

# An introduction to the polynomial method

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## Abstract

We will give an introduction to the application of the polynomial method to Galois geometries for people who are unfamiliar with it. The concept of directions not determined by a set of points in  $AG(n, q)$  will be introduced and applied in a proof using a particular kind of polynomials. Following this result, we discuss the cylinder conjecture in  $AG(3, p)$ ,  $p$  prime, and a reduction of the problem to a question involving sequences of length  $p^2$  over  $\mathbb{F}_p$ .