ACYCLIC CHROMATIC INDICES OF GRAPHS

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Let $G = (V, E)$ be any finite simple graph. A mapping $\varphi : E \to [k]$ is called an acyclic edge k-colouring of G, if any two adjacent edges have different colours and there are no bichromatic cycles in G. In other words, for every pair of distinct colours i and j, the subgraph induced by all the edges which have either colour i or j is acyclic. The smallest number k of colours, such that G has an acyclic edge k-colouring is called the acyclic chromatic index of G and is denoted by $\chi_a^{'}(G)$. Fiamčík proved that $\Delta(G) \cdot (\Delta(G) - 1) + 1$ is an upper bound for the acyclic chromatic index of a graph G and conjectured that $\chi_a^{'}(G) \leq \Delta(G) + 2$. In 1991 Alon et al. proved that $\chi_a^{'}(G) \leq 64\Delta(G)$. This bound was later improved to $16\Delta(G)$ by Molloy and Reed.

In this talk we present upper bounds for the acyclic chromatic indices of some classes of graphs.

Keywords: acyclic edge colouring.

AMS Subject Classification: 05C69, 05C05.

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