



DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

40th Anniversary Seminar Series

Professor Lixing ZHU

*Director of Statistics Research and Consultancy Centre
Hong Kong Baptist University*

will give a talk

entitled

**QUASI-SCORE TESTS FOR
VARIANCE COMPONENTS IN VARYING
COEFFICIENT MIXED MODELS**

Abstract

We consider a general class of varying coefficient mixed models where random effects are introduced to account for potential correlation within a subject. To address the question of whether a varying coefficient mixed models can be reduced to a simpler varying coefficient model, we develop tests for the null hypothesis that all the variance components are zero. Without assumptions on the distributions for the random effects and random errors, we construct two-sided and one-sided quasi-score tests using the extended quasi-likelihood. In addition to the standard score tests which are purely null-based, we propose new extended score tests by constructing estimators for the second and the fourth moments of the random errors which are consistent under both the null and alternative hypotheses. All the proposed tests are consistent for global alternatives and local alternatives distinct at certain rates from the null. Furthermore, all the tests have tractable asymptotic distributions which make them easy to use in practice. Extensive simulations indicate that all the tests perform well. The extended quasi-score tests are more powerful than the standard score tests and the one-sided tests are more powerful than the two-sided tests. A real example is analyzed for illustration.

on

Wednesday, December 12, 2007

2:00 p.m. – 3:00 p.m.

at

**Room 524, Meng Wah Complex
(behind the Chong Yuet Ming Amenities Centre)**

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