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Super total local antimagic coloring of graphs

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Abstract. Let $G = (V, E)$ be a finite, simple, undirected graph without isolated vertices. A bijective map $f\colon V \cup E \to \{1, 2, \ldots, |V| + |E|\}$ gives a *labeling* of the vertices and edges of G. With each vertex v, we associate a weight $w(v)$ as the sum of all labels of vertices that are neighbors of v (not including v), together with the labels of edges incident at v. The labeling given by f is called *total local antimagic* if adjacent vertices have distinct weights. Furthermore, f is called a *super vertex total local antimagic labeling* if vertices have labels $1, 2, \ldots, |V|$. Similarly, f is called a *super edge total local antimagic labeling* if the edges have labels $1, 2, \ldots, |E|$. The labeling f induces a proper vertex coloring of G. The *super vertex* (*edge*) *total local antimagic chromatic number* of a graph G is the minimum number of colors used over all colorings of G induced by the super vertex (edge) total local antimagic labeling of G. In this paper, we discuss these parameters for some families of graphs.

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