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***A family of 4-designs on 26 points***

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**Abstract:** Using the Kramer-Mesner method,  $4-(26, 6, \lambda)$  designs with  $PSL(2, 25)$  as a group of automorphisms and with  $\lambda$  in the set  $\{30, 51, 60, 81, 90, 111\}$  are constructed. The search uses specific partitioning of columns of the orbit incidence matrix, related to so-called “quasi-designs”. Actions of groups  $PSL(2, 25)$ ,  $PGL(2, 25)$  and twisted  $PGL(2, 25)$  are being compared. It is shown that there exist  $4-(26, 6, \lambda)$  designs with  $PGL(2, 25)$ , respectively twisted  $PGL(2, 25)$  as a group of automorphisms and with  $\lambda$  in the set  $\{51, 60, 81, 90, 111\}$ . With  $\lambda$  in the set  $\{60, 81\}$ , there exist designs which possess all three considered groups as groups of automorphisms. An overview of  $t-(q+1, k, \lambda)$  designs with  $PSL(2, q)$  as group of automorphisms and with  $(t, k) \in \{(4, 5), (4, 6), (5, 6)\}$  is included.

**Keywords:** block designs, orbits, projective linear group, projective special linear group, twisted projective linear group, Kramer-Mesner method

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