1079-05-43 **Sarah Crown Rundell*** (`rundells@denison.edu`), 100 West College St, Department of Mathematics, Denison University, Granville, OH 43023. *The coloring complex of a hypergraph.*

Let G be a graph with n vertices and at least one edge. The coloring complex $\Delta(G)$ was defined by Steingrímsson, and is a simplicial complex that is associated to G whose r-faces consist of all ordered set partitions $[B_1, \ldots, B_{r+2}]$ of the vertices of G so that at least one of the B_i contains an edge of G. Jonsson showed that $\Delta(G)$ is a constructible complex, and the rank of the unique nontrivial homology group is $|\chi_G(-1)|-1$, where $\chi_G(\lambda)$ denotes the chromatic polynomial of G. Let H be a hypergraph with n vertices. In this talk, we define the coloring complex of a hypergraph, $\Delta(H)$, and we will discuss its homology. In particular, in the case where the hypergraph is a complete k-uniform hypergraph, $\Delta(H)$ is a shellable complex, and the rank of its unique nontrivial homology group can be expressed in terms of the chromatic polynomial of H. Using the Eulerian idempotents, one can place a decomposition on this nonzero homology group, and the rank of the j^{th} component in this decomposition equals the absolute value of the coefficient of λ^j in the chromatic polynomial of H. We also will discuss the homology of the cyclic coloring complex of a complete k-uniform hypergraph. (Received December 02, 2011)