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 $c \in \mathrm{C}_G(Q)$ 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 $\mathrm{N}_G(P)$ 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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