

THE MAXIMUM LIKELIHOOD ESTIMATION OF AUTOREGRESSIVE PROCESS

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In this paper, the maximum likelihood estimates for the parameters of a general order autoregressive process are investigated. In this case, given a realization $X=(X_1, \dots, X_n)$, we shall obtain the exact algebraical expressions of the inverse Γ_n^{-1} and the determinant $|\Gamma_n|$ of the covariance matrix Γ_n for the general order autoregressive process and find the exact expressions for the quadratic form $X'\Gamma_n^{-1}X$ and its derivative. The exact likelihood function and the exact likelihood equations will be derived, and two approximate maximum likelihood estimates will be evaluated. Finally, we will obtain the approximate confidence region of the autoregressive parameters.

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