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**Title:** *A  $(2,1)$ -relaxed coloring game on graphs*

**Abstract:** Consider the following game. Two players, Alice and Bob are given  $r$  colors. Alice and Bob take turns coloring the uncolored vertices of a graph  $G$  with legal colors. A color  $\gamma$  is legal for an uncolored vertex  $u$  if  $u$  is adjacent to at most one vertex  $v$  that has already been colored with  $\gamma$ , and  $v$  is not adjacent to any vertices already colored  $\gamma$ . Alice wins the game if eventually all of the vertices are legally colored; otherwise Bob wins the game when there is an uncolored vertex with no legal color. This is called the  $(r,1)$ -relaxed coloring game, which we will analyze. We will show that Alice has a winning strategy for sparsely-legged caterpillars when playing this game with two colors.