

Department of Applied and Computational Mathematics and Statistics Colloquium



Zihuai He

Department of Biostatistics
Columbia University

Inference for statistical interactions under misspecified or high-dimensional main effects

An increasing number multi-omic studies have generated complex high-dimensional data. A primary focus of these studies is to determine whether exposures interact in the effect that they produce on an outcome of interest. Interaction is commonly assessed by fitting regression models in which the linear predictor includes the product between those exposures. When the main interest lies in interactions, the standard approach is not satisfactory because it is prone to (possibly severe) type I error inflation when the main exposure effects are misspecified or high-dimensional. I will propose generalized score type tests for high-dimensional interaction effects on correlated outcomes. I will also discuss the theoretical justification of some empirical observations regarding Type I error control, and introduce solutions to achieve robust inference for statistical interactions. The proposed methods will be illustrated using an example from the Multi-Ethnic Study of Atherosclerosis (MESA), investigating interaction between measures of neighborhood environment and genetic regions on longitudinal measures of blood pressure over a study period of about seven years with four exams.

Wednesday December 20, 2017

4:30 PM – 5:30 PM

127 Hayes-Healy Center

Colloquium Tea 4:00 PM to 4:30 PM Hurley Hall Globe Area