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On maximal cliques in Paley graphs of square order

In [1], Blokhuis studied maximum cliques in Paley graphs of square order $(^2)$. It was shown that a clique of size q in $(^2)$ is necessarily a quadratic line in the corresponding affine plane $(2,)$.

Let $()$ denote the reminder after division of by 4. In [2], for any odd prime power , a maximal (but not maximum) clique in $(^2)$ of size $\frac{+()}{2}$ was constructed.

In [3], for any odd prime power , a maximal clique in $(^2)$ of the same size $\frac{+()}{2}$ was constructed. This clique was shown to have a remarkable connection with eigenfunctions of $(^2)$ that have minimum cardinality of support $+1$.

In this talk, we discuss the constructions of maximal cliques from [2] and [3] and establish a correspondence between them.

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References

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