BLT-sets of Q(4, 27)

Anton Betten

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There are 6 BLT-sets.

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The BLT-Sets

3.1 Isomorphism Type 0

Stabilizer has order 3302208
Plane intersection type is 28
Plane invariant is

$$\begin{bmatrix} 28 \end{bmatrix}$$

$\rightarrow$	1_1
28_0	1

$\downarrow$	1_1
28_0	28

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

$\rightarrow$	1_1
28_0	1

$\downarrow$	1_1
28_0	28

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27\}_{28}$
$C_1 = \{0\}_1$
Column cell 1:
Order of the group that is induced on the object is 58968
Number of ancestors on 5-sets is 4.
Number of orbits on 5-sets is 4.
With 1 orbits on the object
Orbit lengths: 28
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	7	142	14	137	21	150
1	1	8	145	15	141	22	152
2	134	9	139	16	143	23	153
3	135	10	140	17	144	24	154
4	136	11	146	18	147	25	155
5	151	12	157	19	148	26	156
6	138	13	159	20	149	27	158

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 1, 2, 1) P_3 = (0, 1, 1, 1, 2)$$

$$P_4 = (0, 1, 25, 11, 19) P_5 = (0, 1, 8, 25, 14) P_6 = (0, 1, 22, 12, 24) P_7 = (0, 1, 8, 14, 25)$$

$$P_8 = (0, 1, 13, 5, 7) P_9 = (0, 1, 25, 19, 11) P_{10} = (0, 1, 22, 24, 12) P_{11} = (0, 1, 6, 17, 22)$$

$$P_{12} = (0, 1, 13, 7, 5) P_{13} = (0, 1, 6, 22, 17) P_{14} = (0, 1, 20, 15, 21) P_{15} = (0, 1, 20, 21, 15)$$

$$P_{16} = (0, 1, 12, 16, 23) P_{17} = (0, 1, 9, 3, 6) P_{18} = (0, 1, 15, 9, 18) P_{19} = (0, 1, 16, 4, 8)$$

$$P_{20} = (0, 1, 7, 10, 20) P_{21} = (0, 1, 11, 13, 26) P_{22} = (0, 1, 9, 6, 3) P_{23} = (0, 1, 12, 23, 16)$$

$$P_{24} = (0, 1, 16, 8, 4) P_{25} = (0, 1, 11, 26, 13) P_{26} = (0, 1, 7, 20, 10) P_{27} = (0, 1, 15, 18, 9)$$

Stabilizer of order 3302208 is generated by:

$$g_1 = \begin{bmatrix} 26 & 0 & 0 & 0 & 0 \\ 0 & 13 & 0 & 0 & 0 \\ 0 & 0 & 13 & 0 & 0 \\ 0 & 0 & 0 & 13 & 0 \\ 0 & 0 & 0 & 0 & 13 \end{bmatrix}_0$$

with 784 fixed points

$$g_2 = \begin{bmatrix} 16 & 0 & 0 & 0 & 0 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 0 & 16 & 0 & 0 \\ 0 & 0 & 0 & 16 & 0 \\ 0 & 0 & 0 & 0 & 16 \end{bmatrix}_1$$

with 40 fixed points

$$g_3 = \begin{bmatrix} 25 & 0 & 0 & 0 & 0 \\ 0 & 25 & 0 & 0 & 0 \\ 0 & 0 & 25 & 0 & 0 \\ 0 & 0 & 0 & 14 & 0 \\ 0 & 0 & 0 & 0 & 14 \end{bmatrix}_2$$

with 6 fixed points

$$g_4 = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 11 & 0 & 0 & 0 \\ 0 & 0 & 6 & 0 & 0 \\ 0 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{bmatrix}_1$$

with 6 fixed points

$$g_5 = \begin{bmatrix} 17 & 0 & 0 & 6 & 6 \\ 0 & 9 & 0 & 0 & 0 \\ 0 & 0 & 9 & 0 & 0 \\ 6 & 0 & 0 & 13 & 4 \\ 6 & 0 & 0 & 4 & 13 \end{bmatrix}_0$$

