# Fractional Separation Dimension

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Given a linear ordering $\sigma$ of $V(G)$, say that a pair of nonincident edges is *separated* by $\sigma$ if both vertices of one edge precede both vertices of the other. The *separation dimension* is the minimum size of a set of vertex orders needed to separated every pair of non-incident edges. The *$t$-separation dimension* $\pi_t(G)$ of a graph $G$ is the minimum size of a multiset of vertex orders needed to separate every pair of non-incident edges of $G$ $t$ times. The *fractional separation dimension* $\pi_f(G)$ of a graph $G$ is $\liminf_t \pi_t(G)/t$.

We show that $\pi_f(G) \leq 3$ for every graph $G$, with equality if and only if $K_4 \subseteq G$. On the other hand, there is no sharper upper bound; we show $\pi_f(K_{m,m}) = \frac{3m}{m+1}$.