

THE CHINESE UNIVERSITY OF HONG KONG

Department of Statistics

will present a seminar entitled

Semi-parametric Nonlinear Mixed Effects Models and Their Applications

by

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University of California, Santa Barbara

on

Tuesday, 30 January 2007

2:00pm – 3:00pm

in

Lady Shaw Building C2

The Chinese University of Hong Kong

Abstract:

NonLinear Mixed effects Models (NLMM) and Self-MODEling nonlinear Regression (SEMOR) models are often used to fit repeated measures data. They use a common function shared by all subjects to model variation within each subject and some fixed and/or random parameters to model variation between subjects. The parametric NLMM may be too restrictive and the semi-parametric SEMOR model ignores correlations within each subject. We propose a class of Semi-parametric Nonlinear Mixed effects Models (SNMM) which extend NLMMs, SEMOR models and many other existing models in a natural way. A SNMM assumes that the mean function depends on some parameters and nonparametric functions. The parameters provide an interpretable data summary. The nonparametric functions provide flexibility to allow the data to decide some unknown/uncertain components, such as the shape of the mean response over time. A second stage model with fixed and random effects is used to model the parameters. Smoothing splines are used to model the nonparametric functions. Covariate effects on parameters can be built into the second stage model, and covariate effects on nonparametric functions can be constructed using smoothing spline ANOVA decompositions. Applications of SNMMs are illustrated with analyses of a real data set. This is a joint work with Chunlei Ke at St. Jude Medical.

All are Welcome