with 28 fixed points

$$g_6 = \begin{bmatrix} 0 & 0 & 0 & 16 & 16 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 0 & 16 & 0 & 0 \\ 23 & 0 & 0 & 23 & 16 \\ 23 & 0 & 0 & 16 & 23 \end{bmatrix}_0$$

with 730 fixed points

$$g_7 = \begin{bmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 2 \\ 0 & 0 & 0 & 2 & 0 \end{bmatrix}_0$$

with 28 fixed points

$$g_8 = \begin{bmatrix} 22 & 0 & 0 & 23 & 23 \\ 0 & 6 & 0 & 0 & 0 \\ 0 & 6 & 6 & 6 & 3 \\ 23 & 6 & 0 & 11 & 14 \\ 23 & 3 & 0 & 14 & 11 \end{bmatrix}_2$$

with 4 fixed points

$$g_9 = \begin{bmatrix} 4 & 0 & 0 & 17 & 17 \\ 0 & 7 & 7 & 5 & 7 \\ 0 & 7 & 7 & 7 & 5 \\ 22 & 7 & 5 & 4 & 4 \\ 22 & 5 & 7 & 4 & 4 \end{bmatrix}_1$$

with 0 fixed points

3.2 Isomorphism Type 1

Stabilizer has order 4704
Plane intersection type is $14^2\ 4^{49}\ 3^{2352}$

Plane invariant is

$$\begin{bmatrix} 14 & 0 \\ 0 & 14 \end{bmatrix}$$

$\rightarrow$	2_1
28_0	1

$\downarrow$	2_1
28_0	14

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

$\rightarrow$	2_1	49_2
28_0	1	7

$\downarrow$	2_1	49_2
28_0	14	4

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27\}_{28}$
$C_1 = \{0, 50\}_2$
$C_2 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43$
Column cell 1:
Column cell 2:
Order of the group that is induced on the object is 4704
Number of ancestors on 5-sets is 95.
Number of orbits on 5-sets is 82.
With 1 orbits on the object
Orbit lengths: 28
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	7	142	14	11317	21	8314
1	1	8	145	15	11321	22	7848
2	134	9	139	16	4199	23	4209
3	135	10	140	17	7840	24	10476
4	136	11	146	18	13199	25	8319
5	151	12	157	19	10470	26	7124
6	138	13	159	20	7117	27	13210

The points:

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

Stabilizer of order 4704 is generated by:

$$g_1 = \begin{bmatrix} 26 & 0 & 0 & 0 & 0 \\ 0 & 13 & 0 & 0 & 0 \\ 0 & 0 & 13 & 0 & 0 \\ 0 & 0 & 0 & 26 & 0 \\ 0 & 0 & 0 & 0 & 26 \end{bmatrix}_0$$

with 30 fixed points

$$g_2 = \begin{bmatrix} 26 & 0 & 0 & 0 & 0 \\ 0 & 23 & 0 & 0 & 0 \\ 0 & 0 & 17 & 0 & 0 \\ 0 & 0 & 0 & 26 & 0 \\ 0 & 0 & 0 & 0 & 26 \end{bmatrix}_1$$

with 40 fixed points

$$g_3 = \begin{bmatrix} 10 & 0 & 0 & 5 & 5 \\ 0 & 13 & 0 & 0 & 0 \\ 0 & 0 & 13 & 0 & 0 \\ 5 & 0 & 0 & 16 & 3 \\ 5 & 0 & 0 & 3 & 16 \end{bmatrix}_0$$

with 28 fixed points

$$g_4 = \begin{bmatrix} 23 & 0 & 0 & 14 & 14 \\ 0 & 13 & 0 & 0 & 0 \\ 0 & 0 & 13 & 0 & 0 \\ 25 & 0 & 0 & 10 & 6 \\ 25 & 0 & 0 & 6 & 10 \end{bmatrix}_0$$

with 730 fixed points

$$g_5 = \begin{bmatrix} 0 & 0 & 0 & 23 & 23 \\ 0 & 16 & 0 & 0 & 0 \\ 0 & 0 & 16 & 0 & 0 \\ 16 & 0 & 0 & 23 & 16 \\ 16 & 0 & 0 & 16 & 23 \end{bmatrix}_0$$

