

Cross-intersecting families

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Extremal set theory is the study of how small or how large a system of sets can be under certain conditions. A problem in this field that has recently attracted much attention is that of determining the maximum sum or the maximum product of sizes of $k \geq 2$ *cross- t -intersecting* subfamilies of a given family \mathcal{F} of sets; families $\mathcal{A}_1, \mathcal{A}_2, \dots, \mathcal{A}_k$ are said to be *cross- t -intersecting* if for every i and j in $\{1, 2, \dots, k\}$ with $i \neq j$, each set in \mathcal{A}_i intersects each set in \mathcal{A}_j in at least t elements. Solutions have been obtained for various important families \mathcal{F} , such as power sets, levels of power sets, hereditary families, families of permutations, and families of integer sequences. The talk will provide an outline of these results, together with some general observations and results.