

THE NILPOTENCY OF GROUPS WITH ISOMORPHIC NON-COMMUTING GRAPHS.

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Abstract:

Given a finite group G , one can consider a graph Γ_G associated with G which encodes certain group properties of G . Such an approach has been extensively studied in the last decades, mainly to determine structure description of G investigating the invariants of Γ_G .

A natural question in this research line is to understand if a graph isomorphism - which is clearly a weaker relation than a group isomorphism - may or may not preserve specific properties of a group. More precisely, we are interested in the following question. Assume that G and H are finite groups with isomorphic graphs $\Gamma_G \cong \Gamma_H$. If G is nilpotent, is it true that H is nilpotent as well? Of course the hardness of the problem, as well as the answer, change depending on the graph choice. In this talk we report on this problem, clarifying that the situation is not so easy in general and that in some cases the problem remains still open.