International Workshop On Combinatorial Algorithms
IWOCA
http://www.iwoca.org → Problems Section

Recognition of well-dominated graphs

Uéverton dos Santos Souza[1]

[1]Universidade Federal Fluminense, Brazil, ueverton@ic.uff.br

presented at IWOCA 2022 on June 10
last update: January 6, 2023

A graph G is well-dominated if every minimal dominating set is a minimum dominating set.

A graph G is well-covered if every maximal independent set is a maximum independent set (i.e., every minimal vertex cover is a minimum vertex cover).

The recognition of well-covered graphs is a well-known coNP-complete problem [1]. Every well-dominated graph is well covered, but the time complexity of recognizing well-dominated graphs still open (see [2]). Thus, the main question is:

"Can well-dominated graphs be recognized in polynomial time?"

References

[1] V. Chvátal and P. J. Slater: A note on well-covered graphs. *Annals of Discrete Mathematics*, 55, 179–181, 1993.

[2] D. Gözüpek, Ademir Hujdurovic and Martin Milanic: Characterizations of minimal dominating sets and the well-dominated property in lexicographic product graphs. *Discrete Mathematics & Theoretical Computer Science*, 19:1, 2017.