1125-VF-192 **Brian G. Kronenthal*** (kronenthal@kutztown.edu), **Felix Lazebnik** and **Jason Williford**.

On the uniqueness of some girth eight algebraically defined graphs.

In this talk, we will discuss algebraically defined bipartite graphs. Indeed, let $\mathbb{F}$ denote a field, and consider the bipartite graph with partite sets $P = \mathbb{F}^3 = L$ such that $(p_1, p_2, p_3) \in P$ and $[\ell_1, \ell_2, \ell_3] \in L$ are adjacent if and only if $p_2 + \ell_2 = p_1\ell_1$ and $p_3 + \ell_3 = p_1\ell_1^2$. This graph has girth eight, and of particular interest is whether it is possible to alter these equations by replacing $p_1\ell_1$ and $p_1\ell_1^2$ with other bivariate polynomials to create a nonisomorphic girth eight graph. In addition to discussing some results related to this question, we will also explain the connection between algebraically defined graphs and the point-line incidence graphs of generalized quadrangles, which partially motivates the study of the objects in this talk. (Received August 10, 2016)