

Berkeley Algebraic Statistics Seminar

Organizer(s): Andrew Critch and Shaowei Lin

Wednesday, 2:00–3:00pm, 939 Evans

Nov 2 **Piotr Zwiernik, IPAM**

Why do we care about inequalities in (algebraic) statistics?

Discrete Bayesian networks with hidden nodes usually have a complicated geometric description involving inequality constraints. A standard approach in algebraic statistics is to ignore inequalities which allows us to use classical algebraic tools without referring to the real algebraic geometry. In biostatistics this led to the concept of phylogenetic invariants. Recently some effort has been put to understand the full semi-algebraic structure of some graphical models with hidden data including phylogenetic tree models. In my talk I will make a small step back and try to explain why we care about inequality constraints. I will show how they may improve our understanding of statistical inference. My analysis is very simplistic and focuses on the simplest naive Bayes model. However, the main ideas will generalize to more complicated models.