Matching Preclusion and Conditional Matching Preclusion for the Twisted Cubes

Ram Bhaskar, International Academy; Eddie Cheng, Oakland University; Mason Liang*, Troy High School; Kevin Wang*, Groves High School

The matching preclusion number of an even graph is the minimum number of edges whose deletion results in a graph with no perfect matchings. For many interconnection networks, the optimal sets are precisely those induced by a single vertex. Recently, the conditional matching preclusion number of an even graph was introduced to look for obstruction sets beyond those induced by a single vertex. It is defined to be the minimum number of edges whose deletion results in an even graph with no isolated vertices and no perfect matchings. The twisted cubes were designed to improve upon the hypercubes. We study the matching preclusion and conditional matching preclusion problems for the twisted cubes.

Keywords: matching preclusion, twisted cubes