ABHINAV SHANTANAM, Simon Fraser University

Minimum Balanced Bipartitions of Planar Triangulations

A balanced bipartition of a graph G is a bipartition (V_1, V_2) of $V(G)$ where V_1 and V_2 differ in size by at most 1. A minimum balanced bipartition of G is a balanced bipartition (V_1, V_2) of $V(G)$ with the minimum number $e(V_1, V_2)$ of edges with ends in both V_1 and V_2. We show that, for every plane triangulation G, there exists a minimum balanced bipartition (V_1, V_2) of $V(G)$ with $e(V_1, V_2) \leq |V(G)|$ such that both V_1 and V_2 induce connected near-triangulations, and the total number of blocks in $G[V_1]$ and $G[V_2]$ exceeds the total number of internal vertices by at most 2. This confirms the folklore conjecture that, for any planar graph G, a minimum balanced bipartition (V_1, V_2) of $V(G)$ has $e(V_1, V_2) \leq |V(G)|$.