

1 BLT set 5 over GF(17)

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

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

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

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

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

$$P_5 = (0, 1, 10, 5, 15)$$

$$P_6 = (0, 1, 10, 11, 13)$$

$$P_7 = (1, 1, 12, 7, 3)$$

$$P_8 = (1, 16, 5, 8, 9)$$

$$P_9 = (1, 5, 13, 3, 12)$$

$$P_{10} = (1, 15, 10, 4, 9)$$

$$P_{11} = (1, 12, 13, 8, 8)$$

$$P_{12} = (1, 11, 1, 7, 8)$$

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

$$P_{14} = (1, 11, 9, 5, 14)$$

$$P_{15} = (1, 2, 11, 2, 14)$$

$$P_{16} = (1, 9, 7, 5, 11)$$

$$P_{17} = (1, 8, 3, 14, 14)$$

$$P_{18} = (1, 6, 16, 16, 12)$$

Stabilizer of order 32 is generated by:

$$g_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 16 & 6 & 1 & 6 \\ 0 & 0 & 16 & 0 & 0 \\ 0 & 0 & 6 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 5 & 0 & 0 & 2 & 5 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 12 & 16 & 11 & 15 \\ 11 & 15 & 0 & 15 & 1 \\ 1 & 11 & 0 & 9 & 15 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 12 & 1 & 13 & 3 \\ 0 & 9 & 12 & 4 & 7 \\ 0 & 7 & 3 & 5 & 6 \\ 0 & 4 & 13 & 10 & 5 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 32 and is generated by:

$$g_1 = (1, 3)(5, 6)(7, 8)(9, 11)(10, 15)(12, 13)(14, 18)(16, 17)$$

$$g_2 = (2, 4)(5, 7)(6, 8)(9, 11)(10, 12)(13, 15)(14, 16)(17, 18)$$

$$g_3 = (1, 6)(2, 4)(3, 5)(7, 12)(8, 13)(9, 17)(10, 14)(11, 16)(15, 18)$$

Kernel has order 1 and is generated by:

There are 2 orbits on the BLT set.

The orbit length are [16, 2]

The orbits are:

$$O_0 = \{1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\} \text{ (length 16)}$$

$$O_1 = \{2, 4\} \text{ (length 2)}$$

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$ (length 16)

The induced group has order 32 and is generated by:

$$g_1 = (1, 2)(3, 4)(5, 6)(7, 9)(8, 13)(10, 11)(12, 16)(14, 15)$$

$$g_2 = (3, 5)(4, 6)(7, 9)(8, 10)(11, 13)(12, 14)(15, 16)$$

$$g_3 = (1, 4)(2, 3)(5, 10)(6, 11)(7, 15)(8, 12)(9, 14)(13, 16)$$

Kernel has order 1 and is generated by:

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

The induced group has order 2 and is generated by:

$$g_1 = \text{id}$$

$$g_2 = (1, 2)$$

$$g_3 = (1, 2)$$

Kernel has order 16 and is generated by:

$$b_1 = \begin{pmatrix} 5 & 0 & 3 & 9 & 3 \\ 0 & 5 & 16 & 4 & 14 \\ 0 & 0 & 7 & 0 & 0 \\ 11 & 0 & 5 & 8 & 4 \\ 1 & 0 & 12 & 15 & 9 \end{pmatrix}$$

The kernel has 331 orbits on the quadric.

The orbit length are $[16^{325}, 8^2, 1^4]$

Induced action on orbit $O_{21} = \{22, 1015, 1043, 1074, 1141, 1207, 1235, 1279\}$ (length 8)

The induced group has order 8 and is generated by:

$$g_1 = (1, 4, 3, 8, 5, 2, 7, 6)$$

Kernel has order 2 and is generated by:

$$b_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 16 & 6 & 1 & 6 \\ 0 & 0 & 16 & 0 & 0 \\ 0 & 0 & 6 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 \end{pmatrix}$$

The kernel has 2620 orbits on the quadric.

The orbit length are $[2^{2600}, 1^{20}]$

Induced action on orbit $O_0 = \{1, 101\}$ (length 2)

The induced group has order 2 and is generated by:

$$g_1 = (1, 2)$$

Kernel has order 1 and is generated by: