1 BLT set 3 over GF(41)

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

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

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

$P_3 = (0, 1, 27, 40, 27)$

$P_4 = (0, 1, 17, 20, 34)$

$P_5 = (0, 1, 6, 8, 30)$

$P_6 = (0, 1, 22, 27, 25)$

$P_7 = (0, 1, 38, 14, 9)$

$P_8 = (1, 23, 6, 15, 29)$

$P_9 = (1, 25, 6, 20, 15)$

$P_{10} = (1, 17, 10, 34, 1)$

$P_{11} = (1, 21, 6, 2, 39)$

$P_{12} = (1, 39, 11, 20, 40)$

$P_{13} = (1, 37, 24, 28, 40)$

$P_{14} = (1, 24, 18, 36, 21)$

$P_{15} = (1, 18, 6, 28, 21)$

$P_{16} = (1, 9, 35, 24, 21)$

$P_{17} = (1, 23, 17, 40, 23)$

$P_{18} = (1, 34, 36, 39, 18)$

$P_{19} = (1, 19, 21, 30, 14)$

$P_{20} = (1, 38, 39, 38, 16)$

$P_{21} = (1, 35, 18, 8, 39)$

$P_{22} = (1, 14, 25, 31, 31)$

$P_{23} = (1, 17, 4, 14, 39)$

$P_{24} = (1, 19, 8, 26, 2)$

$P_{25} = (1, 30, 9, 37, 37)$

$P_{26} = (1, 32, 19, 19, 37)$

$P_{27} = (1, 10, 17, 6, 33)$

$P_{28} = (1, 33, 27, 7, 19)$

$P_{29} = (1, 30, 36, 21, 11)$

$P_{30} = (1, 38, 21, 24, 6)$

$P_{31} = (1, 39, 6, 5, 35)$

$P_{32} = (1, 32, 3, 35, 23)$

$P_{33} = (1, 4, 12, 20, 16)$

$P_{34} = (1, 38, 21, 37, 5)$

$P_{35} = (1, 6, 32, 27, 5)$

$P_{36} = (1, 20, 24, 6, 36)$

$P_{37} = (1, 31, 17, 8, 16)$

$P_{38} = (1, 17, 37, 39, 28)$

$P_{39} = (1, 31, 35, 16, 9)$

$P_{40} = (1, 28, 9, 24, 39)$

$P_{41} = (1, 28, 1, 26, 32)$

$P_{42} = (1, 33, 24, 17, 4)$

Stabilizer of order 2 is generated by:

$$g_1 = \begin{pmatrix} 3 & 33 & 29 & 20 & 3 \\ 35 & 15 & 5 & 37 & 38 \\ 37 & 32 & 15 & 13 & 6 \\ 22 & 6 & 38 & 24 & 25 \\ 10 & 13 & 37 & 39 & 24 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 2 and is generated by:

g_1 =(1, 15)(2, 28)(3, 42)(4, 20)(5, 21)(6, 31)(7, 11)(8, 18)(9, 35)(10, 26)(12, 23)(13, 19)(14, 39)(16, 37)(17, 30)(22, 27)(24, 32)(25, 34)(29, 36)(33, 40)(38, 41)

Kernel has order 1 and is generated by:

There are 21 orbits on the BLT set.

The orbit length are $[2^{21}]$

The orbits are:

$O_0 = \{1, 15\}$ (length 2)

$O_1 = \{2, 28\}$ (length 2)

$O_2 = \{3, 42\}$ (length 2)

$O_3 = \{4, 20\}$ (length 2)

$O_4 = \{5, 21\}$ (length 2)

$O_5 = \{6, 31\}$ (length 2)

$O_6 = \{7, 11\}$ (length 2)

$O_7 = \{8, 18\}$ (length 2)

$O_8 = \{9, 35\}$ (length 2)

$O_9 = \{10, 26\}$ (length 2)

$O_{10} = \{12, 23\}$ (length 2)

$O_{11} = \{13, 19\}$ (length 2)

$O_{12} = \{14, 39\}$ (length 2)

$O_{13} = \{16, 37\}$ (length 2)

$O_{14} = \{17, 30\}$ (length 2)

$O_{15} = \{22, 27\}$ (length 2)

$O_{16} = \{24, 32\}$ (length 2)

$O_{17} = \{25, 34\}$ (length 2)

$O_{18} = \{29, 36\}$ (length 2)

$O_{19} = \{33, 40\}$ (length 2)

$O_{20} = \{38, 41\}$ (length 2)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 15\}$ (length 2)

The induced group has order 2 and is generated by:

$g_1 =$(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{2, 28\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_2 = \{3, 42\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_3 = \{4, 20\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_4 = \{5, 21\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_5 = \{6, 31\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_6 = \{7, 11\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_7 = \{8, 18\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_8 = \{9, 35\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_9 = \{10, 26\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{10} = \{12, 23\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{11} = \{13, 19\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{12} = \{14, 39\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{13} = \{16, 37\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{14} = \{17, 30\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{15} = \{22, 27\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{16} = \{24, 32\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{17} = \{25, 34\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{18} = \{29, 36\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{19} = \{33, 40\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by:

Induced action on orbit $O_{20} = \{38, 41\}$ (length 2)

The induced group has order 2 and is generated by:

g_1 =(1, 2)

Kernel has order 1 and is generated by: