

Regular Packings in $\text{PG}(3, 5)$

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A spread of $\text{PG}(3, q)$ is a set of pairwise disjoint lines which together cover all the points. A packing in $\text{PG}(3, q)$ is a set of pairwise disjoint spreads which together exhaust all the lines. A packing is regular if the spreads in it are all isomorphic to the desarguesian spread, which is the spread that is defined using field reduction from the set of points in $\text{PG}(1, q^2)$. Using the back and forth between combinatorial objects and groups, we are able to find a new regular packing. The packing is different from the Penttila / Williams packing [1] because it has a stabilizer of order 3 and not 93. The computations are based on finding cliques in suitably defined graphs.

[1] Penttila, Tim and Williams, Blair, Regular packings of $\text{PG}(3, q)$, European Journal of Combinatorics, 19 (1998) 713-720.