

The Oliver Club

www.math.cornell.edu/~oliver/

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Measuring with Algebra

The last ten years witnessed the rapid development of algebraic tools to measure scale. The ability to measure scale is needed whenever we assess the importance of a feature in a signal. We think of the signal generally as a dataset we collect and we aim for a measure that identifies aspects of the data that are sufficiently important to be considered above the noise level.

The main mathematical idea in this development is the concept of persistent homology of a real-valued function on a space. Think for example of a subset of the plane and consider the function on the plane that maps every point in the plane to the Euclidean distance from that subset.

Persistence analyzes which homological features of the subset can be recognized at which distance thresholds. This analysis leads to the concepts of persistence diagrams and proofs of stability of these diagrams. They have ramifications inside and outside mathematics.



Friday, October 9, 2009

at 3:30 PM in 406 Malott Hall

Refreshments will be served at 3:00 PM in the Mathematics Department lounge (532 Malott Hall).