

SOME PROPERTIES OF K-TREES

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ABSTRACT. Let $k \geq 2$ be an integer. We investigate hamiltonian properties for a k -tree G , a special chordal graph. Instead of studying the toughness condition motivated by a conjecture of Chvátal, we introduce a new parameter, the branch number of G , denoted by $\beta(G)$. Some results on the relationships between $\beta(G)$ and other graph parameters will be presented. A path system of G is a subgraph whose components are paths with length at least 1. One of our main results shows that if $\beta(G) < k$ and T is any path system with at most $k - (\beta(G) + 1)$ edges, then for any x and x' not in the same path in T with $d_T(x) \leq 1$ and $d_T(x') \leq 1$, we can find a hamiltonian (x, x') -path passing through T . Using this result, we show that if $\beta(G) \leq k$, then G is hamiltonian. This generalizes a recent result of Broersma et al. which says that any $\frac{k+1}{3}$ -tough k -tree is hamiltonian.

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