

The Exceptional Invariance of Distance- l , k -Component Order Neighbor Connectivity

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The domination number of a graph is known as an ‘exceptional invariant.’ This means that with the removal of vertices the parameter can either increase or decrease depending on other conditions. There are many variations of domination including distance domination and component order neighbor connectivity. Distance domination allows vertices to fail not only their adjacent neighbors, but also those within a fixed distance away. The component order neighbor connectivity of a graph is the number of vertices that need to fail and consequently fail their adjacent neighbors to produce a component of order less than some given threshold. My goal is to consider the merging of these two definitions: allowing failure to extend within a fixed distance and also allowing components to survive provided they are small enough. This presentation will introduce Distance- l , k -Component Order Neighbor Connectivity and explore the exceptional invariance of this new parameter.

Keywords: distance domination, domination, domination alteration, component order neighbor connectivity, network vulnerability