1145-52-527 **Emily Barranca*** (ebarran1@swarthmore.edu), 14 Crystal Ln, Delmar, NY 12054, and **Clara Buck** and **Lauren Hartmann**. *Special Sets of Vertices in Paley Graphs.* Preliminary report.

Strongly regular graphs have three distinct eigenvalues that give bounds on the average degree of an induced subgraph. Tight sets are sets of vertices that induce a subgraph with as many or as few edges as possible relative to the parameters and eigenvalues of the graph. A particular family of examples of strongly regular graphs is the Paley Graph P(q), which has the finite field of size $q \equiv 1 \bmod 4$ as its vertex set, where two vertices are adjacent when their difference is a nonzero perfect square in the considered field.

Motivated by a 1984 result by Blockhuis, we consider the connection between Paley graphs $P(q^2)$ and finite affine planes. In this model, each line of the affine plane represents either a clique or an independent set in the graph. Selecting only those lines which correspond to cliques, we construct a partial affine plane in which two vertices are adjacent in the graph if and only if they are on the same line in the affine plane. This allows us to examine tight sets of $P(q^2)$ in a geometric context. We work towards classifying the tight sets which are not the disjoint union of smaller tight sets. (Received September 08, 2018)