

## Normal Subgroup Based Power Graph of a Finite Group

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Let  $G$  be a finite group and  $N \trianglelefteq G$ . The normal subgroup based power graph  $\Gamma_N(G)$  is an undirected graph with vertex set  $(G \setminus N) \cup \{e\}$  in which two distinct vertices  $a$  and  $b$  are adjacent if and only if  $aN = b^m N$  or  $bN = a^n N$ , for some positive integers  $m$  and  $n$ . In this talk, we report on our recent results on the normal subgroup based power graph of a finite group. As a consequence of this talk, a characterization of all pairs  $(G, N)$  of a finite group  $G$  and a proper non-trivial normal subgroup  $N$  of  $G$  such that  $\Gamma_H(G)$  is split, bisplit or  $(n-1)$ -bisplit are given. Moreover, all finite groups  $G$  with  $c$ -cyclic normal subgroup based power graph,  $c \leq 4$ , will be determined.