Abstract. In this paper we face with the problem of constructing semifield spreads in projective spaces of dimension larger than 3. To this aim we study the relationship between linear sets disjoint from the secant variety of a Segre variety $S_{n,n}$ of $PG(n^2 - 1, q)$ and semifield spreads of $PG(2n - 1, q)$, focusing on the symplectic case. When $n = 3$, we construct a new symplectic semifield spread of $PG(5, q)$, $q$ odd. Using the cubical array, we describe the associated commutative semifield and deal with the isotopy issue for this example.

Keywords. Semifield spread, Segre variety