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**Mark Kempton\*** (mkempton@mathematics.byu.edu). *Cospectral Vertices in Graphs*. Preliminary report.

The basic question of spectral graph theory is: "What can the spectrum of a matrix tell us about a graph?" Fundamental to answering this question is an understanding of when two graphs can be "cospectral," that is, when can two non-isomorphic graphs have the same (adjacency matrix) spectrum. A related question concerns cospectral pairs of vertices, namely two vertices of a graph whose respective deletion yields a cospectral pair of graphs. The study of cospectral vertices shows up in various applications of spectral graph theory. We will discuss various characterizations of cospectral vertices and methods for constructing graphs with cospectral pairs. (Received August 12, 2020)