High Dimensional Nonstationary Time Series

IRTG 1792 Short Course

Wolfgang Polonik

Topological Data Analysis

The short course will give a brief introduction to topological data analysis (TDA) based on the notion of "persistence". We will first introduce and discuss the fundamental object underlying much of these ideas - the persistence diagram, and we will discuss representations of persistence diagrams, including Betti curves and others. This will be done in both a heuristic manner and in a formal manner based on the notion of homology (no previous knowledge of algebraic topology is expected, though). Then, data analysis methods based on the persistence diagram and on representations of persistence diagrams (such as Betti curves) will be discussed. We will also review some recent more probabilistic results about the behavior of the corresponding TDA methods.

Wolfgang Polonik is a professor at the Department of Statistics, University of California, Davis. He received his Ph.D. degree from Ruprecht-Karls-Universität Heidelberg in 1992. His areas of interest cover Non- parametric Statistics, Shape constraints, modality, Non- stationary Time series and Empirical process theory. Currently, he is specialized in Topological Data Analysis.

April 19, 2021 | 16:30-18:00 (CET) | Online via Zoom

April 20, 2021 | 16:30-18:00 (CET) | Online via Zoom

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