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 \( v \equiv 4, 8 \mod 12 \) \([1, 2] \). 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 \( 3\)-\((q^{3n}+1, q+1, 1)\) design.

References