A maximal moment inequality for long range dependent time series with applications to estimation and model selection

Ching-Kang Ing and Ching-Zong Wei

Institute of Statistical Science, Academia Sinica

Abstract. We establish a maximal moment inequality for the weighted sum of a long range dependent time series. An extension to Hájek-Rény and Chow's type inequality is then obtained. It enables us to deduce a strong law for the weighted sum of a stationary long range dependent time series. Applications to the strong consistency of the least squares estimate in multiple regression model with long range dependent errors and to the strongly consistent mean function selection under the same model are given.

Key words and phrases: Convergence system, long range dependence, maximal inequality, model selection, strong consistency.