with 730 fixed points

$$g_6 = \begin{bmatrix} 16 & 0 & 0 & 14 & 14 \\ 0 & 2 & 17 & 24 & 12 \\ 0 & 2 & 2 & 1 & 2 \\ 25 & 2 & 12 & 18 & 5 \\ 25 & 1 & 24 & 5 & 18 \end{bmatrix}_0$$

with 28 fixed points

$$g_7 = \begin{bmatrix} 0 & 7 & 17 & 20 & 10 \\ 19 & 22 & 25 & 10 & 10 \\ 9 & 12 & 6 & 25 & 25 \\ 5 & 26 & 12 & 2 & 15 \\ 7 & 26 & 12 & 21 & 1 \end{bmatrix}_2$$

with 0 fixed points

3.3 Isomorphism Type 2

Stabilizer has order 117936
Plane intersection type is 4^{819}
Plane invariant is too big (819 planes)

$\rightarrow$	819_1
28_0	117

$\downarrow$	819_1
28_0	4

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

$\rightarrow$	819_1
28_0	117

$\downarrow$	819_1
28_0	4

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27\}_{28}$
$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42,$
Column cell 1:
Order of the group that is induced on the object is 58968
Number of ancestors on 5-sets is 4.
Number of orbits on 5-sets is 4.
With 1 orbits on the object

Orbit lengths: 28
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	7	344	14	719	21	182
1	1	8	531	15	585	22	730
2	134	9	527	16	690	23	211
3	135	10	450	17	561	24	573
4	175	11	347	18	198	25	595
5	220	12	452	19	778	26	229
6	772	13	644	20	649	27	698

The points:

$$P_0 = (0,1,0,0,0)P_1 = (0,0,1,0,0)P_2 = (0,1,1,2,1)P_3 = (0,1,1,1,2)$$

$$P_4 = (0,1,9,10,22)P_5 = (0,1,13,14,20)P_6 = (0,1,11,4,7)P_7 = (0,1,7,11,21)$$

$$P_8 = (0,1,6,21,12)P_9 = (0,1,6,15,24)P_{10} = (0,1,8,12,19)P_{11} = (0,1,7,19,15)$$

$$P_{12} = (0,1,8,24,11)P_{13} = (0,1,20,13,18)P_{14} = (0,1,22,9,23)P_{15} = (0,1,25,16,26)$$

$$P_{16} = (0,1,12,3,8)P_{17} = (0,1,15,5,6)P_{18} = (0,1,16,17,25)P_{19} = (0,1,11,8,5)$$

$$P_{20} = (0,1,20,26,9)P_{21} = (0,1,9,20,17)P_{22} = (0,1,22,18,16)P_{23} = (0,1,16,22,14)$$

$$P_{24} = (0,1,15,7,3)P_{25} = (0,1,25,23,13)P_{26} = (0,1,13,25,10)P_{27} = (0,1,12,6,4)$$

Stabilizer of order 117936 is generated by:

$$g_1 = \begin{bmatrix} 13 & 0 & 0 & 0 & 0 \\ 0 & 26 & 0 & 0 & 0 \\ 0 & 0 & 26 & 0 & 0 \\ 0 & 0 & 0 & 26 & 0 \\ 0 & 0 & 0 & 0 & 26 \end{bmatrix}_0$$

with 784 fixed points

$$g_2 = \begin{bmatrix} 23 & 0 & 0 & 0 & 0 \\ 0 & 23 & 0 & 0 & 0 \\ 0 & 0 & 23 & 0 & 0 \\ 0 & 0 & 0 & 23 & 0 \\ 0 & 0 & 0 & 0 & 23 \end{bmatrix}_2$$

with 40 fixed points

$$g_3 = \begin{bmatrix} 7 & 0 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 & 0 \\ 0 & 0 & 5 & 0 & 0 \\ 0 & 0 & 0 & 7 & 0 \\ 0 & 0 & 0 & 0 & 7 \end{bmatrix}_0$$

with 30 fixed points

$$g_4 = \begin{bmatrix} 25 & 0 & 0 & 0 & 0 \\ 0 & 26 & 0 & 0 & 0 \\ 0 & 0 & 5 & 0 & 0 \\ 0 & 0 & 0 & 22 & 0 \\ 0 & 0 & 0 & 0 & 9 \end{bmatrix}_1$$

