

# Mathematical Sciences

Fall 2021

## Colloquium Series

**Dr. Amy Wagler**

The University of Texas at El Paso

Friday, September 10 : 3pm : Zoom Meeting

*Click on this announcement to access the Zoom link*



## Rapid Multiplicity Adjustment for Independent or Dependent Chi-square Distributed Test Endpoints

### Abstract

Somerville\* developed step-up and step-down false discovery rate (FDR) algorithms that produce critical values under a series of least favorable configurations about the location parameter. This approach performs well and is promising since it requires a reasonable set of assumptions for hypothesis testing. In particular, the hypotheses must involve testing a location parameter, utilize this parameter to obtain an appropriate series of least favorable configurations, and allow simulation of multivariate normal distributions for approximating critical values. Though powerful in many settings, this procedure is not applicable in scenarios involving multiple association or goodness-of-fit tests. I will present an analogous approach for controlling FDR in situations where  $i = 1, \dots, m$  hypotheses are tested using chi-square distributed tests. For these settings, the  $i^{\text{th}}$  least favorable configuration can be determined by making only a few assumptions that fit many study designs. Simulations confirm the performance of this method and compare it to other FDR approaches utilizing chi-square critical values.

\* Somerville, P. N. (2004). *FDR step-down and step-up procedures for the correlated case*. Lecture Notes-Monograph Series, 100-118.

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