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On Some Graphs Associated with Permutations

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The well-known Erdős-Ko-Rado theorem in extremal set theory has many different proofs. Recently, there has been a proof based on graphs and linear algebraic methods. In this method, the proof is done by classifying the maximum independent sets of some graphs, namely Kneser graphs. A number of other theorems which are of the same nature have been established for other mathematical objects, often by use of similar algebraic graph theoretical methods. In this presentation we will talk about some new results on classifying maximum independent sets of some graphs, $\Gamma_{n,m}$, whose vertices are all permutations on the set $X = \{1, \ldots, n\}$ and in which two permutations α and β are adjacent if $\alpha\beta^{-1}$ is an m-cyclic permutation, a permutation which moves m elements of X "cycle-wise" and does not move the other elements