1 BLT set 7 over GF(41)

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

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

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

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

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

$P_5 = (0, 1, 22, 27, 25)$

$P_6 = (0, 1, 3, 37, 11)$

$P_7 = (1, 31, 38, 27, 11)$

$P_8 = (1, 13, 31, 6, 1)$

$P_9 = (1, 10, 12, 2, 1)$

$P_{10} = (1, 11, 16, 33, 17)$

$P_{11} = (1, 19, 36, 17, 20)$

$P_{12} = (1, 22, 2, 22, 11)$

$P_{13} = (1, 28, 21, 17, 16)$

$P_{14} = (1, 21, 11, 1, 14)$

$P_{15} = (1, 2, 30, 15, 26)$

$P_{16} = (1, 19, 4, 27, 26)$

$P_{17} = (1, 4, 13, 33, 22)$

$P_{18} = (1, 3, 16, 32, 10)$

$P_{19} = (1, 20, 27, 30, 38)$

$P_{20} = (1, 6, 40, 3, 29)$

$P_{21} = (1, 19, 40, 33, 8)$

$P_{22} = (1, 8, 12, 13, 2)$

$P_{23} = (1, 8, 35, 30, 33)$

$P_{24} = (1, 6, 10, 26, 15)$

$P_{25} = (1, 4, 13, 21, 17)$

$P_{26} = (1, 26, 32, 33, 17)$

$P_{27} = (1, 7, 36, 8, 35)$

$P_{28} = (1, 28, 31, 19, 19)$

$P_{29} = (1, 21, 24, 36, 19)$

$P_{30} = (1, 38, 33, 11, 35)$

$P_{31} = (1, 26, 16, 16, 38)$

$P_{32} = (1, 19, 23, 31, 11)$

$P_{33} = (1, 19, 18, 35, 23)$

$P_{34} = (1, 24, 40, 1, 23)$

$P_{35} = (1, 7, 9, 40, 23)$

$P_{36} = (1, 15, 37, 40, 23)$

$P_{37} = (1, 36, 26, 7, 36)$

$P_{38} = (1, 14, 37, 8, 12)$

$P_{39} = (1, 40, 7, 28, 9)$

$P_{40} = (1, 25, 15, 10, 28)$

$P_{41} = (1, 39, 22, 23, 9)$

$P_{42} = (1, 21, 17, 26, 2)$

Stabilizer of order 60 is generated by:

$$g_1 = \begin{pmatrix} 35 & 0 & 0 & 6 & 1 \\ 0 & 0 & 17 & 0 & 0 \\ 0 & 29 & 0 & 0 & 0 \\ 21 & 0 & 0 & 24 & 38 \\ 3 & 0 & 0 & 15 & 24 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 27 & 14 & 19 & 22 & 7 \\ 30 & 5 & 14 & 35 & 25 \\ 7 & 14 & 5 & 23 & 18 \\ 24 & 18 & 25 & 23 & 16 \\ 11 & 23 & 35 & 15 & 23 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 23 & 39 & 14 & 26 & 6 \\ 0 & 9 & 30 & 16 & 19 \\ 2 & 15 & 21 & 38 & 38 \\ 11 & 24 & 29 & 21 & 6 \\ 29 & 8 & 19 & 4 & 8 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 4 & 22 & 0 & 18 & 6 \\ 0 & 1 & 0 & 0 & 0 \\ 11 & 29 & 1 & 28 & 21 \\ 3 & 21 & 0 & 18 & 20 \\ 9 & 28 & 0 & 16 & 18 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 60 and is generated by:

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

g_2 =(1, 27)(2, 15)(3, 5)(4, 24)(6, 18)(7, 33)(8, 35)(9, 10)(11, 26)(12, 19)(13, 31)(14, 23)(20, 22)(21, 41)(25, 30)(28, 39)(29, 32)(34, 38)(36, 42)(37, 40)

g_3 =(1, 4, 37, 30, 18)(2, 28, 27, 21, 26)(3, 32, 33, 35, 5)(6, 24, 23, 16, 38)(8, 36, 42, 29, 10)(11, 20, 25, 31, 34)(12, 40, 22, 15, 14)(13, 17, 19, 39, 41)

g_4 =(2, 40)(3, 42)(4, 39)(5, 36)(6, 21)(7, 10)(8, 29)(9, 33)(11, 30)(12, 23)(13, 34)(14, 19)(15, 37)(16, 17)(18, 41)(20, 22)(24, 28)(25, 26)(31, 38)(32, 35)

Kernel has order 1 and is generated by:

There are 2 orbits on the BLT set.

The orbit length are $[30, 12]$

The orbits are:

$O_0 = \{1, 2, 4, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 34, 37, 38, 39, 40, 41\}$ (length 30)

$O_1 = \{3, 5, 7, 8, 9, 10, 29, 32, 33, 35, 36, 42\}$ (length 12)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 2, 4, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 34, 3$
(length 30)
The induced group has order 60 and is generated by:
g_1 =(1, 2)(3, 20)(4, 13)(6, 16)(7, 17)(8, 9)(10, 30)(11, 18)(12, 22)(14, 25)(15, 26)(19, 24)(21, 23)(27, 28)
g_2 =(1, 21)(2, 9)(3, 18)(4, 12)(5, 20)(6, 13)(7, 24)(8, 17)(14, 16)(15, 30)(19, 23)(22, 28)(25, 27)(26, 29)
g_3 =(1, 3, 26, 23, 12)(2, 22, 21, 15, 20)(4, 18, 17, 10, 27)(5, 14, 19, 24, 25)(6, 29, 16, 9, 8)(7, 11, 13, 28, 30)
g_4 =(2, 29)(3, 28)(4, 15)(5, 23)(6, 17)(7, 25)(8, 13)(9, 26)(10, 11)(12, 30)(14, 16)(18, 22)(19, 20)(24, 27)
Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{3, 5, 7, 8, 9, 10, 29, 32, 33, 35, 36, 42\}$ (length 12)
The induced group has order 60 and is generated by:
g_1 =(1, 6)(2, 4)(3, 5)(7, 8)(9, 12)(10, 11)
g_2 =(1, 2)(3, 9)(4, 10)(5, 6)(7, 8)(11, 12)
g_3 =(1, 8, 9, 10, 2)(4, 11, 12, 7, 6)
g_4 =(1, 12)(2, 11)(3, 6)(4, 7)(5, 9)(8, 10)
Kernel has order 1 and is generated by: