BLT-sets of Q(4, 31)

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There are 8 BLT-sets.

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The BLT-Sets

3.1 Isomorphism Type 0

Stabilizer has order 1904640
Plane intersection type is 32
Plane invariant is

$$\begin{bmatrix} 32 \end{bmatrix}$$

$\rightarrow$	1_1
32_0	1

$\downarrow$	1_1
32_0	32

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{32}$
$C_1 = \{0\}_1$

$\rightarrow$	1_1
32_0	1

$\downarrow$	1_1
32_0	32

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{32}$
$C_1 = \{0\}_1$
Column cell 1:
Order of the group that is induced on the object is 29760
Number of ancestors on 5-sets is 11.
Number of orbits on 5-sets is 11.
With 1 orbits on the object
Orbit lengths: 32
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	199	16	187	24	193
1	1	9	201	17	188	25	209
2	184	10	202	18	204	26	194
3	185	11	203	19	189	27	211
4	186	12	206	20	205	28	196
5	200	13	208	21	191	29	212
6	190	14	195	22	207	30	197
7	210	15	213	23	192	31	198

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 10, 30, 10) P_3 = (0, 1, 18, 15, 5)$$
$$P_4 = (0, 1, 8, 10, 24) P_5 = (0, 1, 1, 20, 17) P_6 = (0, 1, 4, 22, 28) P_7 = (0, 1, 20, 8, 13)$$
$$P_8 = (0, 1, 9, 29, 20) P_9 = (0, 1, 14, 12, 4) P_{10} = (0, 1, 16, 13, 25) P_{11} = (0, 1, 7, 17, 16)$$
$$P_{12} = (0, 1, 5, 4, 22) P_{13} = (0, 1, 2, 26, 19) P_{14} = (0, 1, 16, 18, 6) P_{15} = (0, 1, 10, 1, 21)$$
$$P_{16} = (0, 1, 20, 23, 18) P_{17} = (0, 1, 19, 6, 2) P_{18} = (0, 1, 28, 28, 30) P_{19} = (0, 1, 2, 5, 12)$$
$$P_{20} = (0, 1, 25, 7, 23) P_{21} = (0, 1, 5, 27, 9) P_{22} = (0, 1, 4, 9, 3) P_{23} = (0, 1, 25, 24, 8)$$
$$P_{24} = (0, 1, 28, 3, 1) P_{25} = (0, 1, 19, 25, 29) P_{26} = (0, 1, 7, 14, 15) P_{27} = (0, 1, 8, 21, 7)$$
$$P_{28} = (0, 1, 14, 19, 27) P_{29} = (0, 1, 18, 16, 26) P_{30} = (0, 1, 1, 11, 14) P_{31} = (0, 1, 9, 2, 11)$$

Stabilizer of order 1904640 is generated by:

$$g_1 = \begin{bmatrix} 4 & 0 & 0 & 0 & 0 \\ 0 & 27 & 0 & 0 & 0 \\ 0 & 0 & 27 & 0 & 0 \\ 0 & 0 & 0 & 27 & 0 \\ 0 & 0 & 0 & 0 & 27 \end{bmatrix}$$

with 1024 fixed points

$$g_2 = \begin{bmatrix} 8 & 0 & 0 & 0 & 0 \\ 0 & 12 & 0 & 0 & 0 \\ 0 & 0 & 26 & 0 & 0 \\ 0 & 0 & 0 & 8 & 0 \\ 0 & 0 & 0 & 0 & 8 \end{bmatrix}$$

with 34 fixed points

$$g_3 = \begin{bmatrix} 29 & 0 & 0 & 3 & 30 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 0 & 30 & 0 & 0 \\ 15 & 0 & 0 & 16 & 15 \\ 17 & 0 & 0 & 11 & 16 \end{bmatrix}$$

with 962 fixed points

$$g_4 = \begin{bmatrix} 18 & 0 & 0 & 16 & 5 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 0 & 30 & 0 & 0 \\ 18 & 0 & 0 & 6 & 8 \\ 8 & 0 & 0 & 10 & 6 \end{bmatrix}$$

with 1024 fixed points

$$g_5 = \begin{bmatrix} 3 & 0 & 0 & 14 & 16 \\ 0 & 27 & 0 & 0 & 0 \\ 0 & 15 & 27 & 26 & 19 \\ 8 & 19 & 0 & 16 & 27 \\ 7 & 26 & 0 & 26 & 16 \end{bmatrix}$$

with 34 fixed points

$$g_6 = \begin{bmatrix} 5 & 0 & 0 & 1 & 10 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 7 & 2 & 12 & 4 \\ 5 & 4 & 0 & 12 & 16 \\ 16 & 12 & 0 & 20 & 12 \end{bmatrix}$$

with 34 fixed points

$$g_7 = \begin{bmatrix} 11 & 0 & 0 & 14 & 16 \\ 0 & 29 & 11 & 2 & 11 \\ 0 & 0 & 29 & 0 & 0 \\ 23 & 0 & 11 & 22 & 14 \\ 24 & 0 & 2 & 2 & 22 \end{bmatrix}$$

with 2 fixed points

3.2 Isomorphism Type 1

Stabilizer has order 2048
Plane intersection type is $16^2\ 4^{64}\ 3^{3584}$
Plane invariant is

$$\begin{bmatrix} 16 & 0 \\ 0 & 16 \end{bmatrix}$$

$\rightarrow$	2_1
32_0	1

$\downarrow$	2_1
32_0	16

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{32}$
$C_1 = \{0, 1\}_2$

$\rightarrow$	2_1	64_2
32_0	1	8

$\downarrow$	2_1	64_2
32_0	16	4

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{32}$
$C_1 = \{0, 65\}_2$
$C_2 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43$
Column cell 1:
Column cell 2:
Order of the group that is induced on the object is 2048
Number of ancestors on 5-sets is 652.
Number of orbits on 5-sets is 387.
With 1 orbits on the object
Orbit lengths: 32
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	199	16	10894	24	11184
1	1	9	201	17	17061	25	16511
2	184	10	202	18	26551	26	9500
3	185	11	203	19	13064	27	18872
4	186	12	206	20	25805	28	29603
5	200	13	208	21	22547	29	17826
6	190	14	195	22	26966	30	10096
7	210	15	213	23	10303	31	5703

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 10, 30, 10) P_3 = (0, 1, 18, 15, 5)$$

$$P_4 = (0, 1, 8, 10, 24) P_5 = (0, 1, 1, 20, 17) P_6 = (0, 1, 4, 22, 28) P_7 = (0, 1, 20, 8, 13)$$

$$P_8 = (0, 1, 9, 29, 20) P_9 = (0, 1, 14, 12, 4) P_{10} = (0, 1, 16, 13, 25) P_{11} = (0, 1, 7, 17, 16)$$

$$P_{12} = (0, 1, 5, 4, 22) P_{13} = (0, 1, 2, 26, 19) P_{14} = (0, 1, 16, 18, 6) P_{15} = (0, 1, 10, 1, 21)$$

$$P_{16} = (1, 5, 1, 14, 4) P_{17} = (1, 2, 19, 4, 29) P_{18} = (1, 19, 10, 25, 6) P_{19} = (1, 23, 17, 17, 28)$$

$$P_{20} = (1, 18, 16, 29, 5) P_{21} = (1, 7, 20, 15, 3) P_{22} = (1, 11, 27, 2, 6) P_{23} = (1, 16, 28, 19, 9)$$

$$P_{24} = (1, 15, 3, 4, 4) P_{25} = (1, 20, 4, 13, 20) P_{26} = (1, 24, 11, 22, 26) P_{27} = (1, 13, 15, 16, 11)$$

$$P_{28} = (1, 8, 14, 9, 15) P_{29} = (1, 12, 21, 13, 2) P_{30} = (1, 29, 12, 6, 9) P_{31} = (1, 26, 30, 19, 16)$$

Stabilizer of order 2048 is generated by:

$$g_1 = \begin{bmatrix} 2 & 0 & 0 & 22 & 3 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 0 & 16 & 0 & 0 \\ 14 & 0 & 0 & 9 & 23 \\ 20 & 0 & 0 & 21 & 9 \end{bmatrix}$$

