



The University of Chicago  
Department of Statistics  
Seminar Series

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Duke University

**Multiscale Geometric Methods for Noisy  
Point Clouds in High Dimensions**

**MONDAY, March 28, 2011, at 4:00 PM**

133 Eckhart Hall, 5734 S. University Avenue

*Refreshments following the seminar in Eckhart 110.*

**ABSTRACT**

We discuss techniques for analyzing at different scales the geometry of intrinsically low-dimensional point clouds perturbed by high-dimensional noise. We first show how such techniques may be used to estimate the intrinsic dimension, approximate tangent planes, and certain stable notions of curvatures of data sets. We then introduce a novel geometric multiscale transform, based on what we call geometric wavelets, that leads to efficient approximation schemes for point clouds, as well as new dictionary learning methods for data sets.

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For further information and about building access for persons with disabilities, please contact Laura Rigazzi at 773.702.8333 or send email ([lrigazzi@galton.uchicago.edu](mailto:lrigazzi@galton.uchicago.edu)). If you wish to subscribe to our email list, please visit the following website: <https://lists.uchicago.edu/web/info/statseminars>.