TÍTULO: Reconstruction of directed power graphs from power graphs in finite groups

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FECHA: 9 *mayo 2025. HORA: 12:00. LUGAR: Seminario Emmy Noether. Edf. CITE III.*

ABSTRACT:

The directed power graph P→ (G) of a finite group G has vertex set G and arc set $\{(x, y) \in G^2 : x \neq y, y = x^m$ for some $m \in \mathbb{N}\}$. The power graph P(G) is the corresponding undirected graph. We show that, given a graph which is known to be the power graph of at least one finite group G, we can always reconstruct P→ (G) by purely arithmetical and graph theoretical considerations, without taking into account any group theoretical informa- tion about G. The proof is entirely constructive and gives rise to a precise algorithm that completely answers one of the questions set by P. J. Cameron in 2022, which asks to find a simple algorithm for constructing the directed power graph from the power graph. We base our paper on a previous paper by P. J. Cameron 2010 correcting a mistake.

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