with 32 fixed points

$$g_2 = \begin{bmatrix} 10 & 0 & 0 & 2 & 20 \\ 0 & 4 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 \\ 21 & 0 & 0 & 7 & 30 \\ 30 & 0 & 0 & 22 & 7 \end{bmatrix}$$

with 32 fixed points

$$g_3 = \begin{bmatrix} 29 & 0 & 0 & 28 & 1 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 0 & 30 & 0 & 0 \\ 16 & 0 & 0 & 16 & 15 \\ 14 & 0 & 0 & 11 & 16 \end{bmatrix}$$

with 962 fixed points

$$g_4 = \begin{bmatrix} 1 & 0 & 0 & 14 & 16 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 1 & 16 & 13 & 25 \\ 8 & 25 & 0 & 7 & 13 \\ 7 & 13 & 0 & 24 & 7 \end{bmatrix}$$

with 32 fixed points

$$g_5 = \begin{bmatrix} 26 & 0 & 0 & 12 & 27 \\ 0 & 16 & 5 & 15 & 5 \\ 0 & 0 & 16 & 0 & 0 \\ 29 & 0 & 5 & 10 & 12 \\ 6 & 0 & 15 & 15 & 10 \end{bmatrix}$$

with 32 fixed points

$$g_6 = \begin{bmatrix} 22 & 0 & 0 & 13 & 6 \\ 0 & 24 & 13 & 5 & 12 \\ 0 & 21 & 24 & 10 & 24 \\ 3 & 24 & 12 & 26 & 16 \\ 22 & 10 & 5 & 20 & 26 \end{bmatrix}$$

with 32 fixed points

$$g_7 = \begin{bmatrix} 0 & 10 & 26 & 22 & 28 \\ 5 & 2 & 19 & 1 & 30 \\ 2 & 10 & 2 & 28 & 8 \\ 24 & 21 & 28 & 14 & 1 \\ 10 & 20 & 7 & 27 & 29 \end{bmatrix}$$

with 0 fixed points

3.3 Isomorphism Type 2

Stabilizer has order 96
Plane intersection type is 8 5^8 4^{342} 3^{3456}
Plane invariant is

$$\begin{bmatrix} 8 \end{bmatrix}$$

$\rightarrow$	1_1
8_0	1
24_2	0

$\downarrow$	1_1
8_0	8
24_2	0

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7\}_8$
$C_1 = \{0\}_1$
$C_2 = \{8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{24}$

$\rightarrow$	1_1	8_2	48_3	84_6	24_7	186_8
2_0	1	8	24	0	0	0
6_5	1	0	8	28	4	0
24_4	0	1	4	7	3	31

$\downarrow$	1_1	8_2	48_3	84_6	24_7	186_8
2_0	2	2	1	0	0	0
6_5	6	0	1	2	1	0
24_4	0	3	2	2	3	4

$C_0 = \{6, 7\}_2$
$C_1 = \{350\}_1$
$C_2 = \{17, 25, 78, 216, 237, 323, 331, 334\}_8$
$C_3 = \{7, 11, 15, 16, 20, 21, 26, 27, 29, 30, 73, 74, 80, 129, 132, 133, 134, 135, 136, 137, 140, 141, 152, 156, 166, 167, 169, 212, 215, 227, 229, 236, 244,$
$C_4 = \{8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{24}$
$C_5 = \{0, 1, 2, 3, 4, 5\}_6$
$C_6 = \{9, 10, 18, 19, 23, 24, 28, 31, 37, 54, 75, 79, 81, 82, 86, 93, 112, 131, 142, 143, 145, 149, 151, 155, 159, 160, 162, 163, 164, 165, 168, 170, 178, 194$

$C_7 = \{35, 39, 40, 52, 56, 62, 85, 87, 90, 99, 110, 114, 176, 180, 191, 208, 209, 211, 254, 256, 258, 260, 262, 264\}_{24}$
$C_8 = \{0, 1, 2, 3, 4, 5, 6, 8, 12, 13, 14, 22, 32, 33, 34, 36, 38, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 55, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 68, 69, 7$
Column cell 1:
Column cell 2:
Column cell 3:
Column cell 6:
Column cell 7:
Column cell 8:
Order of the group that is induced on the object is 96
Number of ancestors on 5-sets is 2490.
Number of orbits on 5-sets is 2490.
With 3 orbits on the object
Orbit lengths: 2, 6, 24
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	10804	16	28230	24	7353
1	1	9	24118	17	17054	25	10103
2	184	10	4713	18	18604	26	22177
3	185	11	5959	19	8126	27	12216
4	186	12	12547	20	26966	28	17826
5	200	13	29609	21	15399	29	13058
6	190	14	5281	22	21161	30	10890
7	210	15	26551	23	16511	31	28578

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 10, 30, 10) P_3 = (0, 1, 18, 15, 5)$$
$$P_4 = (0, 1, 8, 10, 24) P_5 = (0, 1, 1, 20, 17) P_6 = (0, 1, 4, 22, 28) P_7 = (0, 1, 20, 8, 13)$$
$$P_8 = (1, 2, 1, 7, 4) P_9 = (1, 2, 5, 26, 27) P_{10} = (1, 30, 30, 29, 1) P_{11} = (1, 7, 2, 1, 16)$$
$$P_{12} = (1, 8, 8, 1, 28) P_{13} = (1, 29, 6, 9, 15) P_{14} = (1, 2, 10, 10, 1) P_{15} = (1, 19, 10, 25, 6)$$
$$P_{16} = (1, 23, 23, 9, 10) P_{17} = (1, 15, 17, 4, 29) P_{18} = (1, 1, 1, 28, 11) P_{19} = (1, 24, 27, 8, 8)$$
$$P_{20} = (1, 11, 27, 2, 6) P_{21} = (1, 29, 26, 12, 12) P_{22} = (1, 7, 4, 7, 18) P_{23} = (1, 20, 4, 13, 20)$$
$$P_{24} = (1, 29, 30, 19, 8) P_{25} = (1, 16, 14, 6, 9) P_{26} = (1, 16, 8, 19, 3) P_{27} = (1, 29, 21, 28, 7)$$
$$P_{28} = (1, 12, 21, 13, 2) P_{29} = (1, 2, 25, 17, 28) P_{30} = (1, 15, 23, 22, 4) P_{31} = (1, 24, 29, 14, 10)$$

Stabilizer of order 96 is generated by:

$$g_1 = \begin{bmatrix} 21 & 0 & 0 & 7 & 8 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 0 & 30 & 0 & 0 \\ 4 & 0 & 0 & 20 & 24 \\ 19 & 0 & 0 & 30 & 20 \end{bmatrix}$$

with 962 fixed points

$$g_2 = \begin{bmatrix} 0 & 0 & 0 & 18 & 25 \\ 0 & 4 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 \\ 3 & 0 & 0 & 2 & 11 \\ 22 & 0 & 0 & 6 & 2 \end{bmatrix}$$

with 32 fixed points

$$g_3 = \begin{bmatrix} 11 & 0 & 0 & 6 & 29 \\ 0 & 27 & 0 & 0 & 0 \\ 0 & 15 & 27 & 26 & 19 \\ 30 & 19 & 0 & 12 & 18 \\ 3 & 26 & 0 & 7 & 12 \end{bmatrix}$$

with 32 fixed points

$$g_4 = \begin{bmatrix} 20 & 0 & 0 & 17 & 15 \\ 0 & 2 & 20 & 29 & 20 \\ 0 & 0 & 2 & 0 & 0 \\ 23 & 0 & 20 & 20 & 3 \\ 24 & 0 & 29 & 27 & 20 \end{bmatrix}$$

with 32 fixed points

$$g_5 = \begin{bmatrix} 4 & 0 & 0 & 18 & 25 \\ 0 & 28 & 7 & 1 & 21 \\ 0 & 9 & 0 & 0 & 0 \\ 3 & 28 & 0 & 18 & 15 \\ 22 & 22 & 0 & 11 & 18 \end{bmatrix}$$

with 2 fixed points

3.4 Isomorphism Type 3

Stabilizer has order 8
Plane intersection type is $5^8\ 4^{117}\ 3^{4412}$
Plane invariant is

$$\begin{bmatrix} 5 & 1 & 1 & 0 & 0 & 0 & 0 & 0 \\ 1 & 5 & 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 5 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 5 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 5 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 & 5 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 1 & 5 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & 0 & 5 \end{bmatrix}$$

