

The distinguishing index of connected graphs without pendant edges*

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Abstract

We consider edge colourings, not necessarily proper. The distinguishing index $D'(G)$ of a graph G is the least number of colours in an edge colouring that is preserved only by the identity automorphism. It is known that $D'(G) \leq \Delta$ for every countable, connected graph G with finite maximum degree Δ except for three small cycles. We prove that $D'(G) \leq \lceil \sqrt{\Delta} \rceil + 1$ if additionally G does not have pendant edges.

Keywords: Symmetry breaking, distinguishing index of a graph.

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Razlikovalni indeks povezanih grafov brez visečih robov*

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Povzetek

Obravnavamo barvanja povezav, ne nujno pravilna. Razlikovalni indeks $D'(G)$ grafa G je najmanjše število barv v barvanju povezav, ki ga ohranja samo identični avtomorfizem. Znano je, da je $D'(G) \leq \Delta$ za vsak število, povezan graf G s končno maksimalno stopnjo Δ razen za tri majhne cikle. Dokažemo, da je $D'(G) \leq \lceil \sqrt{\Delta} \rceil + 1$ ob dodatnem pogoju, da graf G nima visečih povezav.

Ključne besede: Zlom simetrije, razlikovalni indeks grafa.

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