INDEPENDENT $(1,1)$-DOMINATING AND $(1,2)$-DOMINATING SETS IN GRAPH PRODUCTS

Adrian Michalski

Rzeszow University of Technology
e-mail: a.michalski@prz.edu.pl

In [1] the concept of $(1,k)$-dominating sets was introduced as a generalization of multiple dominating sets. Let $k \geq 1$ be an integer. A subset $D \subseteq V(G)$ is called a $(1,k)$-dominating set of the graph G if for every vertex $v \in V(G) \setminus D$ there exist $u, w \in D$ such that $vu \in E(G)$ and $d_G(v,w) \leq k$. If $k = 1$ then we obtain the definition of (1,1)-dominating sets, which are also known as 2-dominating sets. If $k = 2$ then we have the well-known concept of (1,2)-dominating sets. A problem of existence arises, when we consider $(1,1)$- or $(1,2)$-dominating sets, which are simultaneously independent.

In the talk I will consider the existence of these sets in four graph products: the G-join, the generalized corona, the tensor product and the strong product of graphs. I will present complete characterizations of these products which have independent $(1,1)$-dominating or $(1,2)$-dominating sets with respect to properties of their factors ([2, 3, 4]).

References

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