Searching for resistant $p$-groups

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Abstract

Let $G$ be a finite group and $H$ a subgroup of $G$. We say that $H$ controls $p$-fusion in $G$ if $(|G : H|, p) = 1$ and for any $g \in G$ and any $p$-subgroup $Q$ such that $Q$ and $gQ$ are contained in $H$, there exists $h \in H$ and $c \in C_G(Q)$ such that $g = hc$, or, equivalently, the conjugation by $g \in G$ between $p$-subgroups of $H$ can be realised by $h \in H$.

A $p$-group $P$ is called resistant if for any finite group $G$ such that $P$ is a Sylow $p$-subgroup of $G$, the normalizer $N_G(P)$ controls $p$-fusion in $G$. In this talk we will explain a general method to find resistant groups and give some examples.

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