

1106-62-1135

Mauro Maggioni, Stanislav Minsker and Nate Strawn* (nstrawn@math.duke.edu).

Data-driven frames: Non-asymptotic bounds for Geometric Multiresolution Analysis.

Geometric Multiresolution Analysis (GMRA) was introduced by Allard, Chen, and Maggioni as a computationally efficient procedure for producing robust, multiscale representations of nonlinear data in high-dimensional Euclidean spaces. In this talk, we discuss recent developments which extend the error analysis of GMRA to the class of "noisy" manifolds, a rich and flexible class of data models. In the course of proving these results, we prove explicit bounds for volumes of tubular neighborhoods, bounds which should prove useful for the general statistical theory of manifold learning. (Received September 10, 2014)