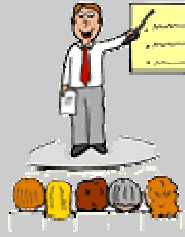


STATISTICS DEPARTMENT



SEMINAR

TITLE: **GENERALIZED LINEAR MODELS FOR THE COVARIANCE MATRIX OF LONGITUDINAL DATA**

SPEAKER: Mohsen Pourahmadi, Division of Statistics
Northern Illinois University



TIME: 4:00 P.M.

DATE: Wednesday, March 29, 2006

ROOM: 140 BARDEEN

ABSTRACT:

We survey the progress made in modelling covariance matrices from the perspective of generalized linear models (GLM) and show how one can move beyond the use of the identity and logarithmic link functions, and prespecified structures. Observing that most time-domain models (ARMA, state-space,...) in time series analysis are means to diagonalize a Toeplitz covariance matrix via a unit lower triangular matrix (Cholesky decomposition), we discuss the distinguished role of the Cholesky decomposition in providing a systematic and data-based procedure for formulating and fitting parsimonious models for general covariance matrices guaranteeing the positive-definiteness of the estimates. Pulling together some techniques from regression and time series analyses provide the necessary tools for the procedure which reduces the unintuitive task of modelling covariance matrices to that of a sequence of regression models. The procedure is illustrated using a real longitudinal dataset. Once a bona fide GLM framework for modelling covariances is found, its Bayesian, nonparametric, generalized additive and other extensions can be developed in direct analogy with the respective extensions of the traditional GLM.

Coffee and Cookies at 3:30 p.m. in Room 1210 MSC