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An extremal problem in graph theory. (In English)

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The distance $d_G(u, v)$ between vertices u and v of a graph G is the least number of edges in any $u - v$ path of G ; $d_G(u, v) = \infty$ if u and v lie in distinct components of G . A graph $G = (V, E)$ is distance-critical if for each $x \in V$ there are vertices u, v (depending on x) such that $d_G(u, v) < d_{G-x}(u, v)$. Let $g(n)$ denote the largest integer such that $|E| \leq \binom{n}{2} - g(n)$ for every distance-critical graph on n vertices. The authors show that $g(n)$ is of the order of magnitude $n^{3/2}$.

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Classification:

05C35 Extremal problems (graph theory)

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distance; distance-critical graph