1057-05-40   **Anton Dochtermann***, anton.dochtermann@gmail.com, and **Alex Engstrom**. *Cellular resolutions of hypergraph edge ideals.*

Given an ideal I in the polynomial ring $S = k[x_1, ..., x_n]$, a basic problem in commutative algebra is to describe a (minimal) free resolution of I. One particularly geometric method is through the construction of a 'cellular resolution', where the syzygies of I are encoded by the faces of a polyhedral (or more generally CW) complex. For a (hyper)graph G on n vertices, the edge ideal I_G is defined to be the monomial ideal in S generated by the edges of G. We show how certain 'mixed subdivisions' of dilated simplices naturally support minimal cellular resolutions of the edge ideals of complete graphs, and then consider labeled subcomplexes to obtain resolutions of edge ideals of a large class of hypergraphs. In particular we obtain explicit cellular resolutions of the edge ideals of (complements of) 'interval' graphs, generalizing results of Nagel and Reiner. (Received December 10, 2009)

1