ON MULTISET DIMENSION RELATED PARAMETERS OF GRAPHS

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Given a connected graph G and an ordered set of vertices $S = \{s_1, \ldots, s_k\} \subseteq V(G)$, the *metric representation* of a vertex $x \in V(G)$ with respect to S is the vector $r_G(x|S) = (d_G(x, s_1), \ldots, d_G(x, s_k))$, where $d_G(x, s_i)$ is the distance between x and s_i in G. The set S is a *resolving set* of G if the representations $r_G(x|S)$, for all $x \in V(G)$, are pairwise distinct. The *metric dimension* of G is the cardinality of a smallest resolving set of G. We are interested in a variation of resolving sets where the ordering of the distances is removed. The set S is a *multiset resolving set* of G if the multisets $m_G(x|S) = \{\{d_G(x, s_1), \ldots, d_G(x, s_k)\}\}$, for all $x \in V(G)$, are pairwise distinct. The *multiset dimension* of G is the cardinality of a smallest multiset resolving set of G. In this talk, we present some results on the multiset dimension of graphs and its variations, namely the outer, local, and edge multiset dimensions.

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