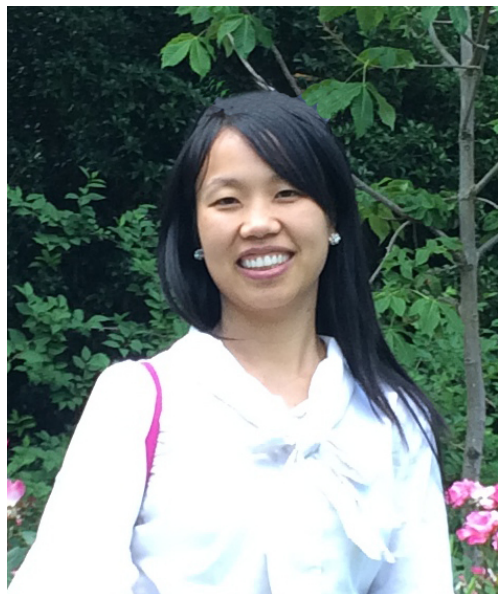


The Department of Statistics & Actuarial Science



COLLOQUIUM- *SPRING 2015*



**ASSISTANT PROFESSOR
LIZHEN LIN**

**UNIVERSITY OF
TEXAS AT AUSTIN**

Title: “Nonparametric Statistical Inference on Non-Euclidean Spaces”

Abstract: Over the last few decades data represented in various non-conventional forms have become increasingly more prevalent. Typical examples include diffusion matrices in diffusion tensor imaging (DTI) of neuroimaging, and various digital images arising in biology, medicine, machine vision and other fields of science and engineering. One may also encounter data that are stored in the forms of subspaces, orthonormal frames, surfaces, and networks. Statistical analysis of such data requires rigorous formulation and characterization of the underlying space, and inference is heavily dependent on the geometry of the space. For a majority of the cases considered, the underlying spaces where these general data objects lie on, fall into the general category of manifolds.

This talks focuses on nonparametric inference on manifolds and general metric spaces. Appropriate notion of means (Fréchet means) and variations are defined, and inference is based on the asymptotic distributions of their sample counterparts. In particular, we present an omnibus central limit theorem for Fréchet means that many of the existing CLTs follows immediately. Applications are provided to some stratified spaces of recent interest, and to the space of symmetric positive definite matrices arising in diffusion tensor imaging. In addition to inferring i.i.d data, we also consider regression problems where predictors or responses lying on manifolds.

April 30, 2015

Reception at 3:00 p.m., 241-B Schaeffer Hall

Talk at 3:30 p.m., 61 Schaeffer Hall