



The Department of Mathematics, Statistics and Computer Science

St. Francis Xavier University

presents

**Copula-based tests of independence for bivariate
discrete data and extreme value analysis**

by

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Monday, March 7 @ 2:15pm, Annex 23A

In this talk, a consistent statistic is proposed to test whether two discrete random variables are independent. The test is based on a statistic of the Cramér—von Mises type constructed using the so-called empirical checkerboard copula. The test can be used for sparse contingency tables or tables whose dimension changes with sample size. The new statistic is compared in a power study to standard procedures for testing independence, including Pearson's Chi-Squared and the Likelihood Ratio test. The new test turns out to be considerably more powerful than all its competitors in all scenarios considered. This talk will also include a brief mention of my current research in extreme value analysis.

Orla Murphy graduated from St.F.X. University in 2011 with a B.Sc. with Honours in Mathematics under the supervision of Professors Xu (Sunny) Wang and Ping Wang. She completed a Masters in Statistics at McGill University in 2013 under the supervision of Profs Genest and Nešlehová and is currently continuing her studies at McGill University in the Statistics PhD program with an additional supervisor, Prof Dupuis (HEC). Funding was provided for her graduate research from NSERC CGS-M and PGS-D awards. Her primary research interests include modeling dependence and extreme value analysis.