

1 Edge Flips in DFS Trees

1.1 Introduction

A DFS-tree T of a graph G is a tree with the following properties. For every edge (u, v) in G that is a non-tree edge in T , one of u and v must be the ancestor of another (i.e. There is no 'crossing' non-tree edge).

Let G be a connected graph and let $DFST(G, r)$ be the graph with vertex set $\{v_T \mid T \text{ is a DFS tree of } G \text{ rooted at } r\}$. Two vertices v_{T_1}, v_{T_2} are adjacent iff T_1 can be obtained from T_2 by flipping one edge.

We seek to investigate properties of these special trees such as connectivity, chromatic number, and more, To this end, we find a set of forbidden minors of G that cause disconnectedness in $DFST(G, r)$ and study colourings of $DFST(G, r)$ based on the properties of G .

1.2 Problem 3

We seek to find a complete characterization of the graphs G with $DFST(G, r)$ connected. This would allow for easier study of $DFST(G, r)$.

1.3 Related Work

References