Mathematics, Statistics, and Computer Science **@ UIC**

Combinatorics and Discrete Probability Seminar

Realizability of Hypergraphs and High-Dimensional Contingency Tables from Random Partitions

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Abstract: A theorem due to Erd\H{o}s and Gallai fully answers the question of when one can realize a provided integer sequence as the degree sequence of a graph with an easy-to-check, necessary and sufficient condition. If one considers a random integer partition as the provided integer sequence, a theorem of Pittel's shows that with high probability a random partition is not the degree sequence of a graph. We consider the analogous question for 3-uniform hypergraphs and show that with high probability a random partition can indeed be realized as the degree sequence of a 3-uniform hypergraph. We will further consider the realizability question of whether one can realize three random integer partitions as the marginals of an associated three-dimensional contingency table. We will briefly discuss how this latter result resolves two conjectures of Pak and Panova regarding Kronecker coefficients

Wednesday, October 2 at 4:00 PM in 712 SEO