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The influence of weakly $S\Phi$-supplemented subgroups on the structure of finite groups

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Abstract. Let G be a finite group. A subgroup H of G is said to be s-permutable in G if $HP = PH$ for all Sylow subgroups P of G. A subgroup H of G is said to be weakly $S\Phi$-supplemented in G if G has a subgroup K such that $G = HK$ and $H \cap K \leq \Phi(H)H_{sG}$, where $\Phi(H)$ is the Frattini subgroup of H, and H_{sG} is the subgroup of H generated by all those subgroups of H which are s-permutable in G. In this paper, we investigate the structure of G under the assumption that certain subgroups of fixed prime power orders are weakly $S\Phi$-supplemented in G. Our main results improve and extend some results in the literature.

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