

1 BLT set 8 over GF(31)

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

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

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

$$P_3 = (0, 1, 10, 30, 10)$$

$$P_4 = (0, 1, 18, 15, 5)$$

$$P_5 = (0, 1, 4, 10, 12)$$

$$P_6 = (0, 1, 1, 25, 26)$$

$$P_7 = (1, 8, 7, 9, 4)$$

$$P_8 = (1, 29, 27, 25, 17)$$

$$P_9 = (1, 19, 1, 20, 30)$$

$$P_{10} = (1, 4, 14, 5, 1)$$

$$P_{11} = (1, 7, 4, 13, 24)$$

$$P_{12} = (1, 17, 30, 26, 3)$$

$$P_{13} = (1, 20, 20, 22, 17)$$

$$P_{14} = (1, 27, 11, 20, 13)$$

$$P_{15} = (1, 19, 2, 11, 19)$$

$$P_{16} = (1, 8, 16, 16, 21)$$

$$P_{17} = (1, 16, 8, 16, 21)$$

$$P_{18} = (1, 27, 26, 9, 8)$$

$$P_{19} = (1, 11, 23, 30, 6)$$

$$P_{20} = (1, 29, 15, 18, 24)$$

$$P_{21} = (1, 17, 17, 25, 7)$$

$$P_{22} = (1, 21, 13, 6, 6)$$

$$P_{23} = (1, 25, 10, 18, 5)$$

$$P_{24} = (1, 7, 14, 26, 26)$$

$$P_{25} = (1, 12, 11, 8, 26)$$

$$P_{26} = (1, 7, 10, 16, 13)$$

$$P_{27} = (1, 14, 1, 22, 12)$$

$$P_{28} = (1, 25, 16, 14, 9)$$

$$P_{29} = (1, 1, 1, 16, 27)$$

$$P_{30} = (1, 9, 14, 24, 27)$$

$$P_{31} = (1, 15, 17, 4, 29)$$

$$P_{32} = (1, 11, 29, 13, 4)$$

Stabilizer of order 64 is generated by:

$$g_1 = \begin{pmatrix} 20 & 0 & 0 & 22 & 3 \\ 0 & 29 & 26 & 1 & 21 \\ 0 & 6 & 29 & 25 & 29 \\ 17 & 29 & 21 & 7 & 9 \\ 11 & 25 & 1 & 19 & 7 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 29 & 0 & 0 & 11 & 11 \\ 24 & 6 & 12 & 12 & 8 \\ 11 & 21 & 26 & 21 & 14 \\ 16 & 12 & 12 & 7 & 27 \\ 13 & 5 & 5 & 25 & 22 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 17 & 22 & 0 & 4 & 21 \\ 0 & 30 & 0 & 0 & 0 \\ 11 & 15 & 30 & 7 & 7 \\ 26 & 7 & 0 & 23 & 7 \\ 2 & 7 & 0 & 16 & 23 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 64 and is generated by:

$$g_1 = (1, 4)(2, 3)(5, 29)(6, 7)(8, 18)(9, 31)(10, 16)(11, 14)(13, 17)(15, 30)(19, 23)(20, 26)(21, 32)(22, 28)(24, 25)$$

$$g_2 = (1, 16, 7, 30, 21, 25, 9, 19, 26, 12, 20, 23, 31, 24, 32, 15, 6, 10, 4, 2, 17, 14, 29, 18, 28, 27, 22, 8, 5, 11, 13, 3)$$

$$g_3 = (2, 24)(3, 16)(4, 32)(5, 21)(7, 13)(8, 25)(9, 22)(10, 15)(11, 30)(12, 18)(14, 23)(17, 31)(19, 27)(20, 29)(26, 28)$$

Kernel has order 1 and is generated by:

There are 1 orbits on the BLT set.

The orbit length are [32]

The orbits are:

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

(length 32)