

Statistics Seminar
Department of Mathematical Sciences

DATE:	Thursday, September 13, 2018
TIME:	1:15pm - 2:15pm
LOCATION:	WH 100E
SPEAKER:	Chen Liang, Binghamton University
TITLE:	Robust Permutation Tests For Correlation And Regression Coefficients

Abstract

Given a sample from a bivariate distribution, consider the problem of testing independence. A permutation test based on the sample correlation is known to be an exact level α test. However, when used to test the null hypothesis that the samples are uncorrelated, the permutation test can have rejection probability that is far from the nominal level. Further, the permutation test can have a large Type 3 (directional) error rate, whereby there can be a large probability that the permutation test rejects because the sample correlation is a large positive value, when in fact the true correlation is negative. It will be shown that studentizing the sample correlation leads to a permutation test which is exact under independence and asymptotically controls the probability of Type 1 (or Type 3) errors. These conclusions are based on our results describing the almost sure limiting behavior of the randomization distribution. We will also present asymptotically robust randomization tests for regression coefficients, including a result based on a modified procedure of Freedman and Lane.

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