$\rightarrow$	8_1
8_0	2
24_2	1

$\downarrow$	8_1
8_0	2
24_2	3

$C_0 = \{1, 4, 5, 6, 8, 10, 18, 21\}_8$
$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7\}_8$
$C_2 = \{0, 2, 3, 7, 9, 11, 12, 13, 14, 15, 16, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{24}$

$\rightarrow$	4_1	4_7	8_2	8_9	4_{10}	16_8	8_{12}	8_{14}	8_{13}	8_{16}	8_{15}	1_{11}	8_{17}	8_{19}	8_{18}	4_{21}	4_{22}	8_{20}
8_0	1	1	2	2	1	2	1	1	1	1	1	0	0	0	0	0	0	0
4_3	1	0	2	0	0	8	2	2	0	0	0	1	2	2	0	0	0	0
8_6	1	0	0	1	0	2	2	1	1	1	0	0	2	2	3	1	1	1
4_5	0	1	2	2	0	0	0	2	4	0	2	0	2	0	0	2	0	0
8_4	0	1	0	0	1	0	0	0	0	2	2	0	0	1	1	0	1	3

$\downarrow$	4_1	4_7	8_2	8_9	4_{10}	16_8	8_{12}	8_{14}	8_{13}	8_{16}	8_{15}	1_{11}	8_{17}	8_{19}	8_{18}	4_{21}	4_{22}	8_{20}
8_0	2	2	2	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0
4_3	1	0	1	0	0	2	1	1	0	0	0	4	1	1	0	0	0	0
8_6	2	0	0	1	0	1	2	1	1	1	0	0	2	2	3	2	2	1
4_5	0	1	1	1	0	0	0	1	2	0	1	0	1	0	0	2	0	0
8_4	0	2	0	0	2	0	0	0	0	2	2	0	0	1	1	0	2	3

$C_0 = \{1, 4, 5, 6, 8, 10, 18, 21\}_8$
$C_1 = \{44, 46, 89, 112\}_4$
$C_2 = \{29, 30, 48, 56, 105, 110, 115, 119\}_8$
$C_3 = \{13, 17, 20, 26\}_4$
$C_4 = \{2, 3, 14, 15, 19, 22, 27, 31\}_8$
$C_5 = \{0, 7, 9, 28\}_4$
$C_6 = \{11, 12, 16, 23, 24, 25, 29, 30\}_8$
$C_7 = \{91, 100, 123, 124\}_4$
$C_8 = \{0, 11, 12, 16, 40, 42, 45, 61, 66, 67, 81, 83, 88, 111, 120, 121\}_{16}$

$C_9 = \{18, 19, 22, 27, 39, 62, 72, 107\}_8$
$C_{10} = \{52, 65, 76, 109\}_4$
$C_{11} = \{104\}_1$
$C_{12} = \{9, 33, 43, 49, 63, 82, 87, 113\}_8$
$C_{13} = \{4, 15, 26, 50, 90, 97, 114, 117\}_8$
$C_{14} = \{28, 31, 59, 60, 69, 73, 99, 106\}_8$
$C_{15} = \{8, 34, 36, 38, 53, 78, 96, 103\}_8$
$C_{16} = \{17, 41, 71, 77, 92, 94, 98, 122\}_8$
$C_{17} = \{6, 47, 51, 54, 58, 68, 70, 79\}_8$
$C_{18} = \{7, 14, 23, 24, 32, 86, 102, 108\}_8$
$C_{19} = \{2, 10, 25, 64, 75, 85, 93, 116\}_8$
$C_{20} = \{20, 35, 37, 55, 80, 84, 101, 118\}_8$
$C_{21} = \{3, 5, 57, 74\}_4$
$C_{22} = \{1, 13, 21, 95\}_4$
Column cell 1:
Column cell 2:
Column cell 7:
Column cell 8:
Column cell 9:
Column cell 10:
Column cell 11:
Column cell 12:
Column cell 13:
Column cell 14:
Column cell 15:
Column cell 16:
Column cell 17:
Column cell 18:
Column cell 19:
Column cell 20:
Column cell 21:
Column cell 22:
Order of the group that is induced on the object is 8
Number of ancestors on 5-sets is 25277.
Number of orbits on 5-sets is 25277.
With 5 orbits on the object
Orbit lengths: $4^2,\ 8^3$
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	21092	16	15158	24	14668
1	1	9	5959	17	4726	25	6635
2	184	10	4911	18	8681	26	9933
3	185	11	12547	19	19516	27	30327
4	186	12	6664	20	20200	28	10026
5	5078	13	21776	21	7339	29	23190
6	14473	14	28424	22	19075	30	26887
7	26285	15	11878	23	7353	31	29283

The points:

$$P_0 = (0, 1, 0, 0, 0)P_1 = (0, 0, 1, 0, 0)P_2 = (0, 1, 10, 30, 10)P_3 = (0, 1, 18, 15, 5)$$

$$P_4 = (0, 1, 8, 10, 24)P_5 = (1, 8, 25, 16, 1)P_6 = (1, 18, 28, 16, 13)P_7 = (1, 19, 16, 1, 5)$$

$$P_8 = (1, 12, 15, 2, 18)P_9 = (1, 7, 2, 1, 16)P_{10} = (1, 20, 19, 22, 1)P_{11} = (1, 8, 8, 1, 28)$$

$$P_{12} = (1, 9, 1, 1, 21)P_{13} = (1, 3, 27, 3, 14)P_{14} = (1, 6, 17, 30, 10)P_{15} = (1, 14, 5, 12, 7)$$

$$P_{16} = (1, 10, 25, 23, 12)P_{17} = (1, 26, 12, 28, 1)P_{18} = (1, 20, 4, 29, 25)P_{19} = (1, 26, 12, 8, 19)$$

$$P_{20} = (1, 20, 9, 28, 19) P_{21} = (1, 1, 2, 19, 8) P_{22} = (1, 11, 24, 21, 11) P_{23} = (1, 29, 30, 19, 8)$$

$$P_{24} = (1, 9, 5, 6, 13) P_{25} = (1, 16, 16, 4, 21) P_{26} = (1, 30, 30, 17, 9) P_{27} = (1, 26, 22, 15, 30)$$

$$P_{28} = (1, 15, 21, 20, 9) P_{29} = (1, 30, 23, 19, 24) P_{30} = (1, 2, 8, 23, 6) P_{31} = (1, 23, 30, 18, 15)$$

Stabilizer of order 8 is generated by:

$$g_1 = \begin{bmatrix} 26 & 0 & 0 & 17 & 15 \\ 0 & 30 & 0 & 0 & 0 \\ 0 & 27 & 30 & 22 & 28 \\ 23 & 28 & 0 & 3 & 20 \\ 24 & 22 & 0 & 25 & 3 \end{bmatrix}$$

with 32 fixed points

$$g_2 = \begin{bmatrix} 17 & 3 & 12 & 20 & 21 \\ 6 & 11 & 12 & 6 & 3 \\ 17 & 27 & 11 & 24 & 4 \\ 26 & 4 & 3 & 11 & 22 \\ 10 & 24 & 6 & 6 & 11 \end{bmatrix}$$

with 32 fixed points

$$g_3 = \begin{bmatrix} 0 & 14 & 7 & 2 & 21 \\ 13 & 9 & 25 & 12 & 24 \\ 22 & 16 & 20 & 13 & 24 \\ 29 & 7 & 2 & 16 & 26 \\ 17 & 30 & 19 & 27 & 21 \end{bmatrix}$$

with 2 fixed points

3.5 Isomorphism Type 4

Stabilizer has order 4
Plane intersection type is $5^4\ 4^{142}\ 3^{4352}$
Plane invariant is

$$\begin{bmatrix} 5 & 0 & 1 & 0 \\ 0 & 5 & 0 & 1 \\ 1 & 0 & 5 & 0 \\ 0 & 1 & 0 & 5 \end{bmatrix}$$

