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Hereditary quasirandom properties of hypergraphs

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Abstract: Thomason, and Chung, Graham and Wilson were the first to investigate systematically properties of quasirandom graphs. They have stated several quite disparate graph properties – such as having uniform edge distribution or containing a prescribed number of certain subgraphs – and proved that these properties are equivalent in a deterministic sense.

Simonovits and Sos introduced a hereditary property (which we call S) stating the following: for a small fixed graph L, a graph G on n vertices is said to have the property S if for every subset X of V(G), the number of labeled copies of L in G[X] (the subgraph of G induced by the vertices of (X) is given by $2^{-e(L)}|X|^{v(L)} + o(n^{v(L)})$. They have shown that S is equivalent to the other quasirandom properties.

In this talk we give a natural extension of the result of Simonovits and Sos to k-uniform hypergraphs, answering a question of Conlon et al. Our approach yields an alternative, and perhaps simpler, proof of their theorem.

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