The q-tensor square of potent p-groups, $q \geq 0$.**

Nathália Nogueira Gonçalves*
Department of Mathematics
University of Brasília
Brasília, Brazil

Abstract

Let p be a prime number and G be a finite p-group. We say that G is *potent* if $\gamma_{p-1}(G) \leq G^p$, for p odd, or if $[G,G] \leqslant G^4$, for $p = 2$. If N is a normal subgroup of G and satisfies $[N,_{p-2} G] \leqslant N^p$, for $p \geq 3$, or $[N,G] \leqslant N^4$, for $p = 2$, then N is said to be *potently embedded* in G. In this talk we consider the group $\nu^q(G)$, q a non-negative integer, as described for instance by Bueno and Rocco in [2], which happens to be an extension of the q-tensor square $G \otimes^q G$ by $G \times G$. Our purpose is to address some results concerning $\nu^q(G)$, $G \otimes^q G$ and some normal subgroups of the $\nu^q(G)$, under the assumption that G is a potent p-group, which generalize results for $q = 0$ found in [1]. The results here obtained are similar to those proved in [3] for another family of finite p-groups.

** This is a joint work with Noraí Romeu Rocco.

References

[1] R. Bastos, E. de Melo, N. Gonçalves and R. Nunes, Non-abelian tensor square and related constructions of p-groups, *Arch. Math.*, 114, (2020) 481-490.

[2] T. P. Bueno, N. R. Rocco, On the q-tensor square of a group, *J. Group Theory*, 14, 2011, 785-805.

[3] N. N. Gonçalves and N. R. Rocco, The q-tensor square of a powerful p-group, *J. Algebra*, 551, 2020, 9-22.

[4] J. González-Sánchez, A. Jaikin-Zapirain, On the structure of normal subgroups of potent p-groups, *J. Algebra*, 276, 2004, 193-209.

*Partially supported by CNPq, e-mail: nathalianogueira208@yahoo.com.br