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Ping-Shou Zhong* (pszhong@uic.edu), Chicago, IL. *Homogeneity Tests of Covariance and Change-Points Identification for High-Dimensional Functional Data.*

We consider inference problems for high-dimensional functional data with a dense number (T) of repeated measurements taken for a large number of p variables from a small number of n experimental units. Our first aim is to solve the theoretical and computational challenges in detecting and identifying change points among covariance matrices from high-dimensional functional data. The second aim is to provide computationally efficient and tuning-free tools with a guaranteed stochastic error control. The change point detection procedure is developed in the form of testing the homogeneity of covariance matrices. The weak convergence of the stochastic process formed by the test statistics is established under the “large p , large T and small n ” setting. Our change point identification estimator is proven to be consistent for change points at any location of a sequence. Its rate of convergence is shown to depend on the data dimension, sample size, number of repeated measurements, and signal-to-noise ratio. Simulation results demonstrate both finite sample performance and computational effectiveness of our proposed procedures. An application to fMRI data demonstrates that our proposed methods can identify event boundaries in the preface of the movie *Sherlock*. (Received August 18, 2020)