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Note

GRAPH EXPONENTIATION AND NEIGHBORHOOD RECONSTRUCTION

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Abstract

Any graph G admits a neighborhood multiset $\mathscr{N}(G) = \{N_G(x) \mid x \in V(G)\}$ whose elements are precisely the open neighborhoods of G. We say G is neighborhood reconstructible if it can be reconstructed from $\mathscr{N}(G)$, that is, if $G \cong H$ whenever $\mathscr{N}(G) = \mathscr{N}(H)$ for some other graph H. This note characterizes neighborhood reconstructible graphs as those graphs G that obey the exponential cancellation $G^{K_2} \cong H^{K_2} \Longrightarrow G \cong H$.

Keywords: neighborhood reconstructible graphs, graph exponentiation.

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