Queen's Algebraic Geometry
— Seminar —

Causality and Algebraic Geometry

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Abstract

Science, and perhaps all learning, is the problem of inferring causal relationships from observations. It turns out that algebraic geometry can provide powerful intuition and methods applicable to causal inference. The relevant theory of graphical causal models is a major entry point to the budding field of algebraic statistics, where algebraic geometry meets statistical modeling, and this talk will give an introduction to it from a geometer's perspective. I'll introduce some conceptual tools and methods that are peculiar to algebraic statistics, and work through an example such causal inference computation using the commutative algebra software *Macaulay2*. At the end I'll review some of my research on hidden Markov models and varieties, and their close connection to matrix product state models of quantum-entangled qubits.

Monday 17 September 2012
16:30 – 17:30
319 Jeffery Hall