1 BLT set 3 over GF(17)

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

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

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

$P_3 = (0, 1, 11, 16, 11)$

$P_4 = (0, 1, 7, 8, 14)$

$P_5 = (0, 1, 12, 10, 9)$

$P_6 = (0, 1, 5, 6, 2)$

$P_7 = (1, 3, 2, 10, 1)$

$P_8 = (1, 5, 8, 10, 1)$

$P_9 = (1, 14, 9, 6, 10)$

$P_{10} = (1, 5, 8, 3, 9)$

$P_{11} = (1, 14, 9, 13, 2)$

$P_{12} = (1, 3, 2, 3, 9)$

$P_{13} = (1, 6, 13, 1, 6)$

$P_{14} = (1, 12, 15, 8, 5)$

$P_{15} = (1, 10, 4, 8, 14)$

$P_{16} = (1, 12, 15, 15, 14)$

$P_{17} = (1, 11, 1, 7, 8)$

$P_{18} = (1, 7, 16, 1, 6)$

Stabilizer of order 144 is generated by:

$$g_1 = \begin{pmatrix} 9 & 0 & 0 & 11 & 2 \\ 0 & 2 & 14 & 16 & 11 \\ 0 & 11 & 0 & 0 & 0 \\ 16 & 2 & 0 & 4 & 4 \\ 3 & 6 & 0 & 2 & 4 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 6 \\ 0 & 0 & 0 & 3 & 0 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 8 & 0 & 0 & 6 & 15 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 13 & 13 \\ 14 & 0 & 0 & 15 & 13 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 8 & 0 & 0 & 11 & 2 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 12 & 16 & 11 & 15 \\ 1 & 15 & 0 & 5 & 10 \\ 14 & 11 & 0 & 5 & 5 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 4 & 0 & 0 & 0 \\ 0 & 11 & 13 & 8 & 14 \\ 0 & 5 & 0 & 16 & 0 \\ 0 & 15 & 0 & 0 & 16 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 144 and is generated by:

$g_1 =(1, 4, 3, 2)(7, 15, 10, 16, 18, 9, 8, 17, 12, 11, 13, 14)$

$g_2 =(7, 12)(8, 10)(9, 11)(14, 16)$

$g_3 =(7, 18, 12)(8, 13, 10)(9, 11, 15)(14, 16, 17)$

$g_4 =(2, 4)(5, 6)(7, 17)(8, 15)(9, 10)(11, 13)(12, 14)(16, 18)$

$g_5 =(2, 5, 4, 6)(7, 9, 16, 10)(8, 12, 11, 14)(13, 18, 15, 17)$

Kernel has order 1 and is generated by:

There are 2 orbits on the BLT set.

The orbit length are $[12, 6]$

The orbits are:

$O_0 = \{1, 2, 3, 4, 5, 6\}$ (length 6)

$O_1 = \{7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$ (length 12)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 2, 3, 4, 5, 6\}$ (length 6)

The induced group has order 24 and is generated by:

$g_1 =$(1, 4, 3, 2)

$g_2 =$id

$g_3 =$id

$g_4 =$(2, 4)(5, 6)

$g_5 =$(2, 5, 4, 6)

Kernel has order 6 and is generated by:

$$b_1 = \begin{pmatrix} 9 & 0 & 0 & 6 & 15 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 0 & 16 & 0 & 0 \\ 16 & 0 & 0 & 12 & 7 \\ 3 & 0 & 0 & 12 & 12 \end{pmatrix}$$

$$b_2 = \begin{pmatrix} 8 & 0 & 0 & 11 & 2 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 16 & 0 & 0 & 13 & 13 \\ 3 & 0 & 0 & 15 & 13 \end{pmatrix}$$

The kernel has 1021 orbits on the quadric.

The orbit length are $[6^{731}, 3^{272}, 1^{18}]$

Induced action on orbit $O_{171} = \{325, 2300, 4460\}$ (length 3)

The induced group has order 6 and is generated by:

g_1 =(1, 2)

g_2 =(1, 2, 3)

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$ (length 12)

The induced group has order 144 and is generated by:

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

g_2 =(1, 6)(2, 4)(3, 5)(8, 10)

g_3 =(1, 12, 6)(2, 7, 4)(3, 5, 9)(8, 10, 11)

g_4 =(1, 11)(2, 9)(3, 4)(5, 7)(6, 8)(10, 12)

g_5 =(1, 3, 10, 4)(2, 6, 5, 8)(7, 12, 9, 11)

Kernel has order 1 and is generated by: