1 BLT set 1 over GF(27)

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

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

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

$P_3 = (0, 1, 1, 2, 1)$

$P_4 = (0, 1, 1, 1, 2)$

$P_5 = (0, 1, 25, 11, 19)$

$P_6 = (0, 1, 20, 15, 21)$

$P_7 = (0, 1, 22, 12, 24)$

$P_8 = (0, 1, 9, 6, 3)$

$P_9 = (0, 1, 15, 18, 9)$

$P_{10} = (0, 1, 7, 20, 10)$

$P_{11} = (0, 1, 25, 19, 11)$

$P_{12} = (0, 1, 20, 21, 15)$

$P_{13} = (0, 1, 22, 24, 12)$

$P_{14} = (0, 1, 9, 3, 6)$

$P_{15} = (0, 1, 6, 17, 22)$

$P_{16} = (0, 1, 11, 13, 26)$

$P_{17} = (0, 1, 8, 14, 25)$

$P_{18} = (0, 1, 15, 9, 18)$

$P_{19} = (0, 1, 16, 4, 8)$

$P_{20} = (0, 1, 12, 23, 16)$

$P_{21} = (0, 1, 6, 22, 17)$

$P_{22} = (0, 1, 16, 8, 4)$

$P_{23} = (0, 1, 12, 16, 23)$

$P_{24} = (0, 1, 13, 5, 7)$

$P_{25} = (0, 1, 7, 10, 20)$

$P_{26} = (0, 1, 8, 25, 14)$

$P_{27} = (0, 1, 13, 7, 5)$

$P_{28} = (0, 1, 11, 26, 13)$

Stabilizer of order 3302208 is generated by:

$$g_1 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}, 0$$

$$g_2 = \begin{pmatrix} 21 & 0 & 0 & 26 & 26 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 2 & 1 \\ 26 & 2 & 0 & 17 & 16 \\ 26 & 1 & 0 & 16 & 17 \end{pmatrix}, 1$$

$$g_3 = \begin{pmatrix} 19 & 0 & 0 & 16 & 16 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 16 & 0 & 0 & 9 & 10 \\ 16 & 0 & 0 & 10 & 9 \end{pmatrix}, 0$$

$$g_4 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}, 2$$

$$g_5 = \begin{pmatrix} 9 & 0 & 0 & 12 & 12 \\ 0 & 2 & 2 & 2 & 1 \\ 0 & 2 & 2 & 1 & 2 \\ 24 & 1 & 2 & 9 & 9 \\ 24 & 2 & 1 & 9 & 9 \end{pmatrix}, 2$$

$$g_6 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{pmatrix}, 1$$

$$g_7 = \begin{pmatrix} 26 & 0 & 0 & 15 & 15 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 16 & 1 & 8 & 4 \\ 15 & 4 & 0 & 14 & 12 \\ 15 & 8 & 0 & 12 & 14 \end{pmatrix}, 0$$

$$g_8 = \begin{pmatrix} 26 & 0 & 0 & 15 & 15 \\ 0 & 15 & 0 & 0 & 0 \\ 0 & 22 & 8 & 10 & 20 \\ 21 & 19 & 0 & 25 & 24 \\ 21 & 11 & 0 & 24 & 25 \end{pmatrix}, 0$$

$$g_9 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 15 & 0 & 0 & 0 \\ 0 & 0 & 8 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}, 0$$

Induced action on the BLT-set:

The induced group has order 58968 and is generated by:

g_1 =id

g_2 =(2, 3, 4)(8, 9, 10)(11, 12, 13)(14, 15, 16)(17, 18, 19)(20, 21, 22)(23, 24, 25)(26, 27, 28)

g_3 =id

g_4 =(5, 6, 7)(8, 22, 27)(9, 20, 28)(10, 21, 26)(11, 12, 13)(14, 19, 24)(15, 17, 25)(16, 18, 23)

g_5 =(1, 4, 2, 3)(5, 26, 24, 28, 6, 10, 14, 9, 7, 21, 19, 20)(8, 17, 13, 16, 22, 25, 11, 18, 27, 15, 12, 23)

g_6 =(3, 4)(5, 13, 6, 11, 7, 12)(8, 24, 22, 14, 27, 19)(9, 16, 20, 18, 28, 23)(10, 17, 21, 25, 26, 15)

g_7 =(2, 6)(3, 5)(4, 7)(8, 24)(9, 19)(10, 14)(11, 13)(15, 26)(16, 21)(17, 28)(18, 20)(22, 23)(25, 27)

g_8 =(2, 14, 19, 3, 21, 12, 17, 22, 26, 13, 5, 6, 23)(4, 7, 9, 20, 8, 15, 10, 24, 16, 28, 11, 27, 18)

g_9 =(3, 19, 20, 14, 13, 28, 9, 17, 15, 24, 11, 25, 12)(4, 22, 23, 8, 7, 16, 18, 26, 21, 27, 5, 10, 6)

Kernel has order 56 and is generated by:

$$b_1 = \begin{pmatrix} 9 & 0 & 0 & 24 & 24 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 12 & 0 & 0 & 10 & 11 \\ 12 & 0 & 0 & 11 & 10 \end{pmatrix}, 0$$

$$b_2 = \begin{pmatrix} 26 & 0 & 0 & 21 & 21 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 15 & 0 & 0 & 24 & 25 \\ 15 & 0 & 0 & 25 & 24 \end{pmatrix}, 0$$

$$b_3 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{pmatrix}, 0$$

$$b_4 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{pmatrix}, 0$$

$$b_5 = \begin{pmatrix} 15 & 0 & 0 & 26 & 26 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 13 & 0 & 0 & 17 & 16 \\ 13 & 0 & 0 & 16 & 17 \end{pmatrix}, 0$$

$$b_6 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{pmatrix}, 0$$

The kernel has 757 orbits on the quadric.

The orbit length are $[28^{729}, 1^{28}]$

Induced action on orbit $O_2 = \{3, 56, 2163, 2216, 2269, 2322, 2375, 2428, 2481, 2534, 2587, 2640, 2693, 2746, 2799, 2$
(length 28)

The induced group has order 56 and is generated by:

g_1 =(1, 27)(2, 20)(3, 6)(4, 17)(7, 23)(8, 9)(10, 14)(11, 22)(12, 15)(16, 25)(18, 19)(21, 26)(24, 28)

g_2 =(1, 15)(2, 19)(3, 8)(4, 21)(5, 10)(6, 14)(7, 17)(9, 26)(11, 28)(13, 23)(16, 24)(20, 25)(22, 27)

g_3 =id

g_4 =id

g_5 =(1, 8)(2, 21)(3, 19)(4, 15)(5, 16)(6, 22)(7, 27)(9, 18)(10, 28)(11, 13)(12, 26)(14, 20)(17, 25)(23, 24)

g_6 =(3, 4)(5, 8)(6, 10)(7, 9)(11, 20)(12, 22)(13, 21)(14, 26)(15, 28)(16, 27)(17, 23)(18, 25)(19, 24)

Kernel has order 1 and is generated by:

There are 1 orbits on the BLT set.

The orbit length are [28]

The orbits are:

$O_0 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28\}$ (length 28)