Discrete Mathematics Seminar

Time: Friday, April 16, 2021, 9:00 - 10:00 AM (Central Time)
Title: On Covering number of Groups with trivial Fitting subgroup
Speaker: Dr. Yang Liu, Tianjin Normal University, China
Zoom Link: Meeting ID: 999 2462 8868, Password: 753321

Abstract:

Let $G$ be a finite group and $S$ be a subset of $\text{Irr}(G)$. If for every prime divisor $p$ of $|G|$ there is a character $\chi$ in $S$ such that $p$ divides $\chi(1)$, $S$ is called a covering set of $G$. The covering number of $G$, denoted by $cn(G)$, is defined as the minimal number of $\text{Card}(S)$, where $S$ is a covering set of $G$ and $\text{Card}(S)$ is the cardinality of set $S$. The concept of covering number was introduced by Alvis and Barry when they considered the Hupperts $\rho - \sigma$ conjecture for simple groups and they proved that if $G$ is a nonabelian simple group, then $cn(G) \leq 2$ unless $G \cong J_1$ or $\text{PSL}(2, q)$ whose covering number equal to 3. Now we show that if $G$ is a finite group with $F(G) = 1$, then the covering number $cn(G) \leq 3$. Especially, if $\text{PSL}_2(q)$ or $J_1$ is not involved in $G$, then $cn(G) \leq 2$. 