THE 3/5-CONJECTURE FOR THE DOMINATION GAME PLAYED ON TREES

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The domination game is played on a graph $G$ by two players, named Dominator and Staller. They alternately take turns choosing vertices of $G$ such that each chosen vertex dominates at least one vertex not dominated by the vertices previously chosen. The game ends when the set of vertices chosen becomes a dominating set in $G$. Dominator wishes to end the game with a minimum number of vertices chosen, and Staller wishes to end the game with as many vertices chosen as possible. The game domination number, $\gamma_g(G)$, of $G$ is the minimum possible number of vertices chosen when Dominator starts the game and both players play according to the rules. In this talk, we discuss the 3/5-Conjecture posted by Kinnersley, West, and Zamani that if $G$ is an isolate-free graph of order $n$, then $\gamma_g(G) \leq \frac{3}{5}n$. We provide constructions of trees reaching the conjectured $\frac{3}{5}$-bound, showing that if the conjecture is true, the family of extremal trees is a very rich one.

Keywords: Game domination, 3/5-Conjecture, trees.

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References

