Statistics Seminar

Department of Mathematics and Statistics

DATE:	Thursday, March 9, 2022
TIME:	1:15pm – 2:15pm
LOCATION:	WH 100E
SPEAKER:	Baozhen Wang, Binghamton University
TITLE:	Combining p-values via averaging

Abstract

This paper is published in Biometrika by V. Vovk and R. Wang. They propose general methods for the problem of multiple testing of a single hypothesis, with a standard goal of combining a number of p-values without making any assumptions about their dependence structure. A result by Rüschendorf (1982) and, independently, Meng (1993) implies that the p-values can be combined by scaling up their arithmetic mean by a factor of 2, and no smaller factor is sufficient in general. A similar result by Mattner about the geometric mean replaces 2 by e. Based on more recent developments in mathematical finance, specifically, robust risk aggregation techniques, they extend these results to generalized means; in particular, they show that K p-values can be combined by scaling up their harmonic mean by a factor of log K asymptotically as K tends to infinity. This leads to a generalized version of the Bonferroni–Holm procedure. They also explore methods using weighted averages of p-values.