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Boros, E.; Szoenyi, T.; Wettl, F.

Sperner extensions of affine spaces. (English)

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Let $S = (P(S), L(S))$ be an indidence structure, where P(S) denotes the set of points of S and L(S) is a collection of subsets of P(S) called the lines of S. The incidence is the natural inclusion.

In the present paper the Sperner spaces $S = (P(S), L(S))$ are investigated in which the affine space $AG(3, q) = A = (P(A), L(A))$ can be embedded in the following sense:

1) P(A) is a subset of P(S).

2) Any line of A is contained in a line of S; moreover for any line e of S if $e' = e \cap P(A)$ is not empty then it is a line of A, called the affine part of e.

3) Let e and f be two lines of S which have non empty affine parts e' and f'. Then they are parallel in S if and only if e' and f' are parallel in A.

A.Barlotti

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