The smallest minimal blocking sets of $Q(6,q)$, $q$ even

Jan De Beule

Ghent University, Department of Pure Mathematics and Computer Algebra,
Krijgslaan 281, 9000 Gent, Belgium.

Joint work with: Leo Storme

Using results on the size of the smallest minimal blocking sets of $Q(4,q)$, $q$ even, of Eisfeld, Storme, Szőnyi and Sziklai [2], and results concerning the number of internal nuclei of $(q+2)$-sets in $PG(2,q)$, $q$ even, of Bichara and Korchmáros [1], together with projection arguments, we obtain the following characterization of the smallest minimal blocking sets of $Q(6,q)$, $q$ even and $q \geq 32$:

**Theorem 1** Let $\mathcal{K}$ be a minimal blocking set of $Q(6,q)$, $q$ even, $|\mathcal{K}| \leq q^3 + q$, $q \geq 32$. Then there is a point $p \in Q(6,q) \setminus \mathcal{K}$ with the following property: $T_p(Q(6,q)) \cap Q(6,q) = pQ(4,q)$ and $\mathcal{K}$ consists of all the points of the lines $L$ on $p$ meeting $Q(4,q)$ in an ovoid $O$, minus the point $p$ itself, and $|\mathcal{K}| = q^3 + q$.
