

1025-51-181

Esteban Diaz Morales* (ediaz@math.uiowa.edu), Iowa City, IA 52246, and **Norman Johnson**, Iowa City, IA 52242. *Connections between homology groups planes and Flocks of Quadratic Cones.*

Every translation plane with spread in $\text{PG}(3, q)$ that admits a cyclic affine homology group of order $q + 1$ corresponds to a flock of a quadratic cone by results of N.L. Johnson. Furthermore, V.Jha and N.L. Johnson completely determine the class of flocks whose corresponding translation planes admit a collineation group of order $q(q + 1)$. Using the above correspondence, there is an associated translation plane of order q^2 admitting a collineation group of order $(q + 1)^2$. In this talk, we consider arbitrary translation planes with spreads in $\text{PG}(3, q)$ that admit linear collineation groups of order $(q + 1)^2$. In particular, we are able to show in almost all cases that such a translation plane produces an associated conical flock plane admitting a group of order $q(q + 1)$, thereby reversing the connections. (Received January 22, 2007)