods

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## Abstract

Hodges and Lehmann (1956) have shown that the asymptotic relative efficiency of Wilcoxon rank tests with respect to Student's  $t$  tests, in location models with independent observations, never falls below 0.864—a lower bound which is attained at a parabolic density related with the so-called Epanechnikov kernel. This result actually holds for under general linear models with independent observations. A similar result is proved here, in a time series context, for the so-called Spearman-Wald-Wolfowitz autocorrelation coefficients. It is shown that the asymptotic relative efficiency of the corresponding tests, with respect to the classical everyday practice based on traditional autocorrelations, is never less than 0.856; the bound is attained at a cosine density.

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