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**Florian T Pokorny\*** (fpokorny@kth.se). *Data-Driven Topological Methods for Reasoning about Motion.*

In this talk, I will review our recent work on algorithms that utilize methods from topological data analysis to enable hierarchical reasoning about sets of trajectories. Applications of our approach include a scalable approach to clustering trajectories by means of persistent homology, both for planar motion and motions in robotic configuration spaces. Further, I will discuss how sampling-based simplicial complex approximations of robotic configuration spaces can be utilized to search for collections of homotopy inequivalent trajectories between two configurations of a robotic system. (Received September 21, 2017)