

1135-05-2287

James Zak* (jameszak@live.unc.edu). *The Total Coloring Game on Forests.*

In the *total coloring game* two players, Alice and Bob, take turns coloring the vertices and edges (elements) of a graph from a given set of colors subject to the constraint that no two adjacent or incident elements can be the same color. If all elements of the graph are eventually colored, then Alice wins the game. Otherwise, Bob wins, meaning there is an uncolored element of the graph with no remaining legal color. The *total game chromatic number* of G , denoted $\chi_g''(G)$, is the least number of colors for which Alice has a winning strategy on G . We have shown that on any forest F , $\chi_g''(F)$ can be bounded above by $\Delta(F) + 3$, and that there exists a family of forests \mathcal{F} , for which $\chi_g''(F) \geq \Delta(F) + 2$ for all $F \in \mathcal{F}$. (Received September 25, 2017)