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Mathematisches Kolloquium

The persistence diagram: A tool for spatial statistics at many scales

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Eingeladen von den Doktoranden der Mathematik

05.02.2021 | 14:30 Uhr | Online-Kolloquium via Zoom.
Link wird rechtzeitig bekanntgegeben.

Topological data analysis (TDA) is based on an equally simple as intriguing principle: leverage invariants from algebraic topology to gain novel insights into data. While initially, TDA started as a vague idea, it is now applied by researchers working in astronomy, biology, finance and materials science. One of the central tools in TDA is the persistence diagram, which tracks the presence of topological features such as loops, components or cavities at multiple scales.

In this talk, I will explain how to derive goodness of fit tests for point patterns and networks based on a functional central limit theorem for the persistence diagram. I will illustrate the performance of these tests on simulated data and on a dataset from neuroscience. The talk will conclude with a perspective to apply extreme value theory for detecting features of atypically long and atypically short life times.

Der Vortrag ist für ein breites Publikum geeignet