James Cussens, University of York, UK

On the polyhedral geometry of conditional independence relations

Abstract: In this talk we consider two polytopes: the *family-variable* polytope whose vertices correspond to DAGs and the *characteristic-imset* polytope whose vertices correspond to Markov equivalence classes (MECs) of DAGs. In both cases a set of models satisfying a given set of conditional independence relations corresponds to a set of vertices, so the question naturally arises of what are the geometric properties of such sets of vertices. In particular are they contained within certain faces of the two polytopes? Answering this question is practically important when using integer programming for model selection subject to given known (or assumed) conditional independence relations.

This talk is based on a joint work with Milan Studený.

References:

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