Colouring squares of claw-free graphs

Lucas Pastor (UW)

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Streszczenie

Let G be a claw-free graph. We consider the square G^2 of G, which is the graph formed from G by the addition of edges between those pairs of vertices connected by some two-edge path in G, and consider proper colourings of G^2. In particular, we relate the chromatic number of G^2 to the clique number of G. We prove that there is an absolute constant $\epsilon > 0$ such that the chromatic number of G^2 is at most $(2-\epsilon)\chi(G)^2$ for any claw-free graph G. Our main theorem extends a result of Molloy and Reed who first gave a positive answer to a conjecture of Erdős and Nešetřil.

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