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CLUSTER DIMENSION OF A NETWORK

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Abstract

We define the *Cluster Dimension* of a network is the minimum cardinality of a subset *S* of the set of nodes having the property that for any two distinct nodes *x* and *y*, there exist the node s_1, s_2 (need not be distinct) in *S* such that $|d(x, s_1) - d(y, s_1)| \geq 1$ and $d(x, s_2) < d(x, s)$ for all $s \in S - \{s_2\}$. In this paper, we obtain sufficient conditions for a graph of cluster dimension *n*and a tight upper bound for the number of nodes of a network with prescribed dimension in terms of diameter. Also give an algorithm to determine cluster basis and dimensions of a given graph to show the *NP* completeness.

Keywords: Metric dimension, metric basis, cluster dimension, cluster basis

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