

Sets of generators in finite classical polar spaces blocking all generators

Anja Hallez

joint work with Jan De Beule, Klaus Metsch and Leo Storme

May 7, 2009

A line is the smallest set of points blocking all planes in $\text{PG}(3, q)$. If we consider now $\text{W}(3, q)$, this property implies that the smallest set of points blocking all points of $\text{W}(3, q)$ is a line or a hyperbolic line of $\text{W}(3, q)$. Dualizing we find that the smallest set of lines of $\text{Q}(4, q)$ meeting all lines of $\text{Q}(4, q)$, is a pencil or a regulus. We call \mathcal{L} a generator blocking set of $\text{Q}(4, q)$. In my talk, I will show what the smallest minimal generator blocking sets in the polar spaces $\text{Q}(2n, q)$, $\text{H}(2n, q^2)$ and $\text{Q}^-(2n + 1, q)$ are. I will explain how counting arguments give an upper bound on the size of a generator blocking set containing the smallest minimal example.