

Bonds intersecting long paths in k -connected graphs

Bing Wei, Haidong Wu, Qinghong Zhao*, University of Mississippi

A well-known question of Gallai (1966) asked whether there is a vertex which passes through all longest paths of a connected graph. Although this has been verified for some special classes of graphs such as outerplanar graphs, circular arc graphs, and series-parallel graphs, the answer is negative for general graphs. In this talk, I will present among other results that if we replace the vertex by a bond, then the answer is affirmative. A *bond* of a graph is a minimal nonempty edge-cut. In particular, in any 2-connected graph, the set of all edges incident to a vertex is a bond, called a vertex-bond. Clearly, for a 2-connected graph, a path passes through a vertex v if and only if it meets the vertex-bond with respect to v . Therefore, a very natural approach to Gallai's question is to study whether there is a bond meeting all longest paths.

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