

# The Erdős-Ko-Rado Theorem: an Algebraic Perspective

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The Erdős-Ko-Rado Theorem is a major result in extremal set theory. It gives the exact size and structure of the largest system of sets, with a fixed number of elements, that has the property that any two sets in the system have at least one element in common. There are many extensions of this theorem to combinatorial objects other than set systems, such as vectors subspaces over a finite field, integer sequences, partitions, and recently, there have been several results that extend the EKR theorem to permutations.

I will describe an algebraic method that can be used to prove the EKR theorem for several types of combinatorial objects. My focus in this talk will be permutations. I will use this method to show how the natural extension of the EKR Theorem holds for two permutation groups. This method relies on having knowledge of the irreducible representations of the group and may well be applicable to other groups whose irreducible representations are well understood.