

Intersecting k -uniform families containing all the k -subsets of a given set

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March 12, 2014

Abstract

Let m, n , and k be integers satisfying $0 < k \leq n < 2k \leq m$. A family of sets \mathcal{F} is called an (m, n, k) -*intersecting family* if $\binom{[n]}{k} \subseteq \mathcal{F} \subseteq \binom{[m]}{k}$ and any pair of members of \mathcal{F} have nonempty intersection. Maximum (m, k, k) - and $(m, k + 1, k)$ -intersecting families are determined by the theorems of Erdős-Ko-Rado and Hilton-Milner, respectively. We determine the maximum families for the cases $n = 2k - 1, 2k - 2, 2k - 3$, or m sufficiently large.

Joint work with Bor-Liang Chen, Kuo-Ching Huang, and Ko-Wei Lih.