Statistics Seminar

Department of Mathematical Sciences

DATE:	Thursday, March 3, 2016
TIME:	1:15pm to 2:15pm
LOCATION:	WH 100E
SPEAKER:	Ganggang Xu, Binghamton University
TITLE:	Efficient Maximum Approximated Likelihood Inference for Tukey's g-and-h Distribution

Abstract

Tukey's g-and-h distribution has been a powerful tool for data exploration and modeling since its introduction. However, two long standing challenges associated with this distribution family have remained unsolved until this day: how to find an optimal estimation procedure and how to make valid statistical inference on unknown parameters. To overcome these two challenges, a computationally efficient estimation procedure based on maximizing an approximated likelihood function of the Tukey's g-and-h distribution is proposed and is shown to have the same estimation efficiency as the maximum likelihood estimator under mild conditions. The asymptotic distribution of the proposed estimator is derived and a series of approximated likelihood ratio test statistics are developed to conduct hypothesis tests involving two shape parameters of Tukey's g-and-h distribution. Simulation examples and an analysis of air pollution data are used to demonstrate the effectiveness of the proposed estimation and testing procedures.