

# HAMILTONIAN CYCLES IN THE GENERATING GRAPHS OF THE ALTERNATING AND SYMMETRIC GROUPS

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ABSTRACT. The generating graph of a finite group  $G$ , denoted by  $\Gamma(G)$ , is the graph on the non-identity elements of  $G$  in which two distinct vertices are joined by an edge if and only if they generate  $G$ . An important problem in this area is the following: For which groups  $G$  does there exist a Hamiltonian cycle in  $\Gamma(G)$ ? (A Hamiltonian cycle in a graph is a cycle that visits each vertex exactly once.)

The existence of a Hamiltonian cycle in the generating graph has been proven by several authors for solvable groups, sufficiently large finite simple groups, sufficiently large symmetric groups, and the groups  $S \wr Cn$ , where  $S$  is a sufficiently large nonabelian finite simple group and  $n$  is a prime power. In this talk, we show that  $\Gamma(A_n)$  and  $\Gamma(S_n)$  contain a Hamiltonian cycle with an explicit lower bound on  $n$ .

This is joint work with Attila Maróti.