

Edge-Wide-Diameter of Graphs with Diameter d

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Abstract. Let k be a positive integer and let G be a graph. For two distinct vertices $x, y \in V(G)$, the k -edge-wide-distance $d_k^e(x, y)$ between x and y is the minimum integer l such that there exist k edge-disjoint (x, y) -paths whose lengths are at most l . We define $d_k^e(x, x) = 0$. The k -edge-wide-diameter $d_k^e(G)$ of G is the maximum value of the k -edge-wide-distance between two vertices of G . We prove that for a fixed positive integer k , the k -edge-wide-diameter of a k -edge-connected graph with diameter d is bounded by a polynomial of d with degree k .

Keywords: diameter, wide-diameter, edge-wide-diameter

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