A finite classical polar space $\mathcal{P}$ of rank $r \geq 2$ arises from the set of all absolute points and totally isotropic subspaces of a polarity of a projective space $\text{PG}(n, q)$, and $r$ denotes the vector dimension of a maximal totally isotropic subspace of $\mathcal{P}$. The Hermitian surface $\mathcal{H}(3, q^2) \subset \text{PG}(3, q^2)$ and the Hermitian variety $\mathcal{H}(4, q^2) \subset \text{PG}(4, q^2)$ are examples of classical generalized quadrangles, that is polar spaces of rank 2.

Let $B$ the set of totally isotropic $k$-dimensional subspaces of $\mathcal{P}$. A blocking set of $\mathcal{P}$ with respect to $B$ is a set of points of $\mathcal{P}$ that meets every element of $B$; a blocking set is minimal if it does not contain a smaller blocking set.

The authors construct infinite families of minimal blocking sets of the generalized quadrangles $\mathcal{H}(3, q^2)$ and $\mathcal{H}(4, q^2)$ with respect to lines. These examples do not lie in a hyperplane of $\text{PG}(3, q^2)$ and of $\text{PG}(4, q^2)$, respectively. All the examples of minimal blocking sets of $\mathcal{H}(4, q^2)$ already known in the literature do not have this property.

Reviewer: Daniele Bartoli (Perugia)

MSC:
51E21 Blocking sets, ovals, $k$-arcs

Keywords:
Hermitian generalized quadrangle; blocking set; tight set; cyclic spread; unital

Full Text: DOI

References:

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.