

Structural properties and hamiltonicity of neighborhood graphs

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Abstract

Let $G = (V, E)$ be a simple undirected graph. $N(G) = (V, E_N)$ is the *neighborhood graph* of the graph G , if and only if $E_N = \{\{a, b\} \mid a \neq b \wedge \exists x \in V : \{x, a\} \in E \wedge \{x, b\} \in E\}$. After discussing several structural properties of $N(G)$, e.g. edge numbers and connectivity, we characterize the hamiltonicity of $N(G)$ by means of chords of a hamiltonian cycle in G .

Keywords: neighborhood graph, hamiltonicity, connectivity

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