$\rightarrow$	4_1
2_0	2
16_2	1
14_3	0

$\downarrow$	4_1
2_0	1
16_2	4
14_3	0

$C_0 = \{0, 27\}_2$
$C_1 = \{0, 1, 2, 3\}_4$
$C_2 = \{1, 2, 3, 4, 5, 6, 7, 8, 10, 18, 20, 22, 23, 24, 28, 29\}_{16}$
$C_3 = \{9, 11, 12, 13, 14, 15, 16, 17, 19, 21, 25, 26, 30, 31\}_{14}$

$\rightarrow$	2_1	2_{10}	1_2	2_{12}	4_{11}	4_{16}	4_{17}	4_{15}	4_{14}	4_{18}	4_{19}	4_{13}	2_{21}	2_{22}	4_{20}	4_{24}	4_{48}	4_{26}	4_{27}	8_{25}	4_{29}	8_{28}	2_{23}	4_{30}	4_{33}
2_0	1	1	1	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4_3	1	0	0	0	1	1	1	1	0	0	0	2	1	1	1	1	1	1	1	2	1	2	0	0	0
4_6	1	0	0	0	1	0	1	0	1	1	0	0	0	0	1	1	0	0	1	0	0	0	1	1	1
4_{47}	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0	1	2	2
4_5	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0	1	1	0	0	2	1	0	0	0	0
2_4	0	0	1	0	0	2	0	0	0	2	0	0	2	0	0	0	0	0	0	4	2	0	0	0	0
4_7	0	0	0	1	0	0	0	0	1	0	1	1	0	0	0	0	0	1	1	2	0	2	0	1	0
4_9	0	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	1	0	0	0	2	0	0	1
4_8	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	1	0	1	2	0	0	0

$\downarrow$	2_1	2_{10}	1_2	2_{12}	4_{11}	4_{16}	4_{17}	4_{15}	4_{14}	4_{18}	4_{19}	4_{13}	2_{21}	2_{22}	4_{20}	4_{24}	4_{48}	4_{26}	4_{27}	8_{25}	4_{29}	8_{28}	2_{23}	4_{30}	4_{33}
2_0	1	1	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4_3	2	0	0	0	1	1	1	1	0	0	0	2	2	2	1	1	1	1	1	1	1	1	0	0	0
4_6	2	0	0	0	1	0	1	0	1	1	0	0	0	0	1	1	0	0	1	0	0	0	2	1	1
4_{47}	0	2	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0	2	2	2
4_5	0	2	0	0	1	0	0	0	1	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	0
2_4	0	0	2	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0
4_7	0	0	0	2	0	0	0	0	1	0	1	1	0	0	0	0	0	1	1	1	0	1	0	1	0
4_9	0	0	0	0	0	0	1	1	0	0	1	0	0	2	1	0	0	1	0	0	0	1	0	0	1
4_8	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	1	0	1	1	0	0	0

$C_0 = \{0, 27\}_2$
$C_1 = \{73, 126\}_2$
$C_2 = \{42\}_1$
$C_3 = \{5, 20, 23, 24\}_4$
$C_4 = \{11, 14\}_2$
$C_5 = \{2, 3, 10, 28\}_4$
$C_6 = \{8, 18, 22, 29\}_4$
$C_7 = \{12, 15, 30, 31\}_4$
$C_8 = \{13, 17, 21, 25\}_4$
$C_9 = \{9, 16, 19, 26\}_4$
$C_{10} = \{107, 145\}_2$
$C_{11} = \{68, 80, 86, 131\}_4$
$C_{12} = \{62, 81\}_2$
$C_{13} = \{51, 67, 78, 87\}_4$
$C_{14} = \{64, 77, 94, 115\}_4$
$C_{15} = \{4, 109, 110, 142\}_4$
$C_{16} = \{35, 36, 55, 74\}_4$
$C_{17} = \{32, 63, 92, 125\}_4$
$C_{18} = \{19, 99, 100, 124\}_4$
$C_{19} = \{10, 18, 114, 133\}_4$
$C_{20} = \{12, 14, 43, 102\}_4$
$C_{21} = \{37, 58\}_2$
$C_{22} = \{48, 91\}_2$
$C_{23} = \{22, 45\}_2$
$C_{24} = \{24, 95, 106, 108\}_4$
$C_{25} = \{38, 40, 52, 56, 57, 66, 112, 117\}_8$
$C_{26} = \{2, 71, 113, 118\}_4$
$C_{27} = \{3, 15, 88, 104\}_4$
$C_{28} = \{25, 93, 103, 105, 129, 134, 135, 143\}_8$
$C_{29} = \{17, 59, 98, 139\}_4$
$C_{30} = \{11, 31, 61, 128\}_4$
$C_{31} = \{6, 96, 121, 122\}_4$
$C_{32} = \{1, 84\}_2$
$C_{33} = \{5, 9, 47, 138\}_4$
$C_{34} = \{41, 76, 83, 116\}_4$
$C_{35} = \{13, 16\}_2$
$C_{36} = \{72, 101\}_2$
$C_{37} = \{53, 123\}_2$
$C_{38} = \{29, 70, 75, 82, 90, 119, 127, 136\}_8$
$C_{39} = \{27, 34, 97, 130\}_4$
$C_{40} = \{46, 65, 137, 140\}_4$
$C_{41} = \{0, 20, 23, 49\}_4$
$C_{42} = \{28, 54, 120, 144\}_4$
$C_{43} = \{21, 79\}_2$
$C_{44} = \{26\}_1$
$C_{45} = \{30, 33\}_2$
$C_{46} = \{89, 111\}_2$
$C_{47} = \{1, 4, 6, 7\}_4$
$C_{48} = \{7, 8, 50, 141\}_4$

$C_{49} = \{44, 132\}_2$
$C_{50} = \{39, 60, 69, 85\}_4$
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Column cell 44:
Column cell 45:
Column cell 46:
Column cell 48:
Column cell 49:
Column cell 50:
Order of the group that is induced on the object is 4
Number of ancestors on 5-sets is 50449.
Number of orbits on 5-sets is 50449.
With 9 orbits on the object
Orbit lengths: $2^2,\ 4^7$
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	10894	16	17954	24	24299
1	1	9	12654	17	4902	25	5206
2	184	10	26580	18	23862	26	21270
3	185	11	17767	19	20042	27	11181
4	186	12	17971	20	15963	28	20396
5	5610	13	9430	21	13234	29	24367
6	11837	14	15934	22	26090	30	25621
7	20584	15	9282	23	24411	31	467

The points:

$$P_0 = (0,1,0,0,0)P_1 = (0,0,1,0,0)P_2 = (0,1,10,30,10)P_3 = (0,1,18,15,5)$$

$$P_4 = (0,1,8,10,24)P_5 = (1,23,23,25,16)P_6 = (1,5,20,21,7)P_7 = (1,9,1,27,18)$$

$$P_8 = (1,5,1,14,4)P_9 = (1,12,3,2,28)P_{10} = (1,11,23,30,6)P_{11} = (1,8,8,14,2)$$

$$P_{12} = (1,7,10,11,2)P_{13} = (1,5,9,3,26)P_{14} = (1,28,1,26,12)P_{15} = (1,19,7,2,26)$$

$$P_{16} = (1,26,17,11,2)P_{17} = (1,10,7,22,1)P_{18} = (1,18,7,24,27)P_{19} = (1,24,15,12,19)$$

$$P_{20} = (1,3,30,26,12)P_{21} = (1,25,1,19,28)P_{22} = (1,27,11,21,5)P_{23} = (1,19,19,13,27)$$

$$P_{24} = (1,13,6,12,27)P_{25} = (1,17,12,12,1)P_{26} = (1,23,23,2,14)P_{27} = (1,4,19,4,4)$$

$$P_{28} = (1,15,27,5,18)P_{29} = (1,14,8,5,27)P_{30} = (1,25,10,18,5)P_{31} = (0,1,8,11,19)$$

Stabilizer of order 4 is generated by:

