

1145-55-1337

**Alexander Wagner\*** ([wagnera@ufl.edu](mailto:wagnera@ufl.edu)). *A Persistent Homology Measure for Morse Functions*. Preliminary report.

The persistence diagram is a stable, algebraic summary of the connectivity of spatial data. The points in the persistence diagram have a representation in the input space, but these representations are notoriously unstable and, as equivalence classes of sets of simplices, hard to visualize. To remedy the lack of canonical representatives for points in the persistence diagram, we take advantage of the fact that in the context of sublevel set filtrations of Morse functions, persistent homology pairs critical values. This pairing generically induces a pairing of critical points. However, the location of these critical point pairings can move wildly even if the Morse function is perturbed only slightly. We address this issue by taking as input a function-valued random variable and constructing a probability distribution on the domain that describes how critical points associated to regions of interest in the persistence diagram are dispersed. In this talk, I will discuss the definition and stability of this construction. (Received September 21, 2018)