
LINCOLN LU, University of South Carolina
Subgraphs in Random Non-uniform Hypergraphs

For a given set of positive integers $R := \{k_1, k_2, \dots, k_r\}$ and probabilities $\mathbf{p} = (p_1, p_2, \dots, p_r) \in [0, 1]^r$, let $G^R(n, \mathbf{p})$ be the random hypergraph G on n vertices so that for $1 \leq i \leq r$ each k_i -subset of vertices appears as an edge of G with probability p_i independently. We ask for what probability vector \mathbf{p} , $G^R(n, \mathbf{p})$ almost surely contains a given subhypergraph H . Those \mathbf{p} for which $G^R(n, \mathbf{p})$ almost surely contains H , form a convex region (depending on H) in a log-scale drawing. We also consider the associated extension problems. (Joint work with Edward Boehnlein.)