$$g_1 = \begin{bmatrix} 13 & 0 & 0 & 26 & 12 \\ 0 & 27 & 0 & 0 & 0 \\ 0 & 15 & 27 & 26 & 19 \\ 6 & 19 & 0 & 11 & 8 \\ 13 & 26 & 0 & 10 & 11 \end{bmatrix}$$

with 32 fixed points

$$g_2 = \begin{bmatrix} 15 & 24 & 27 & 6 & 16 \\ 29 & 23 & 24 & 23 & 23 \\ 12 & 29 & 23 & 4 & 22 \\ 8 & 22 & 23 & 24 & 15 \\ 3 & 4 & 23 & 10 & 24 \end{bmatrix}$$

with 34 fixed points

3.6 Isomorphism Type 5

Stabilizer has order 4
Plane intersection type is $5^4\ 4^{136}\ 3^{4376}$
Plane invariant is

$$\begin{bmatrix} 5 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 \\ 0 & 0 & 5 & 0 \\ 0 & 0 & 0 & 5 \end{bmatrix}$$

$\rightarrow$	4_1
20_0	1
12_2	0

$\downarrow$	4_1
20_0	5
12_2	0

$C_0 = \{0,1,2,3,4,8,10,12,14,16,19,20,21,23,24,25,26,28,30,31\}_{20}$
$C_1 = \{0,1,2,3\}_4$

$C_2 = \{5, 6, 7, 9, 11, 13, 15, 17, 18, 22, 27, 29\}_{12}$

$\rightarrow$	4_1	4_2	4_{11}	4_{10}	4_{12}	2_{13}	4_{14}	2_{15}	4_{16}	4_{43}	4_{17}	2_{44}	4_9	4_{20}	4_{22}	4_{21}	4_{24}	4_{23}	4_{25}	4_{19}	4_{27}	4_{28}	4_{29}	4_{26}	4_{31}
4_0	1	2	0	0	1	1	1	1	2	1	1	0	1	0	0	0	1	1	1	1	1	0	0	0	1
4_{42}	1	1	3	2	1	0	1	0	0	1	1	1	0	1	1	1	0	0	0	0	0	1	1	1	0
4_5	1	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
4_6	1	0	0	0	1	0	0	0	0	0	0	0	2	1	1	0	0	0	0	1	1	1	1	0	0
4_4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	3	2
4_3	0	0	0	1	1	1	1	0	0	0	0	0	0	1	0	1	0	1	0	0	2	1	1	0	0
4_8	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	2	0	0	1	0	0	0
4_7	0	0	0	0	0	0	1	0	1	1	2	1	0	0	0	0	1	1	0	0	0	0	1	0	1

$\downarrow$	4_1	4_2	4_{11}	4_{10}	4_{12}	2_{13}	4_{14}	2_{15}	4_{16}	4_{43}	4_{17}	2_{44}	4_9	4_{20}	4_{22}	4_{21}	4_{24}	4_{23}	4_{25}	4_{19}	4_{27}	4_{28}	4_{29}	4_{26}	4_{31}
4_0	1	2	0	0	1	2	1	2	2	1	1	0	1	0	0	0	1	1	1	1	1	0	0	0	1
4_{42}	1	1	3	2	1	0	1	0	0	1	1	2	0	1	1	1	0	0	0	0	0	1	1	1	0
4_5	1	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
4_6	1	0	0	0	1	0	0	0	0	0	0	0	2	1	1	0	0	0	0	1	1	1	1	0	0
4_4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	3	2
4_3	0	0	0	1	1	2	1	0	0	0	0	0	0	1	0	1	0	1	0	0	2	1	1	0	0
4_8	0	0	0	0	0	0	0	2	1	1	0	0	0	0	1	0	0	0	2	0	0	1	0	0	0
4_7	0	0	0	0	0	0	1	0	1	1	2	2	0	0	0	0	1	1	0	0	0	0	1	0	1

$C_0 = \{3, 19, 24, 31\}_4$
$C_1 = \{7, 21, 45, 138\}_4$
$C_2 = \{6, 57, 66, 105\}_4$
$C_3 = \{7, 9, 17, 29\}_4$
$C_4 = \{0, 16, 28, 30\}_4$
$C_5 = \{4, 10, 12, 14\}_4$
$C_6 = \{1, 8, 21, 26\}_4$
$C_7 = \{5, 13, 18, 22\}_4$
$C_8 = \{6, 11, 15, 27\}_4$
$C_9 = \{1, 51, 93, 119\}_4$
$C_{10} = \{18, 69, 72, 103\}_4$
$C_{11} = \{13, 15, 83, 94\}_4$
$C_{12} = \{20, 125, 131, 136\}_4$
$C_{13} = \{2, 8\}_2$
$C_{14} = \{63, 67, 68, 102\}_4$
$C_{15} = \{34, 115\}_2$
$C_{16} = \{33, 35, 58, 78\}_4$
$C_{17} = \{12, 30, 36, 118\}_4$
$C_{18} = \{24, 55, 82, 110\}_4$
$C_{19} = \{19, 26, 47, 123\}_4$
$C_{20} = \{3, 22, 46, 50\}_4$
$C_{21} = \{79, 113, 117, 122\}_4$
$C_{22} = \{92, 96, 104, 127\}_4$
$C_{23} = \{0, 28, 75, 100\}_4$
$C_{24} = \{4, 65, 130, 133\}_4$
$C_{25} = \{11, 53, 90, 128\}_4$
$C_{26} = \{88, 95, 108, 114\}_4$
$C_{27} = \{5, 32, 44, 81\}_4$
$C_{28} = \{9, 14, 73, 101\}_4$
$C_{29} = \{10, 77, 106, 112\}_4$
$C_{30} = \{39, 40, 135, 137\}_4$
$C_{31} = \{16, 23, 85, 86\}_4$
$C_{32} = \{74, 80, 87, 109\}_4$
$C_{33} = \{48, 89, 98, 126\}_4$
$C_{34} = \{25, 56, 97, 107\}_4$
$C_{35} = \{60, 62, 64, 111\}_4$
$C_{36} = \{17, 70, 129, 134\}_4$
$C_{37} = \{43, 49, 54, 121\}_4$

$C_{38} = \{42, 52, 59, 99\}_4$
$C_{39} = \{29, 31, 91, 116\}_4$
$C_{40} = \{41, 124\}_2$
$C_{41} = \{61, 84, 120, 132\}_4$
$C_{42} = \{2, 20, 23, 25\}_4$
$C_{43} = \{37, 71, 76, 139\}_4$
$C_{44} = \{27, 38\}_2$
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Column cell 40:
Column cell 41:
Column cell 43:
Column cell 44:
Order of the group that is induced on the object is 4
Number of ancestors on 5-sets is 50344.
Number of orbits on 5-sets is 50344.
With 8 orbits on the object
Orbit lengths: 4^8
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	28230	16	13616	24	26548
1	1	9	26948	17	22126	25	28653
2	184	10	17157	18	22999	26	11358
3	185	11	26958	19	5579	27	879
4	188	12	21499	20	23824	28	17677
5	559	13	17387	21	25518	29	16922
6	10721	14	30385	22	5241	30	20545
7	26451	15	27507	23	12219	31	14841

