1 BLT set 6 over GF(31)

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

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

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

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

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

$P_5 = (0, 1, 19, 6, 2)$

$P_6 = (0, 1, 1, 12, 18)$

$P_7 = (1, 12, 29, 13, 28)$

$P_8 = (1, 25, 25, 23, 24)$

$P_9 = (1, 29, 29, 5, 30)$

$P_{10} = (1, 22, 17, 25, 16)$

$P_{11} = (1, 24, 17, 12, 15)$

$P_{12} = (1, 2, 18, 3, 29)$

$P_{13} = (1, 10, 16, 12, 15)$

$P_{14} = (1, 3, 6, 24, 16)$

$P_{15} = (1, 28, 7, 2, 10)$

$P_{16} = (1, 26, 6, 26, 19)$

$P_{17} = (1, 10, 14, 20, 10)$

$P_{18} = (1, 30, 29, 4, 7)$

$P_{19} = (1, 25, 1, 11, 23)$

$P_{20} = (1, 17, 21, 16, 28)$

$P_{21} = (1, 30, 11, 24, 3)$

$P_{22} = (1, 26, 29, 3, 17)$

$P_{23} = (1, 1, 19, 3, 14)$

$P_{24} = (1, 8, 10, 10, 26)$

$P_{25} = (1, 28, 10, 24, 18)$

$P_{26} = (1, 15, 29, 17, 9)$

$P_{27} = (1, 5, 1, 20, 9)$

$P_{28} = (1, 13, 3, 30, 9)$

$P_{29} = (1, 4, 2, 7, 12)$

$P_{30} = (1, 14, 8, 16, 22)$

$P_{31} = (1, 30, 21, 26, 27)$

$P_{32} = (1, 5, 10, 21, 2)$

Stabilizer of order 4 is generated by:

$$g_1 = \begin{pmatrix} 10 & 29 & 8 & 20 & 16 \\ 29 & 2 & 9 & 14 & 25 \\ 19 & 2 & 19 & 8 & 16 \\ 27 & 1 & 10 & 6 & 6 \\ 18 & 26 & 3 & 6 & 26 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 4 and is generated by:

g_1 =(1, 21, 32, 25)(2, 27, 12, 9)(3, 6, 24, 14)(4, 20, 10, 8)(5, 22, 7, 16)(11, 17, 31, 26)(13, 29, 28, 30)(15, 18, 19, 23)

Kernel has order 1 and is generated by:

There are 8 orbits on the BLT set.

The orbit length are $[4^8]$

The orbits are:

$O_0 = \{1, 21, 25, 32\}$ (length 4)

$O_1 = \{2, 9, 12, 27\}$ (length 4)

$O_2 = \{3, 6, 14, 24\}$ (length 4)

$O_3 = \{4, 8, 10, 20\}$ (length 4)

$O_4 = \{5, 7, 16, 22\}$ (length 4)

$O_5 = \{11, 17, 26, 31\}$ (length 4)

$O_6 = \{13, 28, 29, 30\}$ (length 4)

$O_7 = \{15, 18, 19, 23\}$ (length 4)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 21, 25, 32\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 2, 4, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{2, 9, 12, 27\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 4, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_2 = \{3, 6, 14, 24\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 2, 4, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_3 = \{4, 8, 10, 20\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 4, 3, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_4 = \{5, 7, 16, 22\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 4, 2, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_5 = \{11, 17, 26, 31\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 2, 4, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_6 = \{13, 28, 29, 30\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 3, 2, 4)

Kernel has order 1 and is generated by:

Induced action on orbit $O_7 = \{15, 18, 19, 23\}$ (length 4)

The induced group has order 4 and is generated by:

g_1 =(1, 2, 3, 4)

Kernel has order 1 and is generated by: