COLLOQUIUM

DEPARTMENT of MATHEMATICS

Thursday,
February 2, 2017
3:45 p.m.
Morgan Hall 208

Refreshments will be served at 3:30 p.m.

Conics and Hyperovals in Projective Planes over Fields of Characteristic 2

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Abstract: The first sentence of many geometry books is often something like, "Throughout this book, we assume that the characteristic of the field is not 2." Here, we restrict our attention to those very special and interesting fields of characteristic 2. Let π be a projective plane over a field F of characteristic 2. Using homogeneous coordinates, a conic in π is a set of points satisfying $aX^2 + bY^2 + cZ^2 + dXY + eXZ + fYZ = 0$. Such a conic is non-degenerate if it does not contain the point (f, e, d). If F is finite with order q, then a hyperoval in π is a set of $q + 2$ points, no three on a line.

In this talk, we examine non-degenerate conics and hyperovals in projective planes over fields of characteristic 2. We pay special attention to the fields $GF(4)$ and $GF(4^t)$, $t \geq 2$.

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