The points:

$$P_0 = (0,1,0,0,0)P_1 = (0,0,1,0,0)P_2 = (0,1,10,30,10)P_3 = (0,1,18,15,5)$$
$$P_4 = (0,1,19,6,2)P_5 = (0,1,8,29,4)P_6 = (1,7,4,14,9)P_7 = (1,18,19,10,6)$$
$$P_8 = (1,23,23,9,10)P_9 = (1,28,25,2,6)P_{10} = (1,23,22,21,29)P_{11} = (1,22,29,2,6)$$
$$P_{12} = (1,5,2,28,14)P_{13} = (1,4,20,25,29)P_{14} = (1,11,24,17,30)P_{15} = (1,13,22,1,23)$$
$$P_{16} = (1,29,27,25,17)P_{17} = (1,26,12,30,3)P_{18} = (1,1,2,27,24)P_{19} = (1,26,6,27,16)$$
$$P_{20} = (1,1,1,16,27)P_{21} = (1,17,29,17,22)P_{22} = (1,1,19,11,1)P_{23} = (1,27,26,28,7)$$
$$P_{24} = (1,7,5,25,6)P_{25} = (1,15,30,20,10)P_{26} = (1,21,29,18,4)P_{27} = (0,1,5,5,30)$$
$$P_{28} = (1,19,8,30,29)P_{29} = (1,27,15,17,29)P_{30} = (1,30,24,3,18)P_{31} = (1,19,19,27,13)$$

Stabilizer of order 4 is generated by:

$$g_1 = \begin{bmatrix} 9 & 4 & 25 & 3 & 23 \\ 22 & 15 & 21 & 9 & 18 \\ 14 & 15 & 3 & 4 & 25 \\ 24 & 20 & 8 & 22 & 6 \\ 28 & 18 & 22 & 12 & 5 \end{bmatrix}$$

with 2 fixed points

3.7 Isomorphism Type 6

Stabilizer has order 10
Plane intersection type is $4^{145}\ 3^{4380}$
Plane invariant is too big (145 planes)

$\rightarrow$	5_1	10_5	10_8	20_7	10_6	5_{17}	10_9	10_{18}	5_{12}	15_{11}	5_{20}	5_{13}	10_{10}	10_{19}	10_{15}	5_{14}
2_0	5	5	5	10	0	0	0	0	0	0	0	0	0	0	0	0
10_3	0	2	2	2	3	1	2	1	1	3	0	1	1	0	0	0
5_{16}	0	2	0	0	2	2	2	4	1	0	2	0	0	2	2	0
10_4	1	0	1	4	0	0	1	1	0	3	1	0	2	2	1	1
5_2	0	0	0	0	0	0	0	0	1	0	0	2	2	2	4	2

$\downarrow$	5_1	10_5	10_8	20_7	10_6	5_{17}
2_0	2	1	1	1	0	0
10_3	0	2	2	1	3	2
5_{16}	0	1	0	0	1	2
10_4	2	0	1	2	0	0
5_2	0	0	0	0	0	0

$C_0 = \{1,15\}_2$
$C_1 = \{54,59,69,97,101\}_5$
$C_2 = \{5,6,19,26,30\}_5$
$C_3 = \{0,2,4,8,9,20,22,23,24,29\}_{10}$
$C_4 = \{3,7,12,13,14,17,18,21,27,31\}_{10}$
$C_5 = \{8,14,42,50,56,89,99,125,127,144\}_{10}$
$C_6 = \{15,62,67,75,92,119,121,132,134,137\}_{10}$
$C_7 = \{6,7,26,29,34,37,46,47,48,49,74,104,105,109,110,115,117,123,131,135\}_{20}$
$C_8 = \{12,13,21,65,87,93,98,102,120,124\}_{10}$
$C_9 = \{27,33,45,64,84,85,108,130,136,143\}_{10}$
$C_{10} = \{1,2,11,18,38,43,44,79,111,114\}_{10}$
$C_{11} = \{3,32,35,39,55,63,71,72,90,106,112,122,138,139,141\}_{15}$

$C_{12} = \{40, 66, 77, 82, 91\}_5$
$C_{13} = \{0, 20, 22, 25, 129\}_5$
$C_{14} = \{60, 81, 86, 96, 118\}_5$
$C_{15} = \{9, 30, 31, 53, 73, 78, 80, 107, 126, 128\}_{10}$
$C_{16} = \{10, 11, 16, 25, 28\}_5$
$C_{17} = \{4, 24, 68, 133, 142\}_5$
$C_{18} = \{16, 17, 41, 58, 76, 83, 88, 95, 100, 116\}_{10}$
$C_{19} = \{5, 10, 19, 23, 36, 51, 61, 70, 94, 103\}_{10}$
$C_{20} = \{28, 52, 57, 113, 140\}_5$

$\rightarrow$	5_1	10_5	10_8	20_7	10_6	5_{17}	10_9	10_{18}	5_{12}	15_{11}	5_{20}	5_{13}	10_{10}	10_{19}	10_{15}	5_{14}
2_0	5	5	5	10	0	0	0	0	0	0	0	0	0	0	0	0
10_3	0	2	2	2	3	1	2	1	1	3	0	1	1	0	0	0
5_{16}	0	2	0	0	2	2	2	4	1	0	2	0	0	2	2	0
10_4	1	0	1	4	0	0	1	1	0	3	1	0	2	2	1	1
5_2	0	0	0	0	0	0	0	0	1	0	0	2	2	2	4	2

$\downarrow$	5_1	10_5	10_8	20_7	10_6	5_{17}	10_9	10_{18}	5_{12}	15_{11}	5_{20}	5_{13}	10_{10}	10_{19}	10_{15}	5_{14}
2_0	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
10_3	0	2	2	1	3	2	2	1	2	2	0	2	1	0	0	0
5_{16}	0	1	0	0	1	2	1	2	1	0	2	0	0	1	1	0
10_4	2	0	1	2	0	0	1	1	0	2	2	0	2	2	1	2
5_2	0	0	0	0	0	0	0	0	1	0	0	2	1	1	2	2

$C_0 = \{1, 15\}_2$
$C_1 = \{11, 39, 72, 87, 94\}_5$
$C_2 = \{5, 6, 19, 26, 30\}_5$
$C_3 = \{0, 2, 4, 8, 9, 20, 22, 23, 24, 29\}_{10}$
$C_4 = \{3, 7, 12, 13, 14, 17, 18, 21, 27, 31\}_{10}$
$C_5 = \{3, 12, 16, 49, 71, 76, 102, 127, 139, 140\}_{10}$
$C_6 = \{2, 36, 43, 59, 85, 91, 119, 132, 133, 143\}_{10}$
$C_7 = \{4, 9, 22, 31, 35, 50, 52, 60, 62, 64, 65, 68, 97, 98, 99, 108, 112, 123, 135, 142\}_{20}$
$C_8 = \{15, 23, 70, 74, 78, 89, 120, 121, 141, 144\}_{10}$
$C_9 = \{6, 8, 34, 44, 90, 100, 109, 113, 128, 136\}_{10}$
$C_{10} = \{1, 20, 21, 32, 46, 51, 101, 105, 118, 125\}_{10}$
$C_{11} = \{7, 17, 18, 26, 27, 37, 63, 67, 86, 93, 104, 107, 110, 130, 131\}_{15}$
$C_{12} = \{75, 80, 83, 88, 103\}_5$
$C_{13} = \{54, 114, 116, 126, 137\}_5$
$C_{14} = \{24, 28, 38, 41, 45\}_5$
$C_{15} = \{19, 25, 29, 66, 81, 82, 95, 111, 122, 138\}_{10}$
$C_{16} = \{10, 11, 16, 25, 28\}_5$
$C_{17} = \{0, 115, 124, 129, 134\}_5$
$C_{18} = \{14, 40, 55, 56, 61, 73, 77, 79, 84, 92\}_{10}$
$C_{19} = \{10, 42, 47, 53, 57, 58, 69, 96, 106, 117\}_{10}$
$C_{20} = \{5, 13, 30, 33, 48\}_5$
Column cell 1:
Column cell 5:
Column cell 6:
Column cell 7:
Column cell 8:
Column cell 9:
Column cell 10:
Column cell 11:
Column cell 12:
Column cell 13:
Column cell 14:
Column cell 15:
Column cell 17:
Column cell 18:
Column cell 19:

Column cell 20:
Order of the group that is induced on the object is 10
Number of ancestors on 5-sets is 45683.
Number of orbits on 5-sets is 20245.
With 5 orbits on the object
Orbit lengths: $2,\ 5^2,\ 10^2$
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	24283	16	17124	24	19601
1	1	9	30058	17	18811	25	19591
2	184	10	27332	18	13616	26	8902
3	185	11	28717	19	6836	27	5699
4	276	12	15171	20	20042	28	30057
5	6889	13	5681	21	6386	29	14223
6	12537	14	13979	22	13783	30	21326
7	20040	15	11507	23	12219	31	13598

