Guangzhou Discrete Mathematics Seminar

Enumeration of linear hypergraphs with given size and its applications

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For $n \geq 3$, let $r = r(n) \geq 3$ be an integer. A hypergraph is r-uniform if each edge is a set of r vertices, and is said to be linear if two edges intersect in at most one vertex. In this talk, the number of linear r-uniform hypergraphs on $n \to \infty$ vertices is determined asymptotically when the number of edges is $m(n) = o(r^{-3}n^{\frac{3}{2}})$. We also find the probability of linearity for the independent-edge model of random r-uniform hypergraph when the expected number of edges is $o(r^{-3}n^{\frac{3}{2}})$; and some recent developments as the applications.

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