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Sean Sather-Wagstaff* (sean.sather-wagstaff@ndsu.edu), **Bethany Kubik** and **Chelsey Paulsen**. *Path ideals of weighted graphs*. Preliminary report.

Given a (finite simple) graph G , the edge ideal of G is a square-free monomial ideal generated by the edges of G . This is a fairly well-studied invariant of G . Recently, the r -path ideal of G has been introduced and studied when G is a tree. We study this ideal for arbitrary G . Moreover, we introduce versions of these ideals when G is a weighted graph. These ideals are not square-free in general. We give explicit descriptions of their primary decompositions, and we present some criteria for these ideals to be Cohen-Macaulay (Received August 15, 2014)