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Tai H. Ha* (tai@math.tulane.edu), Tulane University, Department of Mathematics, 6823 St. Charles Avenue, New Orleans, LA 70123, and **Chris A. Francisco** and **Adam Van Tuyl**. *Edge ideals and odd cycles in a graph*.

We shall introduce an algebraic approach (via edge ideals) to the problem of recognizing whether a graph has an odd hole. In particular, we show that the minimal odd cycles of a graph are determined completely by the associated primes of powers of the Alexander dual of its edge ideal. Several properties of powers of the Alexander dual of edge ideals will be discussed. (Received July 20, 2007)