Erdős-Ko-Rado theorems in geometrical settings

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The original Erdős-Ko-Rado problem was posed in [7] and asks for the maximal size of an Erdős-Ko-Rado set, a set of k-subsets in a finite set such that every two subsets have a non-empty intersection. This question has been generalised in many ways, and especially to geometrical settings, e.g. to projective and polar spaces and to designs. An Erdős-Ko-Rado set of k-spaces in a projective or polar space is defined as a set of k-dimensional subspaces such that every two of them have a non-empty intersection. An Erdős-Ko-Rado set of a design is a set of mutually intersecting blocks. An Erdős-Ko-Rado set is called maximal if it is non-extendable regarding this intersection condition. The general Erdős-Ko-Rado problem asks for the classification of the (large) maximal Erdős-Ko-Rado sets.

In this talk we will give a survey of Erdős-Ko-Rado theorems in geometrical settings, based on the survey article [6]. This includes recent results on projective spaces, which can be found in [1, 2, 3], recent results on polar spaces, which can be found in [3, 4, 8] and recent results on designs, which can be found in [5].

References

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