

On minimum balanced bipartitions of triangle-free graphs

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A *balanced bipartition* of a graph G is a partition of $V(G)$ into two subsets V_1 and V_2 that differ in cardinality by at most 1. A *minimum balanced bipartition* of G is a balanced bipartition V_1, V_2 of G minimizing $e(V_1, V_2)$, where $e(V_1, V_2)$ is the number of edges joining V_1 and V_2 and is usually referred to as the *size* of the bipartition. In this paper, we show that every 2-connected graph G admits a balanced bipartition V_1, V_2 such that the subgraphs of G induced by V_1 and by V_2 are both connected. This yields a good upper bound to the size of minimum balanced bipartition of sparse graphs. We also present two upper bounds to the size of minimum balanced bipartitions of triangle-free graphs, which sharpen the corresponding bounds of [G. Fan, B. Xu, X. Yu and C. Zhou, Upper bounds on minimum balanced bipartitions, *Discrete Math.* **312** (2012) 1077–1083].