1 BLT set 2 over $\mathbf{GF}(27)$

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

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

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

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

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

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

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

$P_7 = (0, 1, 9, 6, 3)$

$P_8 = (0, 1, 15, 18, 9)$

$P_9 = (0, 1, 11, 13, 26)$

$P_{10} = (0, 1, 12, 23, 16)$

$P_{11} = (0, 1, 6, 22, 17)$

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

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

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

$P_{15} = (1, 25, 7, 24, 13)$

$P_{16} = (1, 24, 18, 22, 10)$

$P_{17} = (1, 3, 26, 14, 17)$

$P_{18} = (1, 17, 19, 20, 7)$

$P_{19} = (1, 18, 17, 24, 15)$

$P_{20} = (1, 11, 15, 26, 7)$

$P_{21} = (1, 9, 22, 15, 24)$

$P_{22} = (1, 10, 2, 15, 25)$

$P_{23} = (1, 20, 1, 25, 15)$

$P_{24} = (1, 12, 9, 10, 22)$

$P_{25} = (1, 22, 11, 7, 20)$

$P_{26} = (1, 6, 13, 17, 14)$

$P_{27} = (1, 19, 21, 7, 26)$

$P_{28} = (1, 14, 5, 13, 24)$

Stabilizer of order 4704 is generated by:

$$g_1 = \begin{pmatrix} 11 & 0 & 0 & 16 & 16 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 23 & 0 & 0 & 9 & 10 \\ 23 & 0 & 0 & 10 & 9 \end{pmatrix}, 0$$

$$g_2 = \begin{pmatrix} 12 & 0 & 0 & 9 & 9 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 18 & 0 & 0 & 13 & 14 \\ 18 & 0 & 0 & 14 & 13 \end{pmatrix}, 0$$

$$g_3 = \begin{pmatrix} 12 & 0 & 0 & 18 & 18 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 9 & 0 & 0 & 13 & 14 \\ 9 & 0 & 0 & 14 & 13 \end{pmatrix}, 0$$

$$g_4 = \begin{pmatrix} 18 & 0 & 0 & 12 & 12 \\ 0 & 1 & 1 & 2 & 1 \\ 0 & 0 & 1 & 0 & 0 \\ 12 & 0 & 1 & 10 & 11 \\ 12 & 0 & 2 & 11 & 10 \end{pmatrix}, 0$$

$$g_5 = \begin{pmatrix} 13 & 0 & 0 & 15 & 15 \\ 0 & 8 & 12 & 7 & 5 \\ 0 & 0 & 15 & 0 & 0 \\ 15 & 0 & 22 & 25 & 24 \\ 15 & 0 & 17 & 24 & 25 \end{pmatrix}, 2$$

$$g_6 = \begin{pmatrix} 26 & 0 & 0 & 15 & 15 \\ 0 & 11 & 12 & 25 & 14 \\ 0 & 13 & 11 & 4 & 8 \\ 15 & 8 & 14 & 4 & 22 \\ 15 & 4 & 25 & 22 & 4 \end{pmatrix}, 0$$

$$g_7 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 9 & 0 & 0 & 0 \\ 0 & 15 & 25 & 6 & 3 \\ 0 & 5 & 0 & 0 & 1 \\ 0 & 7 & 0 & 1 & 0 \end{pmatrix}, 1$$

$$g_8 = \begin{pmatrix} 0 & 11 & 15 & 17 & 22 \\ 7 & 25 & 15 & 18 & 16 \\ 11 & 13 & 11 & 22 & 8 \\ 13 & 18 & 18 & 21 & 18 \\ 26 & 17 & 10 & 8 & 19 \end{pmatrix}, 1$$

Induced action on the BLT-set:

The induced group has order 4704 and is generated by:

$g_1 =$(15, 21)(16, 24)(17, 22)(18, 20)(19, 28)(23, 26)(25, 27)

$g_2 =$(15, 24)(16, 28)(17, 20)(18, 19)(21, 25)(22, 23)(26, 27)

$g_3 =$(15, 25)(16, 26)(17, 24)(18, 28)(19, 22)(21, 23)

$g_4 =$(1, 3)(5, 8)(6, 10)(7, 13)(9, 14)(11, 12)(15, 16, 19, 20, 22, 26, 25)(17, 18, 28, 24, 21, 27, 23)

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

$g_6 =$(1, 5)(2, 13)(3, 6)(4, 8)(7, 12)(9, 11)(10, 14)(15, 22, 16, 26, 19, 25, 20)(17, 21, 18, 27, 28, 23, 24)

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

g_8 =(1, 15, 7, 25, 4, 22)(2, 23, 12, 28, 5, 18)(3, 16)(6, 17, 8, 21, 10, 27)(9, 26, 13, 19, 14, 20)(11, 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)