1 BLT set 2 over GF(31)

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

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

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

$P_3 = (0, 1, 10, 30, 10)$

$P_4 = (0, 1, 18, 15, 5)$

$P_5 = (0, 1, 8, 10, 24)$

$P_6 = (0, 1, 20, 23, 18)$

$P_7 = (0, 1, 28, 3, 1)$

$P_8 = (0, 1, 2, 26, 19)$

$P_9 = (0, 1, 19, 6, 2)$

$P_{10} = (0, 1, 14, 19, 27)$

$P_{11} = (0, 1, 2, 5, 12)$

$P_{12} = (0, 1, 14, 12, 4)$

$P_{13} = (0, 1, 20, 8, 13)$

$P_{14} = (0, 1, 16, 18, 6)$

$P_{15} = (0, 1, 4, 9, 3)$

$P_{16} = (0, 1, 16, 13, 25)$

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

$P_{18} = (1, 1, 1, 14, 22)$

$P_{19} = (1, 10, 10, 20, 12)$

$P_{20} = (1, 23, 23, 17, 29)$

$P_{21} = (1, 18, 18, 8, 2)$

$P_{22} = (1, 21, 21, 26, 14)$

$P_{23} = (1, 13, 13, 25, 18)$

$P_{24} = (1, 4, 4, 18, 18)$

$P_{25} = (1, 8, 8, 6, 15)$

$P_{26} = (1, 27, 27, 8, 25)$

$P_{27} = (1, 25, 25, 27, 17)$

$P_{28} = (1, 22, 22, 19, 12)$

$P_{29} = (1, 19, 19, 19, 25)$

$P_{30} = (1, 12, 12, 18, 4)$

$P_{31} = (1, 30, 30, 27, 16)$

$P_{32} = (1, 9, 9, 26, 4)$

Stabilizer of order 2048 is generated by:

$$g_1 = \begin{pmatrix} 0 & 0 & 0 & 20 & 14 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 24 & 0 & 0 & 16 & 26 \\ 21 & 0 & 0 & 17 & 16 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 26 & 0 & 0 & 17 & 15 \\ 0 & 2 & 5 & 30 & 10 \\ 0 & 25 & 2 & 6 & 2 \\ 23 & 2 & 10 & 1 & 9 \\ 24 & 6 & 30 & 19 & 1 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 11 & 0 & 0 & 9 & 28 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 0 & 30 & 0 & 0 \\ 14 & 0 & 0 & 25 & 12 \\ 20 & 0 & 0 & 15 & 25 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 5 & 0 & 0 & 17 & 15 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 0 & 30 & 0 & 0 \\ 23 & 0 & 0 & 28 & 11 \\ 24 & 0 & 0 & 6 & 28 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 18 & 0 & 0 & 16 & 5 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 13 & 0 & 0 & 25 & 23 \\ 23 & 0 & 0 & 21 & 25 \end{pmatrix}$$

$$g_6 = \begin{pmatrix} 21 & 0 & 0 & 24 & 23 \\ 0 & 0 & 30 & 0 & 0 \\ 0 & 30 & 0 & 0 & 0 \\ 27 & 0 & 0 & 20 & 24 \\ 12 & 0 & 0 & 30 & 20 \end{pmatrix}$$

$$g_7 = \begin{pmatrix} 10 & 0 & 0 & 24 & 23 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 16 & 1 & 18 & 6 \\ 27 & 6 & 0 & 10 & 17 \\ 12 & 18 & 0 & 29 & 10 \end{pmatrix}$$

$$g_8 = \begin{pmatrix} 0 & 4 & 12 & 18 & 6 \\ 29 & 5 & 5 & 12 & 26 \\ 25 & 5 & 5 & 24 & 22 \\ 28 & 4 & 8 & 17 & 14 \\ 22 & 16 & 4 & 2 & 5 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 2048 and is generated by:

g_1 =(17, 19, 27, 22)(18, 26, 31, 24)(20, 28, 25, 32)(21, 30, 23, 29)

g_2 =(1, 4)(2, 3)(5, 6)(9, 10)(11, 12)(13, 14)(15, 16)(18, 24)(19, 22)(20, 23)(21, 25)(26, 31)(28, 30)(29, 32)

g_3 =(17, 29)(18, 25)(19, 23)(20, 31)(21, 22)(24, 32)(26, 28)(27, 30)

g_4 =(17, 28)(18, 30)(19, 20)(21, 26)(22, 25)(23, 24)(27, 32)(29, 31)

g_5 =(17, 30, 24, 20, 22, 21, 31, 32, 27, 29, 26, 25, 19, 23, 18, 28)

g_6 =(1, 2)(3, 7)(4, 9)(5, 15)(6, 12)(8, 16)(10, 13)(11, 14)(17, 20)(18, 21)(19, 32)(22, 28)(23, 31)(24, 30)(25, 27)(26, 29)

g_7 =(2, 11)(3, 9)(4, 6)(7, 13)(8, 14)(10, 15)(12, 16)(17, 19)(20, 29)(21, 32)(22, 27)(23, 28)(24, 26)(25, 30)

g_8 =(1, 23, 15, 17)(2, 27, 5, 21)(3, 31, 8, 32)(4, 30, 12, 19)(6, 29, 9, 22)(7, 28, 16, 18)(10, 26, 14, 20)(11, 24, 13, 25)

Kernel has order 1 and is generated by:

There are 1 orbits on the BLT set.

The orbit length are [32]

The orbits are:

$O_0 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32\}$ (length 32)