Abstract

Resolvable Steiner 3-Designs

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Resolvable Steiner t-$(v,k,1)$ designs with $t>2$ had been known to exist for a few values of k only, that is 5-$(12,6,1)$, 5-$(24,8,1)$, 5-$(48,6,1)$, and 3-$(v,4,1)$ for $v \equiv 4,8 \bmod 12$ [1, 2]. We show that for any prime power q, such that $q+1$ is not a power of 2, and any positive integer n, there exists a resolvable 3-$(q^{3^n}+1, q+1, 1)$ design.

References

[1] Alan Hartman, *The existence of resolvable Steiner quadruple systems*, J. Comb. Theory, Ser. A **44** (1987), 182-206.

[2] L. Ji, L. Zhu, *Resolvable Steiner quadruple systems for the last 23 orders*, SIAM J. Discret. Math. **19** (2005), 420–430.