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Título: The exponent of the non-abelian q-tensor square and related constructions of p-groups.

Resumo: The group $\nu^q(G)$ is a certain extension of the non-abelian q-tensor square, $G \otimes^q G$, by $G \times G$, where q is a non-negative integer and G is an arbitrary group. In this presentation we obtain bounds for the exponent of these constructions when G belongs to some family of finite p-group. For instance, if G is a powerful p-group we prove that $\exp(G \otimes^q G)$ divides $\exp(G)$ if p is odd or if $p = 2$ and either q is odd or 4 divides q, and $\exp(G \otimes^q G)$ divides $2 \exp(G)$ if $p = 2$ and 4 does not divide q. In the potent's family we give a bound for the $\exp(\nu^q(G))$ in terms of the $\exp(G)$. Moreover, we obtain an upper bound for p-groups of maximal class. These bounds extend some existing bounds found in the literature for the particular case $q = 0$.