

STATISTICS COLLOQUIUM

MONDAY, APRIL 09, 2012

TALK: 4:00 PM — SCIENCE CENTER RM. 309

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

“Generalized Point Estimation With Application to Mixed Models”

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ABSTRACT

In estimating the effect of a covariate by a large number of Groups or Subjects with, simple regressions yield highly unreliable estimates. The problem can be alleviated by using Mixed Models, which are now heavily employed in analysis of Marketing Data as well as data from Clinical Trials. Then BLUP of group estimates become a function of variance components, which are traditionally estimated by ML or REML. It is well known that MLE based methods could yield negative (or zero) and/or unreliable estimates for variance components regardless of type of application. As a result, BLUP fails or become highly unreliable, especially in trials involving a few groups and/or small sample sizes. LSE/MLE also has poor performance in estimating location parameters of small magnitude.

To overcome these drawbacks, we propose a generalized estimation method which is substantially superior to MLE in this class of applications. The proposed method also allows one to take advantage of known signs of parameters without taking the Bayesian approach.

The utility of the method will be demonstrated using a Pharmaceutical Marketing application involving millions of parameters.