1 BLT set 7 over GF(23)

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

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

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

$P_3 = (0, 1, 9, 22, 9)$

$P_4 = (0, 1, 8, 11, 16)$

$P_5 = (0, 1, 12, 13, 15)$

$P_6 = (0, 1, 8, 16, 11)$

$P_7 = (1, 22, 20, 19, 1)$

$P_8 = (1, 6, 16, 18, 1)$

$P_9 = (1, 17, 20, 21, 21)$

$P_{10} = (1, 14, 19, 18, 12)$

$P_{11} = (1, 8, 18, 2, 8)$

$P_{12} = (1, 1, 3, 18, 10)$

$P_{13} = (1, 14, 10, 11, 6)$

$P_{14} = (1, 21, 5, 6, 13)$

$P_{15} = (1, 17, 19, 16, 20)$

$P_{16} = (1, 16, 13, 10, 9)$

$P_{17} = (1, 17, 15, 4, 5)$

$P_{18} = (1, 6, 1, 12, 9)$

$P_{19} = (1, 14, 22, 2, 18)$

$P_{20} = (1, 6, 18, 15, 5)$

$P_{21} = (1, 12, 13, 21, 21)$

$P_{22} = (1, 16, 8, 8, 4)$

$P_{23} = (1, 18, 12, 18, 2)$

$P_{24} = (1, 8, 8, 21, 21)$

Stabilizer of order 72 is generated by:

$$g_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 9 & 22 & 9 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 9 & 0 & 9 \\ 0 & 0 & 22 & 18 & 0 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 19 & 0 & 0 & 11 & 7 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 15 & 0 & 0 & 14 & 2 \\ 17 & 0 & 0 & 4 & 14 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 11 & 7 & 11 & 11 & 3 \\ 0 & 17 & 20 & 14 & 2 \\ 0 & 21 & 7 & 1 & 14 \\ 19 & 6 & 11 & 5 & 2 \\ 19 & 18 & 7 & 13 & 5 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 9 & 18 & 0 & 16 & 18 \\ 0 & 1 & 0 & 0 & 0 \\ 9 & 3 & 1 & 18 & 3 \\ 9 & 3 & 0 & 19 & 3 \\ 8 & 18 & 0 & 16 & 19 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 72 and is generated by:

g_1 =(1, 3)(5, 6)(8, 18)(9, 15)(11, 24)(13, 19)(16, 22)

g_2 =(5, 22)(6, 16)(7, 12)(8, 19)(10, 20)(13, 18)(14, 17)

g_3 =(1, 5, 13, 16, 14, 23)(2, 4, 24, 10, 11, 20)(3, 22, 17, 9, 8, 7)(6, 18, 12, 21, 15, 19)

g_4 =(2, 11)(3, 21)(6, 7)(9, 23)(12, 16)(13, 17)(14, 18)

Kernel has order 1 and is generated by:

There are 2 orbits on the BLT set.

The orbit length are $[18, 6]$

The orbits are:

$O_0 = \{1, 3, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23\}$ (length 18)

$O_1 = \{2, 4, 10, 11, 20, 24\}$ (length 6)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 3, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23\}$ (length 18)

The induced group has order 72 and is generated by:

g_1 =(1, 2)(3, 4)(6, 14)(7, 11)(9, 15)(12, 17)

g_2 =(3, 17)(4, 12)(5, 8)(6, 15)(9, 14)(10, 13)

g_3 =(1, 3, 9, 12, 10, 18)(2, 17, 13, 7, 6, 5)(4, 14, 8, 16, 11, 15)

g_4 =(2, 16)(4, 5)(7, 18)(8, 12)(9, 13)(10, 14)

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{2, 4, 10, 11, 20, 24\}$ (length 6)

The induced group has order 72 and is generated by:

g_1 =(4, 6)

g_2 =(3, 5)

g_3 =(1, 2, 6, 3, 4, 5)

g_4 =(1, 4)

Kernel has order 1 and is generated by: