Adjacent vertex distinguishing colorings

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Let $G = (V, E)$ be a graph. As usual, $N(v)$ denotes the set of neighbors of a vertex $v \in V$ and $N[v] := \{v\} \cup N(v)$ is the closed neighborhood of v.

We say that an assignment of positive integers to the vertices of G is *distinguishing* if the sum of the labels of vertices in $N[v]$ differs from the sum of labels of vertices in $N[u]$ for any adjacent vertices u and v unless $N[u] = N[v]$. Let $dis(G)$ be the smallest k such that there is a distinguishing assignment in G using integers between 1 and k.

Furthermore, assume that every vertex v has a list $L(v)$ of available labels. Let $dis_\ell(G)$ be the smallest k such that for every list assignment with $|L(v)| \leq k$ for all $v \in V(G)$ there is a distinguishing assignment giving every vertex v a label from its list.

Define also $dis^-(G)$ and $dis^-_\ell(G)$ using $N(v)$ instead of $N[v]$.

In the talk, we discuss the background of this concept and present some bounds on the parameters defined above.