The polynomial method in Galois geometries

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In Galois geometries, the study of substructures in finite projective spaces, polynomial techniques can be used.

With some substructures, it is possible to associate a polynomial. The geometrical properties of the substructure translate into properties of the polynomial, and vice versa, the properties of the polynomial translate into geometrical properties of the substructure.

This nice interaction has to led to fundamental results on blocking sets, maximal arcs in projective planes, blocking sets on the Hermitian curve, ovoids of the parabolic quadric $Q(4, q)$, and on other substructures in finite projective spaces.

In this talk, I will present a number of these links between substructures and polynomials, explain the results obtained and the techniques used for obtaining these results.

References

[1] S. Ball, The polynomial method in Galois geometries. Chapter in *Current research topics in Galois geometry* (J. De Beule and L. Storme, Eds.), NOVA Academic Publishers (2012), 105-130.