Component Order Neighbor Connectivity: A Generalization of Domination Alteration Sets

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The component order connectivity of a graph, a measure of the vulnerability of a network, is the number of nodes that need to be removed from the graph in order to produce a component of order less than some given threshold. The instance where the threshold value is one coincides with domination and has been widely studied. The domination number, the minimum order of a set of nodes with the property that every other node of the graph is adjacent to at least one node in the set, is an 'exceptional invariant,' meaning it can increase or decrease depending on certain conditions. The more general notion of component order connectivity is also an exceptional invariant. Our goal is to see which properties of domination carry over to higher threshold values and which do not.