

## **Graphical, Simplicial and Statistical Methods for Data Analysis, with an Application to Music**

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There are many approaches for building combinatorial structures from time series (i.e. sequential) data, and from these structures we can compute descriptors that identify patterns in the data that traditional methods often miss. In this talk we explain how to utilize tools from graph theory, simplicial complexes and statistics to get a better understanding of the structure and import of the data. As an application, we consider the melodies in the canon of songs by Lennon and McCartney. This vantage point allows us to uncover new insights into the songwriting styles of composers – yeah, yeah, yeah!

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