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Title: On weakly σ-permutable subgroups of finite groups

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Let G be a finite group and $\sigma = \{\sigma_i | i \in I\}$ be a partition of the set of all primes $\mathbb{P}$. A set $\mathcal{H}$ of subgroups of G with $1 \in \mathcal{H}$ is said to be a complete Hall σ-set of G if every non-identity member of $\mathcal{H}$ is a Hall σ_i-subgroup of G and $\mathcal{H}$ contains exactly one Hall σ_i-subgroup of G for every $\sigma_i \in \sigma(G)$. A subgroup H of G is said to be σ-permutable if G possesses a complete Hall σ-set $\mathcal{H}$ such that $HA^x = A^xH$ for all $A \in \mathcal{H}$ and all $x \in G$. We say that a subgroup H of G is weakly σ-permutable in G if there exists a σ-subnormal subgroup T of G such that $G = HT$ and $H \cap T \leq H_{\sigma G}$, where $H_{\sigma G}$ is the subgroup of H generated by all those subgroups of H which are σ-permutable in G. By using this new notion, we establish some new criteria for a group G to be a σ-soluble and supersoluble, and also we give the conditions under which a normal subgroup of G is hypercyclically embedded.

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