with 6 fixed points

$$g_5 = \begin{bmatrix} 7 & 0 & 0 & 0 & 0 \\ 0 & 7 & 0 & 0 & 0 \\ 0 & 7 & 7 & 5 & 7 \\ 0 & 5 & 0 & 7 & 0 \\ 0 & 7 & 0 & 0 & 7 \end{bmatrix}_0$$

with 1 fixed points

$$g_6 = \begin{bmatrix} 13 & 0 & 0 & 0 & 0 \\ 0 & 19 & 0 & 0 & 0 \\ 0 & 19 & 2 & 5 & 8 \\ 0 & 19 & 0 & 5 & 0 \\ 0 & 11 & 0 & 0 & 4 \end{bmatrix}_0$$

with 4 fixed points

$$g_7 = \begin{bmatrix} 8 & 0 & 0 & 0 & 0 \\ 0 & 4 & 4 & 4 & 8 \\ 0 & 4 & 0 & 0 & 0 \\ 0 & 8 & 0 & 0 & 4 \\ 0 & 4 & 0 & 4 & 0 \end{bmatrix}_2$$

with 16 fixed points

3.4 Isomorphism Type 3

Stabilizer has order 648
Plane intersection type is $4^{360}\ 3^{1836}$
Plane invariant is too big (360 planes)

$\rightarrow$	117_1	243_3
1_0	117	0
27_2	13	36

$\downarrow$	117_1	243_3
1_0	1	0
27_2	3	4

$C_0 = \{2\}_1$
$C_1 = \{0, 1, 4, 5, 6, 9, 13, 14, 20, 22, 29, 33, 34, 38, 42, 44, 46, 54, 55, 56, 62, 64, 67, 73, 78, 79, 80, 89, 95, 107, 108, 109, 113, 115, 117, 121, 130, 131, 1$
$C_2 = \{0, 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27\}_{27}$
$C_3 = \{2, 3, 7, 8, 10, 11, 12, 15, 16, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 30, 31, 32, 35, 36, 37, 39, 40, 41, 43, 45, 47, 48, 49, 50, 51, 52, 53, 57, 58, 59, 60,$

$\rightarrow$	117_1	243_3
1_0	117	0
27_2	13	36

$\downarrow$	117_1	243_3
1_0	1	0
27_2	3	4

$C_0 = \{2\}_1$

$C_1 = \{0, 1, 2, 9, 10, 11, 16, 21, 26, 30, 31, 36, 37, 41, 42, 43, 50, 51, 52, 54, 55, 60, 61, 65, 66, 67, 71, 78, 80, 82, 83, 86, 88, 90, 96, 97, 98, 102, 106, 111$

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

$C_3 = \{3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 29, 32, 33, 34, 35, 38, 39, 40, 44, 45, 46, 47, 48, 49, 53, 56, 57, 58, 59, 62, 63, 6$
Column cell 1:
Column cell 3:
Order of the group that is induced on the object is 648
Number of ancestors on 5-sets is 200.
Number of orbits on 5-sets is 200.
With 2 orbits on the object
Orbit lengths: 1, 27
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	7	17557	14	7998	21	6322
1	1	8	11321	15	11965	22	730
2	134	9	19430	16	8521	23	5204
3	135	10	16074	17	13837	24	13208
4	175	11	13191	18	198	25	595
5	220	12	10462	19	10473	26	5776
6	9157	13	7422	20	649	27	11339

The points:

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

Stabilizer of order 648 is generated by:

$$g_1 = \begin{bmatrix} 23 & 0 & 0 & 0 & 0 \\ 0 & 23 & 0 & 0 & 0 \\ 0 & 0 & 23 & 0 & 0 \\ 0 & 0 & 0 & 23 & 0 \\ 0 & 0 & 0 & 0 & 23 \end{bmatrix}_2$$

with 40 fixed points

$$g_2 = \begin{bmatrix} 4 & 0 & 0 & 0 & 0 \\ 0 & 8 & 0 & 0 & 0 \\ 0 & 8 & 8 & 8 & 4 \\ 0 & 4 & 0 & 4 & 0 \\ 0 & 8 & 0 & 0 & 4 \end{bmatrix}_2$$

