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14850. *Flag f-vectors of colored complexes.*

One can construct a simplicial complex on a set of colored vertices with the restriction that no two vertices of the same color can be in the same face. The flag f-numbers of the complex are the numbers of faces whose vertices are precisely a given color set, e.g., edges with exactly one red vertex and one blue vertex. It then makes sense to ask what possible collections of flag f-numbers a complex could have. More than twenty years ago, it was shown that three other characterization problems are equivalent to this one, but none of the problems have a known solution. We explain why this problem cannot have a "nice" solution of a certain type analogous to known solutions of some similar problems, and then give a solution to the case of three colors. (Received January 23, 2010)