Bethany Kubik, University of Minnesota Duluth, and Sean Sather-Wagstaff* (ssather@clemson.edu), Clemson University. Path ideals of weighted graphs.

We introduce and study the weighted $r$-path ideal of a weighted graph $G_\omega$, which is a common generalization of Conca and De Negri’s $r$-path ideal for unweighted graphs and Paulsen and Sather-Wagstaff’s edge ideal of the weighted graph. Over a field, we explicitly describe primary decompositions of these ideals, and we characterize Cohen-Macaulayness of these ideals for trees (with arbitrary $r$) and complete graphs (for $r = 2$). (Received August 11, 2015)