The points:

$$P_0 = (0,1,0,0,0)P_1 = (0,0,1,0,0)P_2 = (0,1,10,30,10)P_3 = (0,1,18,15,5)$$

$$P_4 = (0,1,4,10,12)P_5 = (1,8,2,11,21)P_6 = (1,24,22,11,28)P_7 = (1,17,23,12,19)$$

$$P_8 = (1,5,28,12,27)P_9 = (1,1,5,6,30)P_{10} = (1,29,15,8,23)P_{11} = (1,14,8,29,10)$$

$$P_{12} = (1,5,19,23,12)P_{13} = (1,9,4,19,16)P_{14} = (1,24,6,17,17)P_{15} = (1,9,20,9,4)$$

$$P_{16} = (1,3,3,5,29)P_{17} = (1,10,10,19,11)P_{18} = (1,29,27,25,17)P_{19} = (1,12,27,17,21)$$

$$P_{20} = (1,24,15,12,19)P_{21} = (1,24,27,4,16)P_{22} = (1,16,28,21,17)P_{23} = (1,27,26,28,7)$$

$$P_{24} = (1,9,4,16,19)P_{25} = (1,19,10,3,19)P_{26} = (1,10,18,25,25)P_{27} = (1,6,6,19,16)$$

$$P_{28} = (1,27,22,6,30)P_{29} = (1,3,30,22,17)P_{30} = (1,30,27,24,14)P_{31} = (1,9,25,25,17)$$

Stabilizer of order 10 is generated by:

$$g_1 = \begin{bmatrix} 11 & 17 & 0 & 26 & 24 \\ 0 & 15 & 29 & 26 & 25 \\ 24 & 30 & 15 & 30 & 3 \\ 12 & 3 & 25 & 10 & 6 \\ 13 & 30 & 26 & 26 & 10 \end{bmatrix}$$

with 32 fixed points

$$g_2 = \begin{bmatrix} 27 & 0 & 9 & 0 & 9 \\ 0 & 30 & 21 & 1 & 21 \\ 0 & 0 & 15 & 0 & 0 \\ 21 & 0 & 8 & 29 & 19 \\ 0 & 0 & 23 & 0 & 23 \end{bmatrix}$$

with 4 fixed points

3.8 Isomorphism Type 7

Stabilizer has order 64
Plane intersection type is $4^{128}\ 3^{4448}$
Plane invariant is too big (128 planes)

$\rightarrow$	128_1
32_0	16

$\downarrow$	128_1
32_0	4

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{32}$
$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42,$

$\rightarrow$	128_1
32_0	16

$\downarrow$	128_1
32_0	4

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}_{32}$
$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42,$
Column cell 1:
Order of the group that is induced on the object is 64
Number of ancestors on 5-sets is 3199.
Number of orbits on 5-sets is 3199.
With 1 orbits on the object
Orbit lengths: 32
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	8	6515	16	14207	24	11924
1	1	9	9260	17	11028	25	9173
2	184	10	26580	18	17054	26	23873
3	185	11	6517	19	13616	27	19669
4	276	12	10715	20	22982	28	11502
5	7869	13	27165	21	23824	29	14491
6	5423	14	15514	22	30454	30	25621
7	14780	15	22503	23	23771	31	899

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 10, 30, 10) P_3 = (0, 1, 18, 15, 5)$$

$$P_4 = (0, 1, 4, 10, 12) P_5 = (1, 27, 26, 9, 8) P_6 = (1, 4, 14, 5, 1) P_7 = (1, 27, 11, 20, 13)$$

$$P_8 = (1, 8, 16, 16, 21) P_9 = (1, 12, 11, 8, 26) P_{10} = (1, 11, 23, 30, 6) P_{11} = (1, 16, 8, 16, 21)$$

$$P_{12} = (1, 25, 16, 14, 9) P_{13} = (1, 21, 13, 6, 6) P_{14} = (1, 14, 1, 22, 12) P_{15} = (1, 17, 30, 26, 3)$$

$$P_{16} = (1, 20, 20, 22, 17) P_{17} = (1, 11, 29, 13, 4) P_{18} = (1, 15, 17, 4, 29) P_{19} = (1, 29, 27, 25, 17)$$

$$P_{20} = (1, 29, 15, 18, 24) P_{21} = (1, 1, 1, 16, 27) P_{22} = (1, 19, 1, 20, 30) P_{23} = (1, 7, 4, 13, 24)$$

$$P_{24} = (1, 17, 17, 25, 7) P_{25} = (1, 7, 14, 26, 26) P_{26} = (1, 9, 14, 24, 27) P_{27} = (1, 19, 2, 11, 19)$$

$$P_{28} = (1, 8, 7, 9, 4) P_{29} = (1, 7, 10, 16, 13) P_{30} = (1, 25, 10, 18, 5) P_{31} = (0, 1, 1, 25, 26)$$

Stabilizer of order 64 is generated by:

$$g_1 = \begin{bmatrix} 3 & 13 & 0 & 8 & 11 \\ 0 & 29 & 0 & 0 & 0 \\ 22 & 30 & 29 & 14 & 14 \\ 21 & 14 & 0 & 15 & 14 \\ 4 & 14 & 0 & 1 & 15 \end{bmatrix}$$

with 32 fixed points

$$g_2 = \begin{bmatrix} 9 & 0 & 0 & 13 & 6 \\ 0 & 27 & 21 & 2 & 11 \\ 0 & 12 & 27 & 19 & 27 \\ 3 & 27 & 11 & 14 & 18 \\ 22 & 19 & 2 & 7 & 14 \end{bmatrix}$$

with 32 fixed points

$$g_3 = \begin{bmatrix} 13 & 0 & 0 & 4 & 28 \\ 0 & 0 & 17 & 0 & 0 \\ 0 & 22 & 0 & 0 & 0 \\ 14 & 0 & 0 & 13 & 4 \\ 2 & 0 & 0 & 14 & 13 \end{bmatrix}$$

