

# COMPUTATIONAL TOPOLOGY: FROM THEORY TO PRACTICE

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Tuesday, 7 September 2021, 15:00–18:45

In this 4 hour lecture-tutorial we will dive into Topological Data Analysis - a new field emerging in between mathematics, computer science and data analysis. We will explore concepts of point-cloud-based triangulations, cubical complexes, homology and persistent homology, Reeb graphs, mapper algorithms and time series analysis. All theoretical aspects discussed in the lecture will be accompanied with hand-on practical exercises where you will analyze certain datasets that we encounter in practice (or that you can generate or collect using your laptop or phone). Each participant will obtain detailed instructions on what needs to be installed prior to the conference. Basic knowledge of (algebraic) topology and programming in Python and/or R is desired, but not required. You will obtain all the required help from the lecturer and his PhD students.