Detecting relevant differences in the covariance operators of functional time series: a sup-norm approach

Holger Dette[1] · Kevin Kokot[1]

Abstract

In this paper we propose statistical inference tools for the covariance operators of functional time series in the two sample and change point problem. In contrast to most of the literature, the focus of our approach is not testing the null hypothesis of exact equality of the covariance operators. Instead, we propose to formulate the null hypotheses in the form that "the distance between the operators is small", where we measure deviations by the sup-norm. We provide powerful bootstrap tests for these type of hypotheses, investigate their asymptotic properties and study their finite sample properties by means of a simulation study.

✉ Holger Dette
holger.dette@rub.de

Kevin Kokot
kevin.kokot@rub.de

[1] Fakultät für Mathematik, Ruhr-Universität Bochum, 44780 Bochum, Germany