

COMBINATORICS
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An Erdos-Ko-Rado Theorem for cross t -intersecting families

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Abstract: A central result in extremal set theory is ‘the Erdos-Ko-Rado Theorem’ (1961) which investigates the maximum size of families X of k -subsets in $[n]$ such that two members in X intersect with at least t elements.

Two families X and Y of k -subsets in $[n]$ are called ‘cross t -intersecting’ if, for every members A in X and B in Y , we have that A and B intersect with at least t elements. The cross t -intersecting version of the Erdos-Ko-Rado Theorem was conjectured but still open.

In this talk we verify the conjecture for all integers $t \geq 13$ except finitely many n and k for each fixed t . Our proofs make use of a weight version of the problem and randomness. This is joint work with Peter Frankl, Norihide Tokushige, and Mark Siggers.

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