Equitable (s,p)-edge-colorings of K_v

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The focus of the talk is on (not necessarily proper) s-edge-colorings of K_v in which, for all $u \in V(K_v)$, the edges incident with u are colored using exactly p colors. In the spirit of proper edge-colorings, such (s,p)-edge-colorings are required to be equitable: the edges at each vertex are shared evenly among p colors. Here, we consider values of v and p with the interesting property that no equitable (p,p)-edge coloring of K_v exists. The structure of equitable $(p+1,p)$-edge-colorings of this case is addressed, finding the minimum sizes of various color classes. Results concerning equitable $(p+1,p)$-block-colorings of C_4-decompositions of $K_{2v} - F$ follow as corollaries.

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