

1 BLT set 1 over GF(13)

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

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

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

$$P_3 = (0, 1, 6, 12, 6)$$

$$P_4 = (0, 1, 8, 6, 3)$$

$$P_5 = (0, 1, 5, 4, 2)$$

$$P_6 = (0, 1, 7, 8, 4)$$

$$P_7 = (0, 1, 2, 3, 8)$$

$$P_8 = (0, 1, 6, 1, 7)$$

$$P_9 = (0, 1, 7, 5, 9)$$

$$P_{10} = (0, 1, 8, 7, 10)$$

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

$$P_{12} = (0, 1, 5, 9, 11)$$

$$P_{13} = (0, 1, 11, 11, 12)$$

$$P_{14} = (0, 1, 2, 10, 5)$$

Stabilizer of order 61152 is generated by:

$$g_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 12 & 0 & 0 & 0 \\ 0 & 5 & 12 & 7 & 10 \\ 0 & 10 & 0 & 1 & 0 \\ 0 & 7 & 0 & 0 & 1 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 3 & 0 & 0 & 9 & 2 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 12 & 1 \\ 11 & 0 & 0 & 4 & 12 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 9 & 0 & 0 & 2 & 12 \\ 0 & 12 & 0 & 0 & 0 \\ 0 & 0 & 12 & 0 & 0 \\ 6 & 0 & 0 & 8 & 2 \\ 1 & 0 & 0 & 8 & 8 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 12 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 8 & 0 & 0 & 10 & 8 \\ 0 & 12 & 7 & 1 & 7 \\ 0 & 0 & 12 & 0 & 0 \\ 9 & 0 & 7 & 11 & 8 \\ 8 & 0 & 1 & 6 & 11 \end{pmatrix}$$

$$g_6 = \begin{pmatrix} 10 & 0 & 0 & 4 & 11 \\ 0 & 6 & 0 & 0 & 0 \\ 0 & 3 & 11 & 5 & 9 \\ 1 & 11 & 0 & 12 & 1 \\ 11 & 9 & 0 & 4 & 12 \end{pmatrix}$$

$$g_7 = \begin{pmatrix} 12 & 0 & 0 & 0 & 0 \\ 0 & 10 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 \\ 0 & 0 & 0 & 12 & 0 \\ 0 & 0 & 0 & 0 & 12 \end{pmatrix}$$

$$g_8 = \begin{pmatrix} 12 & 0 & 0 & 0 & 0 \\ 0 & 6 & 0 & 0 & 0 \\ 0 & 0 & 11 & 0 & 0 \\ 0 & 0 & 0 & 12 & 0 \\ 0 & 0 & 0 & 0 & 12 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 2184 and is generated by:

$$g_1 = (2, 5)(3, 4)(7, 8)(9, 10)(11, 12)(13, 14)$$

$$g_2 = \text{id}$$

$$g_3 = \text{id}$$

$$g_4 = \text{id}$$

$$g_5 = (1, 3)(5, 6)(7, 12)(8, 13)(9, 10)(11, 14)$$

$$g_6 = (2, 4, 3, 6, 10, 5, 13, 9, 11, 8, 14, 7)$$

$$g_7 = (3, 5, 14)(4, 11, 9)(6, 10, 13)(7, 8, 12)$$

$$g_8 = (3, 13, 12, 9, 14, 10, 8, 11, 5, 6, 7, 4)$$

Kernel has order 28 and is generated by:

$$b_1 = \begin{pmatrix} 10 & 0 & 0 & 4 & 11 \\ 0 & 12 & 0 & 0 & 0 \\ 0 & 0 & 12 & 0 & 0 \\ 1 & 0 & 0 & 11 & 7 \\ 11 & 0 & 0 & 2 & 11 \end{pmatrix}$$

$$b_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 12 & 0 & 0 & 0 \\ 0 & 0 & 12 & 0 & 0 \\ 0 & 0 & 0 & 12 & 0 \\ 0 & 0 & 0 & 0 & 12 \end{pmatrix}$$

The kernel has 183 orbits on the quadric.

The orbit length are $[14^{169}, 1^{14}]$

Induced action on orbit $O_2 = \{3, 28, 497, 522, 547, 572, 597, 622, 647, 672, 697, 722, 747, 772\}$ (length 14)

The induced group has order 28 and is generated by:

$$g_1 = (1, 4, 10, 9, 11, 5, 14, 2, 3, 12, 6, 8, 7, 13)$$

$$g_2 = (3, 14)(4, 13)(5, 12)(6, 11)(7, 10)(8, 9)$$

Kernel has order 1 and is generated by:

There are 1 orbits on the BLT set.

The orbit length are $[14]$

The orbits are:

$$O_0 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\} \text{ (length 14)}$$