

GRADUATE SEMINAR

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Cameron-Liebler Sets for 2-Transitive Groups

*supervised by
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Abstract:

We consider very specific groups; namely, 2-transitive groups whose minimal normal subgroup is abelian. Suppose G is such a group and Γ_G is its derangement graph. Any maximum coclique S of Γ_G has characteristic vector χ_S . Each χ_S is a boolean vector contained in a particular module, which we call the permutation module M_p . This module has dimension $1 + (n - 1)^2$ and it is spanned by $\{\chi_{ij} \mid i, j \in \{1, \dots, n\}\}$, where each χ_{ij} is the characteristic vector of S_{ij} , the set of permutations that map i to j . Apart from the χ_{ij} , which correspond to the stabilizers and their cosets, we are interested in finding any other boolean vectors that are contained in M_p . We defined these boolean vectors to be *Cameron-Liebler sets for 2-transitive groups* (CL sets). In this lecture, I will (1) discuss how to use linear programming to find CL sets for these groups; (2) outline the analyses that we perform on the maximum cocliques and maximum cliques of Γ_G ; and (3) present relevant data, results, and conjectures.