with 34 fixed points

Chapter 4

The BLT-Sets in Numeric Form

0, 1, 184, 185, 186, 200, 190, 210, 199, 201, 202, 203, 206, 208, 195, 213, 187, 188, 204, 189, 205, 191, 207, 192, 193, 209, 194, 211, 196, 212, 197, 198
0, 1, 184, 185, 186, 200, 190, 210, 199, 201, 202, 203, 206, 208, 195, 213, 10894, 17061, 26551, 13064, 25805, 22547, 26966, 10303, 11184, 16511, 9500, 18872, 29603, 17826, 10096, 5703
0, 1, 184, 185, 186, 200, 190, 210, 10804, 24118, 4713, 5959, 12547, 29609, 5281, 26551, 28230, 17054, 18604, 8126, 26966, 15399, 21161, 16511, 7353, 10103, 22177, 12216, 17826, 13058, 10890, 28578
0, 1, 184, 185, 186, 5078, 14473, 26285, 21092, 5959, 4911, 12547, 6664, 21776, 28424, 11878, 15158, 4726, 8681, 19516, 20200, 7339, 19075, 7353, 14668, 6635, 9933, 30327, 10026, 23190, 26887, 29283
0, 1, 184, 185, 186, 5610, 11837, 20584, 10894, 12654, 26580, 17767, 17971, 9430, 15934, 9282, 17954, 4902, 23862, 20042, 15963, 13234, 26090, 24411, 24299, 5206, 21270, 11181, 20396, 24367, 25621, 467
0, 1, 184, 185, 188, 559, 10721, 26451, 28230, 26948, 17157, 26958, 21499, 17387, 30385, 27507, 13616, 22126, 22999, 5579, 23824, 25518, 5241, 12219, 26548, 28653, 11358, 879, 17677, 16922, 20545, 14841
0, 1, 184, 185, 276, 6889, 12537, 20040, 24283, 30058, 27332, 28717, 15171, 5681, 13979, 11507, 17124, 18811, 13616, 6836, 20042, 6386, 13783, 12219, 19601, 19591, 8902, 5699, 30057, 14223, 21326, 13598
0, 1, 184, 185, 276, 7869, 5423, 14780, 6515, 9260, 26580, 6517, 10715, 27165, 15514, 22503, 14207, 11028, 17054, 13616, 22982, 23824, 30454, 23771, 11924, 9173, 23873, 19669, 11502, 14491, 25621, 899

```
INT BLT_31_size = 32;
INT BLT_31_nb_reps = 8;
INT BLT_31_reps[] = {
0, 1, 184, 185, 186, 200, 190, 210, 199, 201, 202, 203, 206, 208, 195, 213, 187, 188, 204, 189, 205, 191, 207, 192
0, 1, 184, 185, 186, 200, 190, 210, 199, 201, 202, 203, 206, 208, 195, 213, 10894, 17061, 26551, 13064, 25805, 225
0, 1, 184, 185, 186, 200, 190, 210, 10804, 24118, 4713, 5959, 12547, 29609, 5281, 26551, 28230, 17054, 18604, 8126
0, 1, 184, 185, 186, 5078, 14473, 26285, 21092, 5959, 4911, 12547, 6664, 21776, 28424, 11878, 15158, 4726, 8681, 1
0, 1, 184, 185, 186, 5610, 11837, 20584, 10894, 12654, 26580, 17767, 17971, 9430, 15934, 9282, 17954, 4902, 23862,
0, 1, 184, 185, 188, 559, 10721, 26451, 28230, 26948, 17157, 26958, 21499, 17387, 30385, 27507, 13616, 22126, 2299
0, 1, 184, 185, 276, 6889, 12537, 20040, 24283, 30058, 27332, 28717, 15171, 5681, 13979, 11507, 17124, 18811, 1361
0, 1, 184, 185, 276, 7869, 5423, 14780, 6515, 9260, 26580, 6517, 10715, 27165, 15514, 22503, 14207, 11028, 17054,
};
const BYTE *BLT_31_stab_order[] = {
"1904640",
"2048",
"96",
"8",
"4",
"4",
"10",
"64",
};
INT BLT_31_stab_gens[] = {
 4,  0,  0,  0,  0,  0, 27,  0,  0,  0,  0,  0, 27,  0,  0,  0,  0,  0, 27,  0,  0,  0,  0,  0, 27,
 8,  0,  0,  0,  0,  0, 12,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0,  8,  0,  0,  0,  0,  0,  8,
29,  0,  0,  3, 30,  0, 30,  0,  0,  0,  0,  0, 30,  0,  0, 15,  0,  0, 16, 15, 17,  0,  0, 11, 16,
```

```
18,  0,  0, 16,  5,  0, 30,  0,  0,  0,  0,  0, 30,  0,  0, 18,  0,  0,  6,  8,  8,  0,  0, 10,  6,
 3,  0,  0, 14, 16,  0, 27,  0,  0,  0,  0, 15, 27, 26, 19,  8, 19,  0, 16, 27,  7, 26,  0, 26, 16,
 5,  0,  0,  1, 10,  0,  2,  0,  0,  0,  0,  7,  2, 12,  4,  5,  4,  0, 12, 16, 16, 12,  0, 20, 12,
11,  0,  0, 14, 16,  0, 29, 11,  2, 11,  0,  0, 29,  0,  0, 23,  0, 11, 22, 14, 24,  0,  2,  2, 22,
 2,  0,  0, 22,  3,  0, 16,  0,  0,  0,  0,  0, 16,  0,  0, 14,  0,  0,  9, 23, 20,  0,  0, 21,  9,
10,  0,  0,  2, 20,  0,  4,  0,  0,  0,  0,  0,  4,  0,  0, 21,  0,  0,  7, 30, 30,  0,  0, 22,  7,
29,  0,  0, 28,  1,  0, 30,  0,  0,  0,  0,  0, 30,  0,  0, 16,  0,  0, 16, 15, 14,  0,  0, 11, 16,
 1,  0,  0, 14, 16,  0, 16,  0,  0,  0,  0,  1, 16, 13, 25,  8, 25,  0,  7, 13,  7, 13,  0, 24,  7,
26,  0,  0, 12, 27,  0, 16,  5, 15,  5,  0,  0, 16,  0,  0, 29,  0,  5, 10, 12,  6,  0, 15, 15, 10,
22,  0,  0, 13,  6,  0, 24, 13,  5, 12,  0, 21, 24, 10, 24,  3, 24, 12, 26, 16, 22, 10,  5, 20, 26,
 0, 10, 26, 22, 28,  5,  2, 19,  1, 30,  2, 10,  2, 28,  8, 24, 21, 28, 14,  1, 10, 20,  7, 27, 29,
21,  0,  0,  7,  8,  0, 30,  0,  0,  0,  0,  0, 30,  0,  0,  4,  0,  0, 20, 24, 19,  0,  0, 30, 20,
 0,  0,  0, 18, 25,  0,  4,  0,  0,  0,  0,  0,  4,  0,  0,  3,  0,  0,  2, 11, 22,  0,  0,  6,  2,
11,  0,  0,  6, 29,  0, 27,  0,  0,  0,  0, 15, 27, 26, 19, 30, 19,  0, 12, 18,  3, 26,  0,  7, 12,
20,  0,  0, 17, 15,  0,  2, 20, 29, 20,  0,  0,  2,  0,  0, 23,  0, 20, 20,  3, 24,  0, 29, 27, 20,
 4,  0,  0, 18, 25,  0, 28,  7,  1, 21,  0,  9,  0,  0,  0,  3, 28,  0, 18, 15, 22, 22,  0, 11, 18,
26,  0,  0, 17, 15,  0, 30,  0,  0,  0,  0, 27, 30, 22, 28, 23, 28,  0,  3, 20, 24, 22,  0, 25,  3,
17,  3, 12, 20, 21,  6, 11, 12,  6,  3, 17, 27, 11, 24,  4, 26,  4,  3, 11, 22, 10, 24,  6,  6, 11,
 0, 14,  7,  2, 21, 13,  9, 25, 12, 24, 22, 16, 20, 13, 24, 29,  7,  2, 16, 26, 17, 30, 19, 27, 21,
13,  0,  0, 26, 12,  0, 27,  0,  0,  0,  0, 15, 27, 26, 19,  6, 19,  0, 11,  8, 13, 26,  0, 10, 11,
15, 24, 27,  6, 16, 29, 23, 24, 23, 23, 12, 29, 23,  4, 22,  8, 22, 23, 24, 15,  3,  4, 23, 10, 24,
 9,  4, 25,  3, 23, 22, 15, 21,  9, 18, 14, 15,  3,  4, 25, 24, 20,  8, 22,  6, 28, 18, 22, 12,  5,
11, 17,  0, 26, 24,  0, 15, 29, 26, 25, 24, 30, 15, 30,  3, 12,  3, 25, 10,  6, 13, 30, 26, 26, 10,
27,  0,  9,  0,  9,  0, 30, 21,  1, 21,  0,  0, 15,  0,  0, 21,  0,  8, 29, 19,  0,  0, 23,  0, 23,
 3, 13,  0,  8, 11,  0, 29,  0,  0,  0, 22, 30, 29, 14, 14, 21, 14,  0, 15, 14,  4, 14,  0,  1, 15,
 9,  0,  0, 13,  6,  0, 27, 21,  2, 11,  0, 12, 27, 19, 27,  3, 27, 11, 14, 18, 22, 19,  2,  7, 14,
13,  0,  0,  4, 28,  0,  0, 17,  0,  0,  0, 22,  0,  0,  0, 14,  0,  0, 13,  4,  2,  0,  0, 14, 13,
};
INT BLT_31_stab_gens_fst[] = { 0, 7, 14, 19, 22, 24, 25, 27};
INT BLT_31_stab_gens_len[] = { 7, 7, 5, 3, 2, 1, 2, 3};
INT BLT_31_make_element_size = 0;
```