1 BLT set 3 over GF(27)

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

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

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

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

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

$P_5 = (0, 1, 9, 10, 22)$

$P_6 = (0, 1, 9, 20, 17)$

$P_7 = (0, 1, 6, 15, 24)$

$P_8 = (0, 1, 6, 21, 12)$

$P_9 = (0, 1, 20, 13, 18)$

$P_{10} = (0, 1, 20, 26, 9)$

$P_{11} = (0, 1, 22, 18, 16)$

$P_{12} = (0, 1, 22, 9, 23)$

$P_{13} = (0, 1, 13, 14, 20)$

$P_{14} = (0, 1, 13, 25, 10)$

$P_{15} = (0, 1, 8, 12, 19)$

$P_{16} = (0, 1, 8, 24, 11)$

$P_{17} = (0, 1, 7, 11, 21)$

$P_{18} = (0, 1, 7, 19, 15)$

$P_{19} = (0, 1, 11, 4, 7)$

$P_{20} = (0, 1, 11, 8, 5)$

$P_{21} = (0, 1, 16, 17, 25)$

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

$P_{23} = (0, 1, 12, 6, 4)$

$P_{24} = (0, 1, 12, 3, 8)$

$P_{25} = (0, 1, 15, 5, 6)$

$P_{26} = (0, 1, 15, 7, 3)$

$P_{27} = (0, 1, 25, 16, 26)$

$P_{28} = (0, 1, 25, 23, 13)$

Stabilizer of order 117936 is generated by:

$$g_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 6 & 0 & 0 \\ 0 & 11 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 13 \\ 0 & 0 & 0 & 22 & 0 \end{pmatrix}, 0$$

$$g_2 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}, 0$$

$$g_3 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{pmatrix}, 0$$

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

$$g_5 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 6 & 0 & 0 & 0 \\ 0 & 16 & 11 & 22 & 24 \\ 0 & 21 & 0 & 26 & 0 \\ 0 & 9 & 0 & 0 & 17 \end{pmatrix}, 0$$

$$g_6 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 & 0 \\ 0 & 0 & 24 & 0 & 0 \\ 0 & 0 & 0 & 16 & 0 \\ 0 & 0 & 0 & 0 & 20 \end{pmatrix}, 1$$

$$g_7 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 17 & 0 & 0 & 0 \\ 0 & 0 & 26 & 0 & 0 \\ 0 & 0 & 0 & 7 & 0 \\ 0 & 0 & 0 & 0 & 12 \end{pmatrix}, 1$$

$$g_8 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}, 2$$

Induced action on the BLT-set:

The induced group has order 58968 and is generated by:

g_1 =(1, 2)(3, 6)(4, 5)(7, 8)(9, 11)(10, 12)(13, 15)(14, 16)(17, 19)(18, 20)(21, 23)(22, 24)(25, 27)(26, 28)

g_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)

g_3 =id

g_4 =(1, 3)(2, 4)(5, 17, 13, 15, 21, 7)(6, 23, 14, 26, 22, 20)(8, 28, 18, 11, 16, 10)(9, 19, 27, 24,

12, 25)

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

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

g_7 =(3, 23, 8, 4, 24, 7)(5, 17, 13, 6, 18, 14)(9, 10)(11, 22, 19, 12, 21, 20)(15, 28, 26, 16, 27, 25)

g_8 =(5, 21, 13)(6, 22, 14)(7, 15, 17)(8, 16, 18)(9, 12, 27)(10, 11, 28)(19, 25, 24)(20, 26, 23)

Kernel has order 2 and is generated by:

$$b_1 = \begin{pmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}, 0$$

The kernel has 10612 orbits on the quadric.

The orbit length are $[2^{9828}, 1^{784}]$

Induced action on orbit $O_{784} = \{785, 786\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

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)