



# Robust test for structural instability in dynamic factor models

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## Abstract

In this paper, we consider a robust test for structural breaks in dynamic factor models. The proposed framework considers structural changes when the underlying high-dimensional time series is contaminated by outlying observations, which are often observed in many real applications such as fMRI, economics and finance. We propose a test based on the robust estimation of a vector autoregressive model for principal component factors using minimum density power divergence. The simulations study shows excellent finite sample performance, higher powers while achieving good sizes in all cases considered. Our method is illustrated to the resting state fMRI series to detect brain connectivity changes.

**Keywords** High-dimensional time series · Dynamic factor models · Minimum density power divergence · Parameter change test · Outliers

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