1 BLT set 1 over GF(23)

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

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

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

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

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

$P_5 = (0, 1, 1, 15, 3)$

$P_6 = (0, 1, 4, 7, 6)$

$P_7 = (0, 1, 18, 5, 1)$

$P_8 = (0, 1, 6, 4, 10)$

$P_9 = (0, 1, 13, 2, 5)$

$P_{10} = (0, 1, 12, 3, 19)$

$P_{11} = (0, 1, 6, 19, 13)$

$P_{12} = (0, 1, 1, 8, 20)$

$P_{13} = (0, 1, 2, 17, 8)$

$P_{14} = (0, 1, 9, 1, 14)$

$P_{15} = (0, 1, 3, 13, 21)$

$P_{16} = (0, 1, 2, 6, 15)$

$P_{17} = (0, 1, 16, 9, 11)$

$P_{18} = (0, 1, 8, 12, 7)$

$P_{19} = (0, 1, 13, 21, 18)$

$P_{20} = (0, 1, 18, 18, 22)$

$P_{21} = (0, 1, 12, 20, 4)$

$P_{22} = (0, 1, 16, 14, 12)$

$P_{23} = (0, 1, 4, 16, 17)$

$P_{24} = (0, 1, 3, 10, 2)$

Stabilizer of order 582912 is generated by:

$$g_1 = \begin{pmatrix} 19 & 0 & 0 & 12 & 16 \\ 0 & 22 & 0 & 0 & 0 \\ 0 & 0 & 22 & 0 & 0 \\ 15 & 0 & 0 & 9 & 21 \\ 17 & 0 & 0 & 19 & 9 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 22 & 0 & 0 & 0 \\ 0 & 0 & 22 & 0 & 0 \\ 0 & 0 & 0 & 22 & 0 \\ 0 & 0 & 0 & 0 & 22 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 12 & 0 & 0 & 18 & 1 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 15 & 3 \\ 11 & 3 & 0 & 17 & 1 \\ 14 & 15 & 0 & 2 & 17 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 14 & 0 & 0 & 20 & 19 \\ 0 & 22 & 14 & 1 & 14 \\ 0 & 0 & 22 & 0 & 0 \\ 2 & 0 & 14 & 19 & 1 \\ 13 & 0 & 1 & 2 & 19 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 9 & 0 & 0 & 20 & 19 \\ 0 & 0 & 7 & 0 & 0 \\ 0 & 10 & 21 & 13 & 21 \\ 21 & 0 & 14 & 19 & 1 \\ 10 & 0 & 1 & 2 & 19 \end{pmatrix}$$

$$g_6 = \begin{pmatrix} 0 & 0 & 0 & 8 & 3 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 6 & 1 & 4 & 10 \\ 13 & 10 & 0 & 11 & 16 \\ 4 & 4 & 0 & 9 & 11 \end{pmatrix}$$

$$g_7 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 9 & 0 & 0 & 0 \\ 0 & 0 & 18 & 0 & 0 \\ 0 & 0 & 0 & 22 & 0 \\ 0 & 0 & 0 & 0 & 22 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 12144 and is generated by:

g_1 =id

g_2 =id

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

g_4 =(1, 3)(5, 6)(7, 13)(8, 20)(9, 21)(10, 11)(12, 22)(14, 19)(15, 17)(16, 23)(18, 24)

g_5 =(1, 2, 3, 4)(5, 18, 19, 7)(6, 13, 14, 24)(8, 11, 9, 23)(10, 20, 16, 21)(12, 17, 15, 22)

g_6 =(2, 23)(3, 7)(4, 21)(5, 15)(6, 12)(8, 24)(9, 14)(10, 22)(11, 13)(16, 20)(18, 19)

g_7 =(3, 20, 19, 15, 11, 10, 5, 16, 6, 18, 22, 14, 7, 9, 24, 8, 21, 12, 13, 23, 4, 17)

Kernel has order 48 and is generated by:

$$b_1 = \begin{pmatrix} 15 & 0 & 0 & 19 & 10 \\ 0 & 22 & 0 & 0 & 0 \\ 0 & 0 & 22 & 0 & 0 \\ 18 & 0 & 0 & 7 & 3 \\ 2 & 0 & 0 & 6 & 7 \end{pmatrix}$$

$$b_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 22 & 0 & 0 & 0 \\ 0 & 0 & 22 & 0 & 0 \\ 0 & 0 & 0 & 22 & 0 \\ 0 & 0 & 0 & 0 & 22 \end{pmatrix}$$

$$b_3 = \begin{pmatrix} 10 & 0 & 0 & 14 & 11 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 17 & 0 & 0 & 7 & 8 \\ 7 & 0 & 0 & 16 & 7 \end{pmatrix}$$

The kernel has 553 orbits on the quadric.

The orbit length are $[24^{529}, 1^{24}]$

Induced action on orbit $O_2 = \{3, 48, 1567, 1612, 1657, 1702, 1747, 1792, 1837, 1882, 1927, 1972, 2017, 2062, 2107, 2$

(length 24)

The induced group has order 48 and is generated by:

g_1 =(1, 8, 15, 10, 14, 5, 2, 22, 13, 17, 12, 19)(3, 20, 23, 6, 21, 4, 7, 24, 11, 9, 18, 16)

g_2 =(3, 24)(4, 23)(5, 22)(6, 21)(7, 20)(8, 19)(9, 18)(10, 17)(11, 16)(12, 15)(13, 14)

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

Kernel has order 1 and is generated by:

There are 1 orbits on the BLT set.

The orbit length are [24]

The orbits are:

$O_0 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24\}$ (length 24)