

A New Approximate Graph Coloring Algorithm

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Abstract

Let A be a graph coloring algorithm. Denote by $A(G)$ the ratio between the maximum number of colors A will use to color the graph G , and the chromatic number of G , $\chi(G)$. For most existing polynomial coloring algorithms, $A(G)$ can be as bad as $O(n)$, where n is the number of vertices in G . The best currently known algorithm guarantees $A(G) = O(n / \log n)$. In this paper we present a simple and efficient coloring algorithm which guarantees $A(G) \leq \chi(G)^{1 - \frac{1}{\chi(G) - 1}}$, a considerable improvement over the current bounds.