Identifiability Of Linear Structural Equation Models

Mathias Drton
University of Chicago

Structural equation models are multivariate statistical models that are defined by specifying noisy functional relationships among random variables. This talk treats the classical case of linear relationships and additive Gaussian noise terms. Each linear structural equation model can be represented by a mixed graph in which directed edges encode the linear equations, and bi-directed edges indicate possible correlations among noise terms. A basic problem in structural equation modeling is to determine which models are identifiable. In other words, each model corresponds to a parametrized set of positive definite covariance matrices and we wish to determine the graphs for which the edge coefficients and correlations appearing in the parametrization can be uniquely recovered from the covariance matrix. I will discuss recent results on this problem based on joint work with Jan Draisma, Rina Foygel and Seth Sullivant.