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Title: Isomorphic g-noncommuting graphs of finite groups

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Let G be a finite non-abelian group and g be a fixed element of G. In 2014, Tolue *et al.* introduced the g-noncommuting graph of G (denoted by Γ_G^g) with vertex set G and two distinct vertices x and y join by an edge if $[x, y] \neq g$ and g^{-1}. In this paper, we consider an induced subgraph of Γ_G^g with vertex set $G \setminus Z(G)$ which is denoted by Δ_G^g. We state some properties of Δ_G^g and prove that two groups with isomorphic g-noncommuting graphs have the same order.

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