1117-05-125 **Chris Rodger*** (`rodgec1@auburn.edu`) and **Shanhai Li**. *Equitable block-colorings of C_4-decompositions of $K_v - F$.*

$(V(G), B)$ is said to be an H-decomposition of a graph G if B is a partition of $E(G)$ into sets, each of which induces a copy of H. An H-decomposition $(V(G), B)$ of G is said to have a (s, p)-equitable block-coloring if there exists a surjective function ϕ from B to $\{1, \ldots, s\}$ such that for each $u \in V(G)$: the blocks containing u are colored with exactly p colors; and $|B(u,i) - B(u,j)| \leq 1$ for each $\{i,j\} \subset C(u)$. ($C(u)$ is the set of colors appearing in blocks containing u and $B(u,i)$ is the number of blocks containing u that are colored i.)

Here we find (s,p)-equitable block-colorings of 4-cycle decompositions of $K_v - F$, where F is a 1-factor of K_v. Of interest is settling the values of $\chi'_p(v)$ and $\bar{\chi}'_p(v)$, namely the least and greatest values of s for which there exists such a block-coloring of some 4-cycle decomposition of $K_v - F$. In this paper, several general results are established, both existence and non-existence theorems. These are then used to find, for all possible values of v, the values of $\chi'_p(v)$ when $p \in \{2, 3, 4\}$ and $\bar{\chi}'_2(v)$, and to provide good upper bounds on $\bar{\chi}'_3(v)$. (Received January 08, 2016)