

DIMENSION AND REPRESENTATION NUMBER OF HYPERCUBE

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k -labelling of a graph is a labelling of vertices of the graph by k -tuples of non-negative integers in such a way that two vertices of G are adjacent if and only if their label k -tuples differ in each coordinate. The dimension of a graph G is the least k such that G has a k -labelling.

Narayan and Urick first obtained an upper bound for representation number of Q_n and then thereby obtained an upper bound for $\text{pdim}(Q_n)$ whereas in this paper we give a direct proof for upper bound of the dimension of the hypercube Q_n following the method used by Lovász et al and for lower bound, we use the result of Reza Akhtar. Given a product representation, a modular representation can be obtained by choosing distinct primes for the coordinates, provided that the primes used for coordinate are larger than the number of values used in that coordinate. In paper, using the dimension we get a result regarding the representation number of the hypercube Q_n .

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