**ABSTRACT**

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TITLE: Predictive inference for locally stationary time series  
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Abstract:  
The Model-free Prediction Principle of Politis (2015) has been successfully applied  
to general regression problems, as well as problems involving stationary time series.  
However, with long time series, e.g. annual temperature measurements spanning over  
100 years or daily financial returns spanning several years, it may be unrealistic to  
assume stationarity throughout the span of the dataset. In the paper at hand, we show  
how Model-free Prediction can be applied to handle time series that are only locally  
stationary, i.e., they can be assumed to be as stationary only over short time-windows.  
Surprisingly there is little literature on point prediction for general locally stationary  
time series even in model-based setups and there is no literature on the construction of  
prediction intervals of locally stationary time series. We attempt to fill this gap here as  
well. Both one-step-ahead point predictors and prediction intervals are constructed, and  
the performance of model-free is compared to model-based prediction using models that  
incorporate a trend and/or heteroscedasticity. Both aspects of the paper, model-free and  
model-based, are novel in the context of time-series that are locally (but not globally)  
stationary.