

RUTGERS UNIVERSITY
DEPARTMENT OF STATISTICS AND BIOSTATISTICS
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Seminar

Speaker: **Professor Bing Li**
Department of Statistics
Pennsylvania State University

Title: **Nonlinear sufficient dimension reduction for functional data**

Time: **3:20 – 4:20pm, Wednesday, October 21, 2015**

Place: **552 Hill Center**

Abstract

We propose a general theory and the estimation procedures for nonlinear sufficient dimension reduction where the predictor or the response, or both, are random functions. The relation between the response and predictor can be arbitrary and the sets of observed time points can vary from subject to subject. The functional and nonlinear nature of the problem leads naturally to consideration of two levels of functional spaces: the first space consisting of functions of time; the second space consisting of functions defined on the first space. We take both spaces to be reproducing kernel Hilbert spaces. A particularly attractive feature of our construction is that the two functional spaces are nested, so that the kernel for the first space determines the kernel for the second.

We propose two estimators, functional generalized sliced inverse regression (f-GSIR) and functional generalized sliced average variance estimator (f-GSAVE) for this general dimension reduction problem. We investigated the performances of our estimators by simulations, and applied them to data sets about phoneme recognition and handwritten symbols.

**** Refreshments will be served @2:50pm in Room 502 Hill Center ***