1145-55-2429 **Haibin Hang*** (hhang@math.fsu.edu), **Woojin Kim**, **Facundo Memoli** and **Washington Mio**. *Stability of a Multi-Parameter Persistent Homology Approach to Functional and Structural Data.*

We present a multi-parameter persistent homology approach to functional data on compact topological spaces and structural data treated as compact metric measure spaces. For functional data, we combine sub-level sets and Rips complexes to construct bi-filtered complexes from which we derive homological invariants. We prove a stability theorem for multi-dimensional persistent homology with respect to a metric in which closeness means that the topology of regions where signals are strong are similar regardless of the global topology of the domains. We construct topological invariants for metric measure spaces by mapping them to functional spaces via centrality functions. For a fixed metric domain, the general stability results imply stability with respect to the Wasserstein metric. (Received September 25, 2018)