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Abstract

Title: Multiscale Inference for Nonparametric Time Trends

In this talk, we develop new multiscale methods to test qualitative hypotheses about the regression function m in a nonparametric regression model with fixed design points and time series errors. In time series applications, m represents a nonparametric time trend. Practitioners are often interested in whether the trend m has certain shape properties. For example, they would like to know whether m is increasing/decreasing in certain time intervals. Our multiscale methods allow to test for such shape properties of the trend m . In order to perform the methods, we require an estimator of the long-run variance of the error process. We propose a new difference-based estimator of the long-run error variance for the case that the error terms form an $AR(p)$ process. The usefulness of our methods is illustrated by an empirical application to climate data.