1106-55-284 **Pawel Dlotko*** (dlotko@sas.upenn.edu). *Persistent homology as a practical characteristic of scalar valued functions defined on topological spaces.*

Persistent homology provide an elegant way of describing changes in homology of level sets of a scalar value function defined on finite cell complexes.

There were two main obstacles to use this idea to practically characterize a topological space with a function on it:

1. There were no algorithms to compute persistence of a continuous subsets of a topological space with a given error tolerance.

2. There were no efficient ways to compare persistence diagrams.

In this talk I will remind the concept of persistence homology and describe how to rigorously compute persistence of a subspace of R^n. I will also present an efficient way of computing distances, averages and other statistics of persistence and use the presented machinery to analyze patterns obtained form Cahn-Hiliard-Cook and Diblock-Copolymer equations. This is a joint work with Peter Bubenik, Thomas Wanner and Thomas Stephens. (Received August 19, 2014)