Discrete Mathematics Seminar

Time: Friday, 4 March 2011, 12:30–1:30 PM
Location: 238 Derrick Hall
Title: Large character degrees of solvable 3′-groups
Speaker: Dr. Yong Yang, Mathematics Department

Abstract

Let G be a finite group and denote by $b(G) = \max\{\psi(1) \mid \psi \in \mathrm{Irr}(G)\}$ the largest degree of an irreducible character of G. In [3] Gluck proves that for solvable groups $|G : \mathbf{F}(G)| \leq b(G)^{13/2}$ and conjectures that $|G : \mathbf{F}(G)| \leq b(G)^2$. This has been verified by Espuelas [1] for G of odd order. Espuelas' result has been extended in [2] to G a solvable group with abelian Sylow 2-subgroups by Dolfi and Jabara.

In this talk we prove that if G is a finite solvable group and $3 \nmid |G : \mathbf{F}(G)|$, then the index of the Fitting subgroup of G is at most the square of the largest irreducible character degree of G.

References

[1] Alberto Espuelas, 'Large character degree of groups of odd order', Illinois J. Math, 35 (1991), 499-505.
[2] Silvio Dolfi and Enrico Jabara, 'Large character degrees of solvable groups with abelian Sylow 2-subgroups', Journal of Algebra, 313 (2007), 687-694.
[3] D. Gluck, 'The largest irreducible character degree of a finite group', Canad. J. Math., 37 (3) (1985), 442-451.