with 6 fixed points

$$g_3 = \begin{bmatrix} 3 & 12 & 0 & 26 & 2 \\ 0 & 12 & 0 & 0 & 0 \\ 24 & 16 & 12 & 3 & 10 \\ 1 & 10 & 0 & 18 & 25 \\ 13 & 3 & 0 & 12 & 18 \end{bmatrix}_0$$

with 730 fixed points

$$g_4 = \begin{bmatrix} 15 & 0 & 0 & 0 & 0 \\ 0 & 15 & 15 & 15 & 21 \\ 0 & 15 & 0 & 0 & 0 \\ 0 & 21 & 0 & 0 & 15 \\ 0 & 15 & 0 & 15 & 0 \end{bmatrix}_2$$

with 40 fixed points

3.5 Isomorphism Type 4

Stabilizer has order 6
Plane intersection type is $5^3\ 4^{89}\ 3^{2890}$
Plane invariant is

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

$\rightarrow$	3_1
1_0	3
12_2	1
15_3	0

$\downarrow$	3_1
1_0	1
12_2	4
15_3	0

$C_0 = \{3\}_1$
$C_1 = \{0,1,2\}_3$
$C_2 = \{4,9,10,11,12,17,20,21,22,24,26,27\}_{12}$

$C_3 = \{0, 1, 2, 5, 6, 7, 8, 13, 14, 15, 16, 18, 19, 23, 25\}_{15}$

$\rightarrow$	3_1	1_2	8_7	6_9	6_8	6_{11}	12_{19}	6_{12}	6_{20}	6_{10}	6_{13}	12_{21}	6_{15}	2_{14}	6_{16}
1_0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6_3	1	0	4	2	1	1	2	1	1	0	0	0	0	0	0
6_5	1	0	0	0	2	1	2	0	0	2	1	2	1	0	0
1_4	0	1	0	0	0	6	0	0	0	6	0	0	0	2	0
6_{17}	0	0	0	1	0	0	2	1	1	1	2	4	0	1	2
2_6	0	1	4	0	3	0	0	3	0	0	3	0	0	0	0
6_{18}	0	0	0	1	0	1	2	1	2	0	0	2	3	0	2

$\downarrow$	3_1	1_2	8_7	6_9	6_8	6_{11}	12_{19}	6_{12}	6_{20}	6_{10}	6_{13}	12_{21}	6_{15}	2_{14}	6_{16}
1_0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6_3	2	0	3	2	1	1	1	1	1	0	0	0	0	0	0
6_5	2	0	0	0	2	1	1	0	0	2	1	1	1	0	0
1_4	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
6_{17}	0	0	0	1	0	0	1	1	1	1	2	2	0	3	2
2_6	0	2	1	0	1	0	0	1	0	0	1	0	0	0	0
6_{18}	0	0	0	1	0	1	1	1	2	0	0	1	3	0	2

$C_0 = \{3\}_1$
$C_1 = \{15, 36, 49\}_3$
$C_2 = \{91\}_1$
$C_3 = \{9, 11, 17, 22, 26, 27\}_6$
$C_4 = \{0\}_1$
$C_5 = \{4, 10, 12, 20, 21, 24\}_6$
$C_6 = \{1, 2\}_2$
$C_7 = \{4, 12, 14, 20, 25, 33, 40, 85\}_8$
$C_8 = \{26, 42, 57, 61, 63, 69\}_6$
$C_9 = \{1, 23, 27, 45, 51, 68\}_6$
$C_{10} = \{17, 30, 64, 65, 82, 90\}_6$
$C_{11} = \{28, 50, 76, 77, 84, 87\}_6$
$C_{12} = \{11, 24, 47, 72, 74, 75\}_6$
$C_{13} = \{2, 19, 21, 32, 66, 79\}_6$
$C_{14} = \{13, 39\}_2$
$C_{15} = \{7, 8, 46, 52, 71, 88\}_6$
$C_{16} = \{9, 35, 37, 54, 56, 59\}_6$
$C_{17} = \{5, 6, 7, 18, 19, 25\}_6$
$C_{18} = \{8, 13, 14, 15, 16, 23\}_6$
$C_{19} = \{0, 3, 5, 29, 38, 43, 44, 62, 70, 73, 86, 89\}_{12}$
$C_{20} = \{6, 16, 60, 78, 80, 83\}_6$
$C_{21} = \{10, 18, 22, 31, 34, 41, 48, 53, 55, 58, 67, 81\}_{12}$
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 19:
Column cell 20:
Column cell 21:
Order of the group that is induced on the object is 6
Number of ancestors on 5-sets is 16422.
Number of orbits on 5-sets is 16422.

