1086-57-832 **John L Harer*** (`john.harer@duke.edu`), Department of Mathematics, Duke University, Durham, NC 27514. *Topology, Geometry and Statistics: Merging Methods for Data Analysis.* Preliminary report.

Dimension reduction and shape description for scientific datasets are difficult problems, ones that continue to grow in importance within the statistical, mathematical and computer science communities. Powerful new methods of Topological Data Analysis (TDA) have emerged in the last 10 years, and these have added significantly to the data analysis toolbox.

In this talk we will give an overview of these methods and describe some early efforts to make them work together with statistical approaches. In particular we will discuss how one can use topological priors in data analysis and how TDA applies to the study of shape in point clouds, dimension reduction, time varying data and finding quasi-periodic patterns in signals. (Received September 13, 2012)