Induced cycles vertex number vs. $(1,2)$-domination in cubic graphs

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A $(1,2)$-dominating set in a graph G is a set S such that every vertex outside S has at least one neighbor in S, and each vertex in S has at least two neighbors in S. The $(1,2)$-domination number, $\gamma_{1,2}(G)$, is the minimum size of such a set, while $c_{\text{ind}}(G)$ is the cardinality of the largest vertex set in G that induces one or more cycles. In this paper, we initiate the study of a relationship between these two concepts and discuss how establishing such a connection can contribute to solving a conjecture on the lower bound of $c_{\text{ind}}(G)$ for cubic graphs. We also establish an upper bound on $c_{\text{ind}}(G)$ for cubic graphs and characterize graphs that achieve this bound.

References

[1] R. Erveš, A. Tepeh , Induced cycles vertex number and $(1,2)$-domination in cubic graphs, *Applied Math. Comput.* (to appear).