

On largest reduced neighborhood clique cover number

Farhad Shahrokhi*, University of North Texas

Let G be a graph and $t \geq 0$. The largest reduced neighborhood clique cover number of G , denoted by $\hat{\beta}_t(G)$, is the largest, overall t -shallow minors H of G , of the smallest number of cliques that can cover any closed neighborhood of a vertex in H . It is readily seen that $\hat{\beta}_t(G) = 1$ when G is chordal, and, $\hat{\beta}_t(G) \leq s$, where G is an incomparability graph that does not have a t -shallow minor which is isomorphic to an induced star on s leaves. We give an overview of properties of $\hat{\beta}_t(G)$ including the connections to the greatest reduced average density of G , or $\nabla_t(G)$, and introduce the class of graphs with bounded neighborhood clique cover number. We announce separator theorems (with respect to certain measures) for interesting classes of graphs with polynomial bounded neighborhood clique cover number.

Keywords: