Summary: A new graph parameter, called tree-coritivity, is introduced in this paper. A decycling-cut is a vertex-cut whose removal results in an acyclic graph. Let $\omega(G)$ be the number of connected components of a graph $G$. The tree-coritivity of a graph $G$ is the maximum value of $\omega(G - S^*) - |S^*|$, where $S^*$ takes over all decycling-cuts of $G$. It is shown that this parameter can be used to measure the vulnerability of a graph.

We prove that the problem of computing the tree-coritivity of a graph is NP-complete. Moreover, we figure out the bounds of tree-coritivity of graphs, give a way to compute the tree-coritivity of the join graph, and determine the exact value of tree-coritivities for some special classes of graphs.

*Keywords:* combinatorial problems; connectivity; tree-coritivity; tree-core; NP-complete

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