1100-62-223   **Leif Ellingson***, Texas Tech University, Department of Mathematics and Statistics, Broadway and Boston, Lubbock, TX 79409. *An Introduction to Statistics on Manifolds.*

Researchers are increasingly interested in analyzing data arising on sample spaces that are differentiable manifolds. Example of such spaces are: (1) spheres, which arise in directional data analysis, (2) projective spaces, which arise in shape analysis, and (3) the space of symmetric, positive definite matrices, which arise in diffusion tensor imaging and as covariance matrices. Because these spaces need only to be locally homeomorphic to a Euclidean space, traditional statistical methodologies developed for univariate and multivariate data cannot directly be applied. Parameters for distributions of random objects on a manifold, along with their corresponding sample statistics, are commonly defined with respect to distances on the manifold. These distances are typically defined by either equipping the manifold with a Riemannian structure, which leads to an intrinsic analysis, or embedding the manifold in a Euclidean space, which leads to an extrinsic analysis. This talk will discuss these approaches and provide motivation through examples. (Received February 08, 2014)