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Constructing Cameron-Liebler line classes with large parameter

We report on joint work with Jeroen Demeyer, Klaus Metsch and Morgan Rodgers to construct Cameron-Liebler line classes with parameter $x \in \mathcal{O}(q^2)$. The geometrical understanding of the orbits of the points of $\text{PG}(3, q)$ under a group of order $q^2 + q + 1$ preserving the desired Cameron-Liebler line class, together with the representation of $\text{AG}(3, q)$ as \mathbb{F}_{q^3} plays a central role. We overview the state of the art of the currently known examples, [1, 2].

References

- [1] M. Rodgers. Private communication.
- [2] M. Rodgers. Some new examples of cameron-liebler line classes in $\text{PG}(3, q)$. *Des. Codes Cryptogr.*, to appear, DOI: 10.1007/s10623-011-9581-2