



JOHNS HOPKINS  
BLOOMBERG  
SCHOOL of PUBLIC HEALTH

*Department of Biostatistics*

# BIOSTATISTICS SEMINAR

## Dimension Reduction for Functional and Longitudinal Data

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### *Abstract*

Functional and longitudinal data are commonly observed nowadays either as response or covariates. While they share similarities, the methods to handle these two types of data are often different, with parametric approaches commonly used for longitudinal data and non or semi-parametric approaches the predominant approach for functional data. However, a unified approach is often feasible for both types of data. We illustrate this with semi-parametric approaches that afford both flexible modeling and dimension reduction, and focus on the approach that accomplishes dimension reduction through a single index or a few indices.

We discuss the extension of single and multiple-index models to functional and longitudinal data and establish root-n consistency and asymptotical normality of the parametric estimate without undersmoothing the nonparametric link function. We also demonstrate how to use the semiparametric approach for model building through a historical data of CD4 cell counts.

\* Based on joint work with Ciren Jiang, Academia Sinica, Taiwan, R.O.C.

**The Johns Hopkins Bloomberg School of Public Health  
Department of Biostatistics, Wednesday, October 26, 2011  
Room W2030 School of Public Health, 4:00-5:00pm (Refreshments: 3:30)**

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