

Exclusive sum labellings of hypergraphs

An assignment of distinct natural numbers to the vertices of a hypergraph H is called a k -exclusive sum labelling (k -ESL) if there exists a set S of k natural numbers (not appearing as labels) such that a subset of vertices is an edge in G if and only if the sum of their labels appears in S . The class of hypergraphs with a k -ESL is closed under deleting vertices. Graphs (i.e. 2-graphs) in this class are well understood, but in general a characterisation is non-trivial even for $k=1$. The main result we will discuss is a complete description of the 3-graphs of vertex degree at most 2 having a 1-ESL. We will also discuss a positive result for hypertrees and a negative result for block designs.