CHOOSABILITY OF COMPLETE MULTIPARTITE GRAPHS

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A list assignment to the vertices of a graph G is the assignment of a list $L(v)$ of colors C to every vertex v of G. A k-list assignment is a list assignment such that $|L(v)| \geq k$ for every vertex v. A proper L-coloring of G is a function $f : V(G) \to C$ such that $f(v) \in L(v)$ for all $v \in V(G)$ and $f(u) \neq f(v)$ for every $uv \in E(G)$. If for every k-list assignment L, there exists an L-coloring, then G is k-choosable. The choice number $ch(G)$ is the smallest number k such that G is k-choosable.
We focus on choosability of complete multipartite graphs. Let $K_{n_1,n_2,\ldots,n_r}$ be the complete multipartite graph with r partite sets of order $n_1, n_2, \ldots, n_r$. Our main result shows that a complete r-partite graph G consisting of one partite set of order $(t+2)(t+3)/2$ and $r-1$ partite sets of order two is $(r+t)$-choosable. We also present results on upper and lower bounds for choice number of complete multipartite graphs with partite sets of equal sizes.