ASYMPTOTIC PROPERTIES OF PERIODOGRAM FOR ALMOST PERIODICALLY CORRELATED TIME SERIES

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Abstract: The main purpose of this paper is to establish the asymptotic properties of the expectation and variance of periodogram for nonstationary, almost periodically correlated time series. We expand our consideration to the whole bifrequency square $(0, 2\pi]^2$. We show the exact form of asymptotic covariance between two values of periodogram which are calculated at different points. This result implies that periodogram is not consistent in mean square sense for any point from bifrequency square $(0, 2\pi]^2$. Finally, under the moment and α-mixing condition, we prove the consistency of smoothed periodogram.

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