On minimal coverings and pairwise generation of some primitive groups of wreath product type

Júlia Arêdes de Almeida
UnB

Abstract: The covering number of a finite noncyclic group G, denoted $\sigma(G)$, is the smallest positive integer k such that G is a union of k proper subgroups. If G is 2-generated, let $\omega(G)$ be the maximal size of a subset S of G with the property that $\langle x, y \rangle = G$ whenever $x, y \in S$ and $x \neq y$. Since any proper subgroup of G can contain at most one element of such a set S, we have $\omega(G) \leqslant \sigma(G)$. For a family of primitive groups G with a unique minimal normal subgroup N isomorphic to A_n^m and G/N cyclic, we calculate $\sigma(G)$ for n divisible by 6 and $m \geqslant 2$. This is a generalization of a result of E. Swartz concerning the symmetric groups, which corresponds to the case $m = 1$. For the above family of primitive groups G, we also prove a result concerning pairwise generation: for fixed $m \geqslant 2$ and n even, we calculate asymptotically the value of $\omega(G)$ when $n \to \infty$ and show that $\omega(G)/\sigma(G)$ tends to 1 as $n \to \infty$. This talk is based on a joint work with Martino Garonzi (UnB).

References

[1] J. Almeida, M. Garonzi, On minimal coverings and pairwise generation of some primitive groups of wreath product type. Preprint. The complete work is available at arXiv:2301.03691.