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MORE RESULTS ON THE SMALLEST ONE-REALIZATION OF A GIVEN SET II

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Abstract

Let S be a finite set of positive integers. A mixed hypergraph $\mathcal{H}$ is a one-realization of S if its feasible set is S and each entry of its chromatic spectrum is either 0 or 1. The minimum number of vertices, denoted by $\delta_3(S)$, in a 3-uniform bi-hypergraph which is a one-realization of S was determined in [P. Zhao, K. Diao and F. Lu, *More result on the smallest one-realization of a given set*, Graphs Combin. 32 (2016) 835–850]. In this paper, we consider the minimum number of edges in a 3-uniform bi-hypergraph which already has the minimum number of vertices with respect of being a minimum bi-hypergraph that is one-realization of S. A tight lower bound on the number of edges in a 3-uniform bi-hypergraph which is a one-realization of S with $\delta_3(S)$ vertices is given.

Keywords: mixed hypergraph, feasible set, chromatic spectrum, gap, one-realization.

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