

Discrete Mathematics Seminar

Time: 2:00pm Friday, September 12, 2014

Room: 237 Derrick Hall

Title: Character Degree Graphs of Finite Solvable Groups with Diameter Three

Speaker: Dr. Catherine Sass, Mathematics Dept.

Abstract

Let G be a finite solvable group and $\text{cd}(G)$ the set of character degrees of G . The character degree graph $\Delta(G)$ is the graph whose vertices, $\rho(G)$, are the primes dividing the degrees in $\text{cd}(G)$ and there is an edge between two distinct primes p and q if their product pq divides some degree in $\text{cd}(G)$. By Pálffy's Condition, we know that the diameter of a character degree graph is at most three for a connected graph. Further, we can partition the vertices, $\rho(G)$ into four non-empty disjoint subsets $\rho_1 \cup \rho_2 \cup \rho_3 \cup \rho_4$ where the following is true: No prime in ρ_1 is adjacent to any prime in $\rho_3 \cup \rho_4$; no prime in ρ_4 is adjacent to any prime in $\rho_1 \cup \rho_2$; every prime in ρ_2 is adjacent to some prime in ρ_3 ; every prime in ρ_3 is adjacent to some prime in ρ_2 ; and $|\rho_1 \cup \rho_2| \leq |\rho_3 \cup \rho_4|$.

We will present the history on the character degree graphs of solvable groups with diameter three, and present some of the recent results.