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Christopher A. Francisco* (chris@math.okstate.edu), Department of Mathematics, Oklahoma State University, 401 Mathematical Sciences, Stillwater, OK 74078, and **Tai H. Ha** and **Adam Van Tuyl**. *Detecting properties of graphs via commutative algebra.*

We present algebraic tools for detecting odd induced cycles of a graph. Let G be a graph, let $I(G) \subset R$ be its edge ideal, and let $J = I(G)^\vee$ be the Alexander dual of the edge ideal. We show that the associated primes of R/J^2 correspond exactly to the set of edges and odd induced cycles of G . Using this correspondence and the Strong Perfect Graph Theorem, we give a method for determining whether a graph is perfect. (Received January 30, 2008)