

# On Forecasting of Long-Memory Time Series

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**Abstract.** We consider the problem of forecasting long-memory processes using autoregressive (AR) models with the orders increasing to infinity with the sample size. Sufficient conditions are proposed to ensure that the least squares predictor obtained from an increasing-order AR model is consistent in the sense that its corresponding mean-squared prediction error converges to that of the best linear predictor based on the infinite past. As an intermediate step to show the consistency, the moment convergence of the memory parameter is established. In addition, a central limit theorem is shown for an estimator of the variance of the innovation constructed from the prediction residuals.

Key Words and Phrases: Autoregressive model; Fractionally integrated autoregressive moving average model; Least squares predictor; long-memory process; Mean-squared prediction error