New upper bounds for some kind of coalition numbers

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Abstract

A coalition in a graph $G = (V, E)$ consists of two disjoint sets V_1 and V_2 of vertices, such that neither V_1 nor V_2 is a dominating set, but the union $V_1 \cup V_2$ is a dominating set of G. A coalition partition in a graph G of order $n = |V|$ is a vertex partition $\mathcal{P} = \{V_1, V_2, ..., V_k\}$ such that every set V_i either is a dominating set consisting of a single vertex of degree $n - 1$, or is not a dominating set but forms a coalition with another set V_j which is not a dominating set. The maximum cardinality of a coalition partition of G is the coalition number of G and is denoted by $C(G)$. Different types of domination coalitions have been studied recently. These variations are mainly formed by imposing additional conditions on the domination coalition. In this talk, after reviewing some kind of coalitions, such as coalition, total coalition, independent coalition and strong coalition, we present some new bound for these numbers.

Keywords: Coalition partition, Coalition number, Bound.

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