

1 BLT set 1 over GF(43)

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

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

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

$$P_3 = (0, 1, 21, 42, 21)$$

$$P_4 = (0, 1, 16, 21, 32)$$

$$P_5 = (0, 1, 31, 14, 7)$$

$$P_6 = (0, 1, 4, 32, 16)$$

$$P_7 = (0, 1, 38, 15, 29)$$

$$P_8 = (0, 1, 14, 31, 37)$$

$$P_9 = (0, 1, 25, 6, 3)$$

$$P_{10} = (0, 1, 41, 2, 1)$$

$$P_{11} = (0, 1, 25, 37, 40)$$

$$P_{12} = (0, 1, 13, 19, 31)$$

$$P_{13} = (0, 1, 17, 3, 23)$$

$$P_{14} = (0, 1, 41, 41, 42)$$

$$P_{15} = (0, 1, 10, 25, 34)$$

$$P_{16} = (0, 1, 9, 5, 24)$$

$$P_{17} = (0, 1, 24, 9, 26)$$

$$P_{18} = (0, 1, 15, 23, 33)$$

$$P_{19} = (0, 1, 17, 40, 20)$$

$$P_{20} = (0, 1, 35, 4, 2)$$

$$P_{21} = (0, 1, 1, 27, 35)$$

$$P_{22} = (0, 1, 21, 1, 22)$$

$$P_{23} = (0, 1, 6, 17, 30)$$

$$P_{24} = (0, 1, 40, 7, 25)$$

$$P_{25} = (0, 1, 1, 16, 8)$$

$$P_{26} = (0, 1, 23, 30, 15)$$

$$P_{27} = (0, 1, 35, 39, 41)$$

$$P_{28} = (0, 1, 36, 33, 38)$$

$$P_{29} = (0, 1, 15, 20, 10)$$

$$P_{30} = (0, 1, 11, 8, 4)$$

$$P_{31} = (0, 1, 38, 28, 14)$$

$$P_{32} = (0, 1, 24, 34, 17)$$

$$P_{33} = (0, 1, 14, 12, 6)$$

$$P_{34} = (0, 1, 9, 38, 19)$$

$$P_{35} = (0, 1, 11, 35, 39)$$

$$P_{36} = (0, 1, 36, 10, 5)$$

$$P_{37} = (0, 1, 10, 18, 9)$$

$$P_{38} = (0, 1, 23, 13, 28)$$

$$P_{39} = (0, 1, 13, 24, 12)$$

$$P_{40} = (0, 1, 40, 36, 18)$$

$$P_{41} = (0, 1, 6, 26, 13)$$

$$P_{42} = (0, 1, 4, 11, 27)$$

$$P_{43} = (0, 1, 31, 29, 36)$$

$$P_{44} = (0, 1, 16, 22, 11)$$

Stabilizer of order 6992832 is generated by:

$$g_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 42 & 0 & 0 & 0 \\ 0 & 0 & 42 & 0 & 0 \\ 0 & 0 & 0 & 42 & 0 \\ 0 & 0 & 0 & 0 & 42 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 20 & 0 & 0 & 29 & 7 \\ 0 & 42 & 0 & 0 & 0 \\ 0 & 32 & 42 & 35 & 39 \\ 25 & 39 & 0 & 12 & 16 \\ 36 & 35 & 0 & 21 & 12 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 40 & 0 & 0 & 4 & 41 \\ 0 & 41 & 11 & 1 & 22 \\ 0 & 36 & 41 & 31 & 37 \\ 1 & 37 & 22 & 1 & 2 \\ 41 & 31 & 1 & 8 & 1 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 32 & 0 & 0 & 5 & 19 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 12 & 0 & 0 & 38 & 3 \\ 19 & 0 & 0 & 12 & 38 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 0 & 0 & 0 & 27 & 8 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 4 & 0 & 0 & 22 & 11 \\ 35 & 0 & 0 & 1 & 22 \end{pmatrix}$$

$$g_6 = \begin{pmatrix} 25 & 0 & 0 & 42 & 22 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 25 & 1 & 6 & 3 \\ 11 & 3 & 0 & 30 & 6 \\ 21 & 6 & 0 & 24 & 30 \end{pmatrix}$$

$$g_7 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 18 & 0 & 0 & 0 \\ 0 & 0 & 12 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

The induced group has order 79464 and is generated by:

$$g_1 = \text{id}$$

$$g_2 = (2, 6)(3, 5)(7, 35)(8, 19)(9, 43)(10, 34)(11, 27)(12, 41)(13, 38)(14, 33)(15, 21)(16, 36)(17, 18)(20, 29)(22, 23)(24, 44)(25, 42)(26, 40)(28, 39)(30, 37)(31, 32)$$

$$g_3 = (1, 4)(2, 5)(3, 6)(7, 10)(9, 11)(12, 13)(14, 20)(15, 17)(16, 22)(18, 21)(23, 36)(24, 31)(25, 30)(26, 39)(27, 43)(28, 40)(29, 33)(32, 44)(34, 35)(37, 42)(38, 41)$$

$$g_4 = \text{id}$$

$$g_5 = \text{id}$$

$$g_6 = (2, 5)(3, 4)(6, 22)(7, 34)(8, 18)(9, 42)(10, 33)(11, 26)(12, 40)(13, 20)(14, 32)(15, 39)(16, 19)(17, 35)(21, 27)(23, 44)(24, 43)(25, 41)(28, 38)(29, 37)(30, 36)$$

$$g_7 = (3, 8, 31, 35, 28, 17, 44, 9, 43, 20, 16, 23, 6, 19, 24, 14, 12, 38, 21, 18, 37, 22, 33, 7, 30, 36, 32, 4, 11, 5, 27, 34, 41, 42, 13, 40, 10, 39, 26, 25, 29, 15)$$

Kernel has order 88 and is generated by:

$$b_1 = \begin{pmatrix} 36 & 0 & 0 & 15 & 14 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 36 & 0 & 0 & 40 & 2 \\ 14 & 0 & 0 & 8 & 40 \end{pmatrix}$$

$$b_2 = \begin{pmatrix} 34 & 0 & 0 & 17 & 13 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 28 & 0 & 0 & 5 & 41 \\ 30 & 0 & 0 & 35 & 5 \end{pmatrix}$$

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

$$b_4 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$b_5 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 42 & 0 & 0 & 0 \\ 0 & 0 & 42 & 0 & 0 \\ 0 & 0 & 0 & 42 & 0 \\ 0 & 0 & 0 & 0 & 42 \end{pmatrix}$$

The kernel has 1893 orbits on the quadric.

The orbit length are $[44^{1849}, 1^{44}]$

There are 1 orbits on the BLT set.

The orbit length are [44]

The orbits are:

$O_0 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34,$
(length 44)