

1064-05-161

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*Hypergraph independent sets.*

The study of extremal problems related to independent sets in hypergraphs is a problem that has generated much interest. While independent sets in graphs are defined as sets of vertices containing no edges, hypergraphs have different types of independent sets depending on the number of vertices from an independent set allowed in an edge. We say that a subset of vertices is *j-independent* if its intersection with any edge has size strictly less than  $j$ . The Kruskal-Katona theorem shows that in an  $r$ -uniform hypergraph with a fixed size and order, the hypergraph with the most  $r$ -independent sets is the lexicographic hypergraph. In this talk, we use a hypergraph regularity lemma, along with a technique developed by Loh, Pikhurko, and Sudakov, to give an asymptotically best possible upper bound on the number of  $j$ -independent sets in an  $r$ -uniform hypergraph. (Received September 07, 2010)