With 7 orbits on the object
Orbit lengths: $1^2,\ 2,\ 6^4$
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	7	8323	14	10348	21	19920
1	1	8	8903	15	7083	22	15376
2	134	9	9042	16	13659	23	12314
3	135	10	17319	17	19426	24	8845
4	175	11	14081	18	13306	25	11127
5	4203	12	7773	19	6570	26	19798
6	11321	13	5142	20	5039	27	17180

The points:

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

Stabilizer of order 6 is generated by:

$$g_1 = \begin{bmatrix} 9 & 0 & 0 & 12 & 12 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 12 & 0 & 0 & 19 & 20 \\ 12 & 0 & 0 & 20 & 19 \end{bmatrix}_1$$

with 40 fixed points

$$g_2 = \begin{bmatrix} 6 & 0 & 0 & 19 & 19 \\ 0 & 20 & 0 & 0 & 0 \\ 0 & 20 & 20 & 10 & 20 \\ 11 & 20 & 0 & 26 & 16 \\ 11 & 10 & 0 & 16 & 26 \end{bmatrix}_1$$

with 6 fixed points

3.6 Isomorphism Type 5

Stabilizer has order 156
Plane intersection type is $4^{91}\ 3^{2912}$
Plane invariant is too big (91 planes)

$\rightarrow$	91_1
28_0	13

$\downarrow$	91_1
28_0	4

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

$\rightarrow$	91_1
28_0	13

$\downarrow$	91_1
28_0	4

$C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27\}_{28}$
$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42,$
Column cell 1:
Order of the group that is induced on the object is 156
Number of ancestors on 5-sets is 833.
Number of orbits on 5-sets is 652.
With 2 orbits on the object
Orbit lengths: 2, 26
The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	7	19313	14	10452	21	14087
1	1	8	6148	15	19564	22	8276
2	134	9	16648	16	13056	23	19135
3	135	10	15661	17	9062	24	8069
4	175	11	5813	18	17481	25	13656
5	4311	12	347	19	8474	26	10829
6	10055	13	8762	20	6315	27	6555

The points:

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

Stabilizer of order 156 is generated by:

$$g_1 = \begin{bmatrix} 3 & 0 & 0 & 10 & 10 \\ 0 & 8 & 0 & 0 & 0 \\ 0 & 0 & 8 & 0 & 0 \\ 10 & 0 & 0 & 1 & 5 \\ 10 & 0 & 0 & 5 & 1 \end{bmatrix}_2$$

with 40 fixed points

$$g_2 = \begin{bmatrix} 2 & 0 & 0 & 16 & 16 \\ 0 & 5 & 0 & 0 & 0 \\ 0 & 5 & 5 & 5 & 7 \\ 23 & 7 & 0 & 4 & 6 \\ 23 & 5 & 0 & 6 & 4 \end{bmatrix}_2$$

with 4 fixed points

$$g_3 = \begin{bmatrix} 8 & 0 & 0 & 18 & 18 \\ 0 & 24 & 24 & 12 & 24 \\ 0 & 24 & 24 & 24 & 12 \\ 9 & 12 & 24 & 8 & 8 \\ 9 & 24 & 12 & 8 & 8 \end{bmatrix}_1$$

with 6 fixed points

$$g_4 = \begin{bmatrix} 24 & 0 & 23 & 8 & 12 \\ 0 & 11 & 1 & 5 & 8 \\ 0 & 0 & 12 & 0 & 0 \\ 5 & 0 & 13 & 26 & 1 \\ 5 & 0 & 15 & 11 & 17 \end{bmatrix}_1$$

