

## Nullity of t-Tuple Graphs

**Authors :** Khidir R. Sharaf, Didar A. Ali

**Abstract :** The nullity  $\eta(G)$  of a graph is the occurrence of zero as an eigenvalue in its spectra. A zero-sum weighting of a graph  $G$  is real valued function, say  $f$  from vertices of  $G$  to the set of real numbers, provided that for each vertex of  $G$  the summation of the weights  $f(w)$  over all neighborhood  $w$  of  $v$  is zero for each  $v$  in  $G$ . A high zero-sum weighting of  $G$  is one that uses maximum number of non-zero independent variables. If  $G$  is graph with an end vertex, and if  $H$  is an induced sub-graph of  $G$  obtained by deleting this vertex together with the vertex adjacent to it, then,  $\eta(G) = \eta(H)$ . In this paper, a high zero-sum weighting technique and the end vertex procedure are applied to evaluate the nullity of  $t$ -tuple and generalized  $t$ -tuple graphs are derived and determined for some special types of graphs. Also, we introduce and prove some important results about the  $t$ -tuple coalescence, Cartesian and Kronecker products of nut graphs.

**Keywords :** graph theory, graph spectra, nullity of graphs, statistic

**Conference Title :** ICMSSC 2014 : International Conference on Mathematics, Statistics and Scientific Computing

**Conference Location :** Kuala Lumpur, Malaysia

**Conference Dates :** February 13-14, 2014