

# On inclusive and non- inclusive distance vertex irregularity strength

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The *irregularity strength* of a graph (introduced by Chartrand et al. in [?]) is the minimum number  $k$  such that there exists a labeling of its edges by elements from the set  $\{1, 2, \dots, k\}$  such that weights of all vertices calculated as the sum of labels over all the edges incident to the vertex are distinct.

Slamin [?] introduced the concept of a distance vertex irregular labeling of graphs. A *distance vertex irregular labeling* of a graph  $G$  is a mapping  $g: V(G) \rightarrow \{1, 2, \dots, k\}$  such that the set of vertex weights consists of distinct numbers, where the weight of a vertex  $x \in V(G)$  under the labeling

$$w_g(x) = \sum_{y \in N_G(x)} g(y),$$

where  $N_G(x)$  is the set of all neighbors of a vertex  $x$ .

Bong et al. [?] generalized the concept to inclusive and non-inclusive vertex irregular  $d$ -distance vertex labeling. The difference between inclusive and non-inclusive labeling depend on the way to calculate the vertex weight whether the vertex label of vertex which we calculate its weight is included or not.

We present some known and new results in this area.

## References

- [1] N.H. Bong, Y. Lin, Slamin, On inclusive and non-inclusive vertex irregular  $d$ -distance vertex labelings, preprint.
- [2] G. Chartrand, M.S. Jacobson, J. Lehel, O. Oellermann, S. Ruiz, F. Saba, Irregular networks, Congr. Numer. 64 (1988) 187–192.
- [3] Slamin, On distance irregular labelings of graphs, Far East J. Math. Sci. (FJMS) 102(5) (2017) 919–932.

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