with 6 fixed points

Chapter 4

The BLT-Sets in Numeric Form

0, 1, 134, 135, 136, 151, 138, 142, 145, 139, 140, 146, 157, 159, 137, 141, 143, 144, 147, 148, 149, 150, 152, 153, 154, 155, 156, 158
0, 1, 134, 135, 136, 151, 138, 142, 145, 139, 140, 146, 157, 159, 11317, 11321, 4199, 7840, 13199, 10470, 7117, 8314, 7848, 4209, 10476, 8319, 7124, 13210
0, 1, 134, 135, 175, 220, 772, 344, 531, 527, 450, 347, 452, 644, 719, 585, 690, 561, 198, 778, 649, 182, 730, 211, 573, 595, 229, 698
0, 1, 134, 135, 175, 220, 9157, 17557, 11321, 19430, 16074, 13191, 10462, 7422, 7998, 11965, 8521, 13837, 198, 10473, 649, 6322, 730, 5204, 13208, 595, 5776, 11339
0, 1, 134, 135, 175, 4203, 11321, 8323, 8903, 9042, 17319, 14081, 7773, 5142, 10348, 7083, 13659, 19426, 13306, 6570, 5039, 19920, 15376, 12314, 8845, 11127, 19798, 17180
0, 1, 134, 135, 175, 4311, 10055, 19313, 6148, 16648, 15661, 5813, 347, 8762, 10452, 19564, 13056, 9062, 17481, 8474, 6315, 14087, 8276, 19135, 8069, 13656, 10829, 6555

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INT BLT_27_size = 28;
INT BLT_27_nb_reps = 6;
INT BLT_27_reps[] = {
0, 1, 134, 135, 136, 151, 138, 142, 145, 139, 140, 146, 157, 159, 137, 141, 143, 144, 147, 148, 149, 150, 152, 153
0, 1, 134, 135, 136, 151, 138, 142, 145, 139, 140, 146, 157, 159, 11317, 11321, 4199, 7840, 13199, 10470, 7117, 83
0, 1, 134, 135, 175, 220, 772, 344, 531, 527, 450, 347, 452, 644, 719, 585, 690, 561, 198, 778, 649, 182, 730, 211
0, 1, 134, 135, 175, 220, 9157, 17557, 11321, 19430, 16074, 13191, 10462, 7422, 7998, 11965, 8521, 13837, 198, 104
0, 1, 134, 135, 175, 4203, 11321, 8323, 8903, 9042, 17319, 14081, 7773, 5142, 10348, 7083, 13659, 19426, 13306, 65
0, 1, 134, 135, 175, 4311, 10055, 19313, 6148, 16648, 15661, 5813, 347, 8762, 10452, 19564, 13056, 9062, 17481, 84
};
const BYTE *BLT_27_stab_order[] = {
"3302208",
"4704",
"117936",
"648",
"6",
"156",
};
INT BLT_27_stab_gens[] = {
26,  0,  0,  0,  0,  0, 13,  0,  0,  0,  0,  0, 13,  0,  0,  0,  0,  0, 13,  0,  0,  0,  0,  0, 13, 0,
16,  0,  0,  0,  0,  0, 16,  0,  0,  0,  0,  0, 16,  0,  0,  0,  0,  0, 16,  0,  0,  0,  0,  0, 16, 1,
25,  0,  0,  0,  0,  0, 25,  0,  0,  0,  0,  0, 25,  0,  0,  0,  0,  0, 14,  0,  0,  0,  0,  0, 14, 2,
 1,  0,  0,  0,  0,  0, 11,  0,  0,  0,  0,  0,  6,  0,  0,  0,  0,  0,  2,  0,  0,  0,  0,  0,  2, 1,
17,  0,  0,  6,  6,  0,  9,  0,  0,  0,  0,  0,  9,  0,  0,  6,  0,  0, 13,  4,  6,  0,  0,  4, 13, 0,
 0,  0,  0, 16, 16,  0, 16,  0,  0,  0,  0,  0, 16,  0,  0, 23,  0,  0, 23, 16, 23,  0,  0, 16, 23, 0,
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22,  0,  0, 23, 23,  0,  6,  0,  0,  0,  0,  6,  6,  6,  3, 23,  6,  0, 11, 14, 23,  3,  0, 14, 11, 2,
 4,  0,  0, 17, 17,  0,  7,  7,  5,  7,  0,  7,  7,  7,  5, 22,  7,  5,  4,  4, 22,  5,  7,  4,  4, 1,
26,  0,  0,  0,  0,  0, 13,  0,  0,  0,  0,  0, 13,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0, 26, 0,
26,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 17,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0, 26, 1,
10,  0,  0,  5,  5,  0, 13,  0,  0,  0,  0,  0, 13,  0,  0,  5,  0,  0, 16,  3,  5,  0,  0,  3, 16, 0,
23,  0,  0, 14, 14,  0, 13,  0,  0,  0,  0,  0, 13,  0,  0, 25,  0,  0, 10,  6, 25,  0,  0,  6, 10, 0,
```

