

Colloquium
Michigan State University
Department of Statistics and Probability

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**A Penalized Empirical Likelihood Method
In High Dimensions**

Tuesday, March 19, 2013
10:20 a.m. - 11:10 am
Refreshments 10:00 am
C405 Wells Hall

ABSTRACT

We formulate a penalized empirical likelihood (PEL) method for inference on the population mean when the dimension of the observations become unbounded with the sample size. We derive the asymptotic distribution of the PEL ratio statistic. We show that the limit distribution of the proposed PEL ratio statistic can vary widely depending on the correlation structure of the components of the observations. We consider all possible cases of serial dependence, namely, (i) non-Ergodic, (ii) long range dependent and (iii) short range dependent. We derive the limit laws in each case, all of which differ from the usual chi-squared limit of the empirical likelihood ratio statistic in the finite dimensional case. We propose a subsampling approximation for calibrating the PEL ratio test statistic and establish its validity. Finite sample properties of the method are investigated through a simulation study.

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