1 BLT set 4 over GF(29)

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

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

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

$P_3 = (0, 1, 14, 28, 14)$

$P_4 = (0, 1, 18, 14, 7)$

$P_5 = (0, 1, 11, 23, 26)$

$P_6 = (0, 1, 17, 6, 2)$

$P_7 = (0, 1, 19, 19, 28)$

$P_8 = (1, 6, 8, 1, 9)$

$P_9 = (1, 16, 21, 17, 16)$

$P_{10} = (1, 28, 3, 14, 25)$

$P_{11} = (1, 25, 8, 20, 3)$

$P_{12} = (1, 17, 28, 16, 1)$

$P_{13} = (1, 21, 7, 16, 27)$

$P_{14} = (1, 27, 5, 15, 18)$

$P_{15} = (1, 21, 25, 7, 16)$

$P_{16} = (1, 16, 17, 24, 14)$

$P_{17} = (1, 11, 13, 16, 20)$

$P_{18} = (1, 22, 11, 25, 10)$

$P_{19} = (1, 15, 20, 4, 19)$

$P_{20} = (1, 8, 9, 16, 19)$

$P_{21} = (1, 4, 18, 13, 10)$

$P_{22} = (1, 26, 13, 2, 19)$

$P_{23} = (1, 24, 2, 15, 18)$

$P_{24} = (1, 22, 26, 8, 19)$

$P_{25} = (1, 9, 10, 7, 16)$

$P_{26} = (1, 25, 18, 28, 16)$

$P_{27} = (1, 19, 23, 4, 21)$

$P_{28} = (1, 2, 22, 11, 17)$

$P_{29} = (1, 2, 23, 2, 20)$

$P_{30} = (1, 11, 6, 5, 4)$

Stabilizer of order 6 is generated by:

$$g_1 = \begin{pmatrix} 13 & 9 & 13 & 22 & 20 \\ 21 & 6 & 2 & 17 & 16 \\ 19 & 12 & 6 & 11 & 16 \\ 10 & 16 & 16 & 17 & 20 \\ 11 & 11 & 17 & 16 & 17 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 17 & 17 & 13 & 9 & 24 \\ 21 & 22 & 19 & 26 & 6 \\ 23 & 21 & 22 & 28 & 5 \\ 12 & 5 & 6 & 28 & 0 \\ 19 & 28 & 26 & 16 & 28 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 6 and is generated by:

g_1 =(1, 13)(2, 18)(3, 25)(5, 12)(6, 10)(7, 19)(8, 11)(9, 27)(14, 24)(15, 26)(16, 23)(20, 29)(21, 30)(22, 28)

g_2 =(1, 27)(2, 30)(3, 22)(4, 15)(5, 7)(8, 19)(9, 14)(10, 17)(11, 12)(13, 24)(16, 18)(20, 25)(21, 23)(28, 29)

Kernel has order 1 and is generated by:

There are 6 orbits on the BLT set.

The orbit length are $[6^4, 3^2]$

The orbits are:

$O_0 = \{1, 9, 13, 14, 24, 27\}$ (length 6)

$O_1 = \{2, 16, 18, 21, 23, 30\}$ (length 6)

$O_2 = \{3, 20, 22, 25, 28, 29\}$ (length 6)

$O_3 = \{4, 15, 26\}$ (length 3)

$O_4 = \{5, 7, 8, 11, 12, 19\}$ (length 6)

$O_5 = \{6, 10, 17\}$ (length 3)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 9, 13, 14, 24, 27\}$ (length 6)

The induced group has order 6 and is generated by:

g_1 =(1, 3)(2, 6)(4, 5)

g_2 =(1, 6)(2, 4)(3, 5)

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{2, 16, 18, 21, 23, 30\}$ (length 6)

The induced group has order 6 and is generated by:

g_1 =(1, 3)(2, 5)(4, 6)

g_2 =(1, 6)(2, 3)(4, 5)

Kernel has order 1 and is generated by:

Induced action on orbit $O_2 = \{3, 20, 22, 25, 28, 29\}$ (length 6)

The induced group has order 6 and is generated by:

g_1 =(1, 4)(2, 6)(3, 5)

g_2 =(1, 3)(2, 4)(5, 6)

Kernel has order 1 and is generated by:

Induced action on orbit $O_3 = \{4, 15, 26\}$ (length 3)

The induced group has order 6 and is generated by:

g_1 =(2, 3)

g_2 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_4 = \{5, 7, 8, 11, 12, 19\}$ (length 6)

The induced group has order 6 and is generated by:

g_1 =(1, 5)(2, 6)(3, 4)

g_2 =(1, 2)(3, 6)(4, 5)

Kernel has order 1 and is generated by:

Induced action on orbit $O_5 = \{6, 10, 17\}$ (length 3)

The induced group has order 6 and is generated by:

g_1 =(1, 2)

g_2 =(2, 3)

Kernel has order 1 and is generated by: