1113-05-286 **Jason S Williford*** (`jwillif1@uwyo.edu`), University of Wyoming, Dept 3036, 1000 E. University Ave., Laramie, WY 82071. *Graphs With Schur-Closed Adjacency Algebras.*

Given a labeled graph G with adjacency matrix A, we define the adjacency algebra of G to be the matrix algebra $\mathcal{A}$ generated by A. Since A is diagonalizable, the dimension of $\mathcal{A}$ is simply the number of distinct eigenvalues of A. If G is connected and this algebra is also closed under the Schur (entrywise) product of matrices, we will call the graph G an S-graph.

Distance-regular graphs are examples of S-graphs, however many other interesting graphs which are not distance-regular fall into this class as well. This talk will begin with a combinatorial characterization of S-graphs followed by examples. We will then discuss the ongoing search for examples of certain types of S-graphs, including those with the so-called Q-polynomial property. These are S-graphs whose idempotents $E_0, E_1, \ldots, E_d$ in the spectral decomposition of A can be ordered so that E_i is a degree i polynomial of E_1, where multiplication is the Schur product. (Received August 25, 2015)