1 BLT set 1 over GF(11)

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

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

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

$P_3 = (0, 1, 5, 10, 5)$

$P_4 = (0, 1, 4, 5, 8)$

$P_5 = (0, 1, 3, 7, 9)$

$P_6 = (0, 1, 1, 3, 7)$

$P_7 = (0, 1, 1, 8, 4)$

$P_8 = (0, 1, 5, 1, 6)$

$P_9 = (0, 1, 9, 2, 1)$

$P_{10} = (0, 1, 4, 6, 3)$

$P_{11} = (0, 1, 9, 9, 10)$

$P_{12} = (0, 1, 3, 4, 2)$

Stabilizer of order 31680 is generated by:

$$g_1 = \begin{pmatrix} 0 & 0 & 0 & 3 & 4 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 2 & 0 & 0 & 6 & 3 \\ 7 & 0 & 0 & 1 & 6 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 5 & 0 & 0 & 2 & 10 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 6 & 0 & 0 & 3 & 10 \\ 10 & 0 & 0 & 7 & 3 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 10 & 0 & 0 & 0 \\ 0 & 0 & 10 & 0 & 0 \\ 0 & 0 & 0 & 10 & 0 \\ 0 & 0 & 0 & 0 & 10 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 4 & 1 & 6 & 3 \\ 0 & 3 & 0 & 0 & 5 \\ 0 & 6 & 0 & 9 & 0 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 5 & 0 & 0 & 9 & 1 \\ 0 & 10 & 6 & 1 & 6 \\ 0 & 0 & 10 & 0 & 0 \\ 5 & 0 & 6 & 3 & 10 \\ 1 & 0 & 1 & 7 & 3 \end{pmatrix}$$

$$g_6 = \begin{pmatrix} 6 & 0 & 0 & 9 & 1 \\ 0 & 5 & 0 & 0 & 0 \\ 0 & 5 & 9 & 3 & 7 \\ 5 & 9 & 0 & 9 & 7 \\ 1 & 7 & 0 & 6 & 9 \end{pmatrix}$$

$$g_7 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 7 & 0 & 0 & 0 \\ 0 & 0 & 8 & 0 & 0 \\ 0 & 0 & 0 & 10 & 0 \\ 0 & 0 & 0 & 0 & 10 \end{pmatrix}$$

$$g_8 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 8 & 0 & 0 & 0 \\ 0 & 0 & 7 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 1320 and is generated by:

g_1 =id

g_2 =id

g_3 =id

g_4 =(2, 5)(3, 4)(7, 8)(9, 10)(11, 12)

g_5 =(1, 3)(5, 6)(7, 9)(8, 11)(10, 12)

g_6 =(2, 4, 3, 6, 7)(5, 11, 8, 12, 10)

g_7 =(3, 7, 9, 10, 5)(4, 12, 8, 6, 11)

g_8 =(3, 12, 10, 11, 7, 8, 5, 4, 9, 6)

Kernel has order 24 and is generated by:

$$b_1 = \begin{pmatrix} 10 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 6 \\ 0 & 0 & 0 & 2 & 0 \end{pmatrix}$$

$$b_2 = \begin{pmatrix} 8 & 0 & 0 & 7 & 2 \\ 0 & 10 & 0 & 0 & 0 \\ 0 & 0 & 10 & 0 & 0 \\ 10 & 0 & 0 & 9 & 6 \\ 2 & 0 & 0 & 2 & 9 \end{pmatrix}$$

$$b_3 = \begin{pmatrix} 10 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

The kernel has 133 orbits on the quadric.

The orbit length are $[12^{121}, 1^{12}]$

Induced action on orbit $O_2 = \{3, 24, 355, 376, 397, 418, 439, 460, 481, 502, 523, 544\}$ (length 12)

The induced group has order 24 and is generated by:

g_1 =(1, 2)(3, 4)(5, 10)(6, 8)(7, 9)(11, 12)

g_2 =(1, 11, 6, 10, 7, 3, 2, 12, 8, 5, 9, 4)

g_3 =(3, 12)(4, 11)(5, 10)(6, 9)(7, 8)

Kernel has order 1 and is generated by:

There are 1 orbits on the BLT set.

The orbit length are [12]

The orbits are:

$O_0 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$ (length 12)