```
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16,  0,  0, 14, 14,  0,  2, 17, 24, 12,  0,  2,  2,  1,  2, 25,  2, 12, 18,  5, 25,  1, 24,  5, 18, 0,
 0,  7, 17, 20, 10, 19, 22, 25, 10, 10,  9, 12,  6, 25, 25,  5, 26, 12,  2, 15,  7, 26, 12, 21,  1, 2,
13,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0, 26, 0,
23,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 23, 2,
 7,  0,  0,  0,  0,  0,  5,  0,  0,  0,  0,  0,  5,  0,  0,  0,  0,  0,  7,  0,  0,  0,  0,  0,  7, 0,
25,  0,  0,  0,  0,  0, 26,  0,  0,  0,  0,  0,  5,  0,  0,  0,  0,  0, 22,  0,  0,  0,  0,  0,  9, 1,
 7,  0,  0,  0,  0,  0,  7,  0,  0,  0,  0,  7,  7,  5,  7,  0,  5,  0,  7,  0,  0,  7,  0,  0,  7, 0,
13,  0,  0,  0,  0,  0, 19,  0,  0,  0,  0, 19,  2,  5,  8,  0, 19,  0,  5,  0,  0, 11,  0,  0,  4, 0,
 8,  0,  0,  0,  0,  0,  4,  4,  4,  8,  0,  4,  0,  0,  0,  0,  8,  0,  0,  4,  0,  4,  0,  4,  0, 2,
23,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 23,  0,  0,  0,  0,  0, 23, 2,
 4,  0,  0,  0,  0,  0,  8,  0,  0,  0,  0,  8,  8,  8,  4,  0,  4,  0,  4,  0,  0,  8,  0,  0,  4, 2,
 3, 12,  0, 26,  2,  0, 12,  0,  0,  0, 24, 16, 12,  3, 10,  1, 10,  0, 18, 25, 13,  3,  0, 12, 18, 0,
15,  0,  0,  0,  0,  0, 15, 15, 15, 21,  0, 15,  0,  0,  0,  0, 21,  0,  0, 15,  0, 15,  0, 15,  0, 2,
 9,  0,  0, 12, 12,  0,  2,  0,  0,  0,  0,  0,  2,  0,  0, 12,  0,  0, 19, 20, 12,  0,  0, 20, 19, 1,
 6,  0,  0, 19, 19,  0, 20,  0,  0,  0,  0, 20, 20, 10, 20, 11, 20,  0, 26, 16, 11, 10,  0, 16, 26, 1,
 3,  0,  0, 10, 10,  0,  8,  0,  0,  0,  0,  0,  8,  0,  0, 10,  0,  0,  1,  5, 10,  0,  0,  5,  1, 2,
 2,  0,  0, 16, 16,  0,  5,  0,  0,  0,  0,  5,  5,  5,  7, 23,  7,  0,  4,  6, 23,  5,  0,  6,  4, 2,
 8,  0,  0, 18, 18,  0, 24, 24, 12, 24,  0, 24, 24, 24, 12,  9, 12, 24,  8,  8,  9, 24, 12,  8,  8, 1,
24,  0, 23,  8, 12,  0, 11,  1,  5,  8,  0,  0, 12,  0,  0,  5,  0, 13, 26,  1,  5,  0, 15, 11, 17, 1,
};
INT BLT_27_stab_gens_fst[] = { 0, 9, 16, 23, 27, 29};
INT BLT_27_stab_gens_len[] = { 9, 7, 7, 4, 2, 4};
INT BLT_27_make_element_size = 0;
```