

1046-60-1685

**Mauro Maggioni\*** ([mauro.maggioni@duke.edu](mailto:mauro.maggioni@duke.edu)), Duke University, 117 Physics Building, Box 90310, Durham, NC 27708. *"Harmonic and Multiscale Analysis on low-dimensional data sets in high-dimensions"*.

"We discuss recent advances in harmonic analysis ideas and algorithms for analyzing data sets in high-dimensional spaces which are assumed to have lower-dimensional geometric structure. They enable the analysis of both the geometry of the data and of functions on the data, and they can be broadly subdivided into local, global and multiscale techniques, roughly corresponding to PDE techniques, Fourier and wavelet analysis ideas in low-dimensional Euclidean signal processing. We discuss applications to machine learning tasks, image processing, and discuss current research directions." (Received September 16, 2008)