TDA meets dynamics

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In this presentation, I will provide an overview of topological data analysis (TDA) methods that are particularly well-suited for analyzing dynamical data, with a focus on sampled dynamics. The discussion will start with an introduction to persistent homology, a key technique for differentiating the state spaces of various dynamical systems. We will then delve into more advanced methodologies, including Euler characteristic curves and profiles integrated with goodness-of-fit tests. To conclude, I will present conjugacyTests, a set of methods designed to evaluate the conjugacy of two finitely sampled trajectories. This talk will highlight foundational tools and illustrate their applications within dynamical systems theory.