

**RUTGERS UNIVERSITY**  
**DEPARTMENT OF STATISTICS AND BIostatISTICS**  
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**Seminar**

Speaker: **Professor Rui Tuo**  
**Chinese Academy of Science and Oak Ridge National Laboratory**

Title: **A theoretical framework for calibration in computer models: parametrization, estimation and convergence properties**

Time: **3:20 – 4:20pm, Wednesday, April 23, 2014**

Place: **552 Hill Center**

**Abstract**

Calibration parameters in deterministic computer experiments are those attributes that cannot be measured or available in physical experiments or observations. Kennedy-O'Hagan (2001) suggested an approach to estimate them by using data from physical experiments and computer simulations. A new theoretical framework is given which allows us to study the issues of parameter identifiability and estimation. It is shown that a simplified version of the original KO method leads to asymptotically inconsistent calibration. A novel calibration method, called the  $L_2$  calibration, is proposed and proven to be consistent and enjoys optimal convergence rate. The asymptotic results of  $L_2$  calibration for stochastic physical systems are also studied. It is proved that the  $L_2$  calibration estimator is asymptotically normal and semi-parametric efficient. This work also investigates the asymptotic properties of the ordinary least squares method.

(joint work with C. F. Jeff Wu, Georgia Institute of Technology)

**\*\* Refreshments will be served @2:50pm in Room 502 Hill Center \*\***