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**Novi Herawati Bong\*** (nhbong@udel.edu), 313 Ewing Hall, University of Delaware, Newark, DE 19711, and **Yuqing Lin, Slamin Slamin** and **Roman Soták**. *On inclusive and non-inclusive vertex irregular  $d$ -distance vertex labelings.*

Let  $k$  be a positive integer. A *distance irregular vertex labeling* of the graph  $G$  with vertex set  $V$  is an assignment  $\lambda : V \rightarrow \{1, 2, \dots, k\}$  so that the weights at each vertex are distinct. The *weight* of a vertex  $x$ ,  $wt(x)$ , in  $G$  is defined as the sum of the labels of all the vertices at distance 1 from  $x$ . Let  $N(x)$  denote the set of neighbors of  $x$ . Formally,

$$wt(x) = \sum_{y \in N(x)} \lambda(y).$$

The *distance irregularity strength* of  $G$ , denoted by  $\text{dis}(G)$ , is the minimum value of the largest label  $k$  over all such irregular assignments.

In this talk, we generalize the notion of distance irregular labeling to vertex irregular  $d$ -distance vertex labeling, for any distance  $d$  up to the diameter. We will introduce the inclusive vertex irregular  $d$ -distance vertex labeling and give the lower bound of the inclusive vertex irregular 1-distance vertex labeling for general graphs. We will show some constructive examples of this labeling for certain family of graphs. Finally, there is a relation between the inclusive vertex irregular 1-distance vertex labeling on cycles and the vertex irregular 1-distance vertex labeling on prisms. (Received July 29, 2018)