1 BLT set 4 over GF(41)

Points on the quadric $x_0^2 + x_1x_2 + x_3x_4$:

$P_1 = (0, 1, 0, 0, 0)$

$P_2 = (0, 0, 1, 0, 0)$

$P_3 = (0, 1, 27, 40, 27)$

$P_4 = (0, 1, 17, 20, 34)$

$P_5 = (0, 1, 6, 8, 30)$

$P_6 = (0, 1, 22, 27, 25)$

$P_7 = (1, 1, 26, 34, 39)$

$P_8 = (1, 11, 8, 3, 25)$

$P_9 = (1, 12, 32, 25, 1)$

$P_{10} = (1, 5, 3, 16, 40)$

$P_{11} = (1, 10, 12, 2, 1)$

$P_{12} = (1, 1, 12, 12, 16)$

$P_{13} = (1, 26, 5, 37, 2)$

$P_{14} = (1, 3, 39, 23, 2)$

$P_{15} = (1, 15, 36, 27, 24)$

$P_{16} = (1, 26, 5, 24, 27)$

$P_{17} = (1, 36, 38, 7, 27)$

$P_{18} = (1, 25, 15, 11, 18)$

$P_{19} = (1, 11, 2, 13, 14)$

$P_{20} = (1, 22, 21, 1, 29)$

$P_{21} = (1, 16, 30, 34, 16)$

$P_{22} = (1, 35, 36, 15, 28)$

$P_{23} = (1, 1, 27, 30, 10)$

$P_{24} = (1, 17, 4, 30, 10)$

$P_{25} = (1, 21, 17, 3, 31)$

$P_{26} = (1, 12, 5, 6, 24)$

$P_{27} = (1, 36, 19, 20, 17)$

$P_{28} = (1, 6, 5, 32, 8)$

$P_{29} = (1, 24, 36, 30, 19)$

$P_{30} = (1, 4, 13, 33, 22)$

$P_{31} = (1, 22, 4, 40, 7)$

$P_{32} = (1, 20, 13, 8, 34)$

$P_{33} = (1, 4, 26, 15, 34)$

$P_{34} = (1, 3, 33, 6, 38)$

$P_{35} = (1, 27, 2, 8, 29)$

$P_{36} = (1, 6, 9, 30, 5)$

$P_{37} = (1, 10, 26, 3, 36)$

$P_{38} = (1, 33, 15, 35, 28)$

$P_{39} = (1, 38, 5, 38, 9)$

$P_{40} = (1, 30, 8, 4, 32)$

$P_{41} = (1, 30, 33, 29, 4)$

$P_{42} = (1, 12, 10, 1, 2)$

Stabilizer of order 3 is generated by:

$$g_1 = \begin{pmatrix} 5 & 33 & 19 & 17 & 22 \\ 31 & 39 & 14 & 19 & 7 \\ 8 & 35 & 23 & 32 & 10 \\ 38 & 7 & 37 & 18 & 17 \\ 30 & 37 & 39 & 22 & 37 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 3 and is generated by:

g_1 =(1, 38, 29)(2, 40, 20)(3, 13, 22)(4, 27, 7)(5, 26, 33)(6, 39, 17)(8, 21, 34)(9, 10, 24)(11, 25, 12)(14, 36, 16)(15, 23, 19)(18, 41, 31)(28, 37, 30)(32, 35, 42)

Kernel has order 1 and is generated by:

There are 14 orbits on the BLT set.

The orbit length are $[3^{14}]$

The orbits are:

$O_0 = \{1, 29, 38\}$ (length 3)

$O_1 = \{2, 20, 40\}$ (length 3)

$O_2 = \{3, 13, 22\}$ (length 3)

$O_3 = \{4, 7, 27\}$ (length 3)

$O_4 = \{5, 26, 33\}$ (length 3)

$O_5 = \{6, 17, 39\}$ (length 3)

$O_6 = \{8, 21, 34\}$ (length 3)

$O_7 = \{9, 10, 24\}$ (length 3)

$O_8 = \{11, 12, 25\}$ (length 3)

$O_9 = \{14, 16, 36\}$ (length 3)

$O_{10} = \{15, 19, 23\}$ (length 3)

$O_{11} = \{18, 31, 41\}$ (length 3)

$O_{12} = \{28, 30, 37\}$ (length 3)

$O_{13} = \{32, 35, 42\}$ (length 3)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 29, 38\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{2, 20, 40\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_2 = \{3, 13, 22\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_3 = \{4, 7, 27\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_4 = \{5, 26, 33\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_5 = \{6, 17, 39\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_6 = \{8, 21, 34\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_7 = \{9, 10, 24\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_8 = \{11, 12, 25\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_9 = \{14, 16, 36\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{10} = \{15, 19, 23\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{11} = \{18, 31, 41\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{12} = \{28, 30, 37\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{13} = \{32, 35, 42\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

Kernel has order 1 and is generated by: