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Thomassen, Carsten; Erdős, Paul; Alavi, Yousef; Malde, Paresh J.; Schwenk, Allen J.

Tight bounds on the chromatic sum of a connected graph. (In English)

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A proper colouring of the vertices of the graph G assigns different colours to adjacent vertices. The chromatic sum $\Sigma(G)$ of G is defined to be the smallest possible total over all vertices that can occur among all proper colourings of G using natural numbers for the colours.

For any graph G with n vertices and e edges the chromatic sum is at most $n + e$. In the paper tight bounds on the chromatic sum of a connected graph are determined: $\lceil \sqrt{8e} \rceil \leq \Sigma(G) \leq \lfloor \frac{3}{2}(e + 1) \rfloor$. For a disconnected graph G with no isolated vertices $\lceil \sqrt{8e} \rceil \Sigma(G) \leq 3e$ holds.

U.Baumann

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