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Deciding the Dimension of Effective Dimension Reduction Space for Functional and High-Dimensional Data

In this talk, I will consider regression models with a functional predictor and a scalar response, where the response depends on the predictor only through a finite number of projections. The linear subspace spanned by these projections is called the effective dimension reduction (EDR) space. To determine the dimensionality of the EDR space, I will focus on the principal component scores of the functional predictor, and propose two sequential χ^2 testing procedures under the assumption that the predictor has an elliptically contoured distribution. I will further extend these procedures and introduce an adaptive Neyman test that simultaneously takes into account a large number of principal component scores. The proposed procedures are supported by theory, validated by simulation studies, and illustrated by a real-data example. Although the methods and theory were developed under the functional data framework, they are applicable to general high-dimensional data.

Friday, September 18, 2009
at 11:30 am in B760 EH

**Coffee and Cookies will be
served at 11:15 am in the
Statistics Lounge, 450 West Hall**