ACYCLIC CHROMATIC INDICES OF GRAPHS

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Let $G = (V,E)$ be any finite simple graph. A mapping $\varphi : E \rightarrow [k]$ 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 $\chi'_{ac}(G)$. 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 $\chi'_{ac}(G) \leq \Delta(G) + 2$. In 1991 Alon et al. proved that $\chi'_{ac}(G) \leq 64\Delta(G)$. 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.

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References


