



**The Department of Mathematics
Presents**

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Special line sets in projective space

Abstract:

In a 1984 paper, Cameron and Liebler introduced classes of lines in projective space $PG(3,q)$ that they termed “special”. These sets of lines, now known as Cameron–Liebler line classes, are defined as having their characteristic vector contained in the row space of A , the point-line incidence matrix of $PG(3,q)$. This purely algebraic characterization has been shown to be equivalent to many interesting geometric properties.

After discussing some of the properties that make Cameron–Liebler line classes so “special”, we will look at some algebraic and computational techniques that have been used to construct examples of these sets. We will also give a generalization of these objects to subspaces in higher dimensional projective spaces, and look at some of the connections to the theory of error-correcting codes