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Face Vectors of Flag Complexes

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An abstract simplicial complex is called a *flag complex* if every minimal vertex set that is not a face (a simplex of the complex) has two elements. Put another way, the *graph* of a simplicial complex is the 1-skeleton; the complex is a flag complex if its faces are the cliques of the graph. A simplicial complex is *balanced* if the chromatic number of its graph equals the largest size of a face (i.e., 1 + largest dimension of a face). I will show that for any flag complex, there is a balanced complex that has the same number of faces of each dimension as does the original complex, and I will discuss some related results.

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