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Locally asymptotically rank-based procedure for testing autoregressive moving average dependence. (English) [Zbl 0637.62081](#)

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Summary: The problem of testing a given autoregressive moving average (ARMA) model (in which the density of the generating white noise is unspecified) against other ARMA models is considered. A distribution-free asymptotically most powerful test, based on a generalized linear serial rank statistic, is provided against contiguous ARMA alternatives with specified coefficients.

In the case in which the ARMA model in the alternative has unspecified coefficients, the asymptotic sufficiency (in the sense of Hájek) of a finite-dimensional vector of rank statistics is established. This asymptotic sufficiency is used to derive an asymptotically maximin most powerful test, based on a generalized quadratic serial rank statistic. The asymptotically maximin optimal test statistic can be interpreted as a rank-based, weighted version of the classical Box-Pierce portmanteau statistic, to which it reduces, in some particular problems, under gaussian assumptions.

MSC:

[62M10](#) Time series, auto-correlation, regression, etc. in statistics (GARCH)

[62G10](#) Nonparametric hypothesis testing

[62M07](#) Non-Markovian processes: hypothesis testing

Cited in **1** Document

Keywords:

time series; autoregressive moving average; white noise; distribution- free asymptotically most powerful test; generalized linear serial rank statistic; contiguous ARMA alternatives; specified coefficients; unspecified coefficients; asymptotic sufficiency; asymptotically maximin most powerful test; generalized quadratic serial rank statistic; Box- Pierce portmanteau statistic

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