## Statistics Seminar Department of Mathematics and Statistics

DATE:	Thursday, August 28, 2025
TIME:	1:30pm – 2:30pm
LOCATION:	WH 100E
SPEAKER:	Pratik Misra, Binghamton University
TITLE:	Structural identifiability and causal discovery in Gaussian graphical models

## **Abstract**

Algebraic Statistics is an emerging field of research that uses techniques from Algebraic Geometry, Combinatorics and Commutative Algebra to enhance our understanding of statistical and causal inference problems. A key area of research in this field is the Gaussian graphical models, where the dependence structure between jointly normal random variables is determined by a graph. In this talk, I will present the problem of structural identifiability and causal discovery in Gaussian graphical models. Specifically, I will demonstrate how introducing symmetry conditions in the model can ensure structural identifiability. I will also (briefly) talk about a new causal discovery algorithm developed by using algebraic techniques. Finally, I will highlight some key algebraic properties satisfied by these models and outline some open problems in this direction.

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