

Discrete Mathematics Seminar

Time: Friday, March 11, 2022, 1:00 - 2:00 PM (Central Time)
Title: Orbit Sizes and the Central Product Group of Order 16
Speaker: Audriana Pohlman, University of Notre Dame
Zoom Link: Meeting ID: 999 2462 8868, Password: 753321

Abstract:

In previous work of Thomas Keller and Yong Yang it was shown that if G is a finite solvable group and V a finite faithful completely reducible G -module, possibly of mixed characteristic, and M is the largest orbit size in the action of G on V then $|G/G'| \leq M$. In a continuation of this work by the first author and Nathan Jones the first case of equality was proved. If G is a finite nonabelian group and V a finite faithful irreducible G -module and $M = |G/G'|$ is the largest orbit of G on V and that there are exactly two orbits of size M on V then $G = D_8$ and $V = V(2, 3)$. In the paper this talk is concerned with answers the next case, the one where, under otherwise the same hypothesis as before, we have three orbits of size $M = |G/G'|$. It turns out that there is exactly one such action, the one where G is the central product of D_8 and C_4 is acting on the vector space of order 25.