Philip DeOrsey* (philip.deorsey@ucdenver.edu) and William Cherowitzo (william.cherowitzo@ucdenver.edu). Cyclotomic Sets in $\text{AG}(2, q)$.

We let $\text{AG}(2, q)$ denote the affine plane coordinatized by the finite field with $q$ elements, $\text{GF}(q)$. As is well known, the points of $\text{AG}(2, q)$ can be represented as elements of $\text{GF}(q^2)$. A cyclotomic set is an orbit of elements of $\text{GF}(q^2)$ under a field automorphism and is thought of as a geometric structure in $\text{AG}(2, q)$. We will discuss the structures known to be represented by cyclotomic sets, one of which is a cyclic $n_3$ configuration. An $n_3$ configuration is a point-line incidence structure containing $n$ points and $n$ lines, with 3 lines through every point, and 3 points on every line. A configuration is cyclic if there is an automorphism of the configuration that permutes the points in a full cycle. In this talk we determine all generating blocks for cyclic $n_3$ configurations, which allows us to describe when a cyclotomic set contains a cyclic $n_3$ configuration. (Received September 13, 2014)