

Disjoint sets in projective planes

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Point sets in projective planes with two-line intersections have been studied in finite geometry a lot. Maximal arcs and unitals are examples of such sets. For example, in the known projective planes of order 16, 36 maximal $(52, 4)$ -arcs and 156 unitals are known to exist [1-5]. It was pointed out that vt -sets of type $((t-1)k, tk)$ might arise from the unions of t pairwise disjoint maximal (v, k) -arcs [3]. In this talk, we discuss the results of a number of computer searches related to maximal arcs and unitals in some of the projective planes. Previous to our work, all known 104-sets of type $(4, 8)$ associated with maximal arcs of degree 4 were coming from isomorphic copies of maximal $(52, 4)$ -arcs [4]. Our computations show that such sets exist from non-isomorphic pairs as well [1]. Two different methods for finding v -sets of type (a, b) are discussed.

Keywords

Projective plane, Maximal arc, Unital

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