From domination to isolation of graphs

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In 2017, Caro and Hansberg [5] introduced the isolation problem, which generalizes the domination problem. Given a graph G and a set $\mathcal{F}$ of graphs, the *$\mathcal{F}$-isolation number of G* is the size of a smallest subset D of the vertex set of G such that the graph obtained from G by removing the closed neighbourhood of D does not contain a copy of a graph in $\mathcal{F}$. When $\mathcal{F}$ consists of a 1-clique, the $\mathcal{F}$-isolation number is the domination number. Caro and Hansberg [5] obtained many results on the $\mathcal{F}$-isolation number, and they asked for the best possible upper bound on the $\mathcal{F}$-isolation number for the case where $\mathcal{F}$ consists of a k-clique and for the case where $\mathcal{F}$ is the set of cycles. The solutions [1, 3] to these problems will be presented together with other results, including an extension of Chvátal's Art Gallery Theorem. Some of this work was done jointly with Kurt Fenech and Pawaton Kaemawichanurat.

References

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[4] P.Borg, P.Kaemawichanurat, Domination and partial domination of maximal outerplanar graphs, arXiv:2002.06014.

[5] Y.Caro, A.Hansberg, Partial Domination - the Isolation Number of a Graph, *FiloMath* 31:12, 2017, pp.3925-3944.