

1145-55-1787      **Mathieu Carriere\*** ([mathieu.carriere3@gmail.com](mailto:mathieu.carriere3@gmail.com)). *Statistical analysis and parameter selection for Mapper.*

In this presentation, I will study the question of the statistical convergence of the 1-dimensional Mapper algorithm to its continuous analogue, the Reeb graph. In particular, I will show how, building on recent theoretical advances about the structure of the Mapper, one can prove that the Mapper is an optimal estimator of the Reeb graph, which gives, as a byproduct, a method to automatically tune its parameters and compute confidence regions on its topological features, such as its loops and flares. This allows to circumvent the issue of testing a large grid of parameters and keeping the most stable ones in the brute-force setting, which is widely used in visualization, clustering and feature selection with the Mapper. (Received September 24, 2018)