Abstract:

This talk will illustrate some patterns in the homology of the space $F_k(M)$ of ordered $k$-tuples of distinct points in a manifold $M$. For a fixed manifold $M$, as $k$ increases, we might expect the topology of the configuration spaces $F_k(M)$ to become increasingly complicated. Church and others showed, however, that when $M$ is connected and open, there is a representation-theoretic sense in which the homology groups of these configuration spaces stabilize. In this talk I will explain these stability patterns, and describe higher-order stability phenomena -- relationships between unstable homology classes in different degrees -- established in recent work joint with Jeremy Miller. This project was inspired by work-in-progress of Galatius--Kupers--Randal-Williams.