

Large incidence-free sets in geometries

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(No prior knowledge of finite geometry will be assumed)

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Abstract

Consider a projective plane of order q with point set P and line set L . The largest value of $|X||Y|$ where $X \subset P$ and $Y \subset L$ are sets such that no point of X belongs to any line of Y was determined by Haemers and turns out to be $q(q - \sqrt{q} + 1)^2$.

This type of problem is interesting for a large class of geometries. More specifically, we investigate this problem for k -dimensional spaces in n -dimensional projective space and more generally we consider the analogous problem in generalized polygons. Techniques used in the proof are of a combinatorial, geometric, spectral and probabilistic nature.

All notions will be explained. This is joint work with S. De Winter (MTU) and J. Verstraëte (UCSD).