

BLT-sets of $Q(4, 5)$

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July 10, 2014

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Summary

There are 2 BLT-sets.

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The BLT-Sets

3.1 Isomorphism Type 0

Stabilizer has order 1440
 Plane intersection type is 6
 Plane invariant is

$$[6]$$

$$\frac{\rightarrow | 1_1}{6_0 | 1} \quad \frac{\downarrow | 1_1}{6_0 | 6}$$

$C_0 = \{0, 1, 2, 3, 4, 5\}_6$
 $C_1 = \{0\}_1$

$$\frac{\rightarrow | 1_1}{6_0 | 1}$$

$$\frac{\downarrow | 1_1}{6_0 | 6}$$

$C_0 = \{0, 1, 2, 3, 4, 5\}_6$
 $C_1 = \{0\}_1$

Column cell 1:
 Order of the group that is induced on the object is 120
 Number of ancestors on 4-sets is 1.
 Number of orbits on 4-sets is 1.
 With 1 orbits on the object
 Orbit lengths: 6
 The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	2	24	4	26		
1	1	3	25	5	27		

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 2, 4, 2) P_3 = (0, 1, 3, 2, 1)$$

$$P_4 = (0, 1, 3, 3, 4) P_5 = (0, 1, 2, 1, 3)$$

Stabilizer of order 1440 is generated by:

$$g_1 = \begin{pmatrix} 40000 \\ 01000 \\ 00100 \\ 00010 \\ 00001 \end{pmatrix}$$

with 36 fixed points

$$g_2 = \begin{pmatrix} 20000 \\ 04000 \\ 00100 \\ 00020 \\ 00002 \end{pmatrix}$$

with 8 fixed points

$$g_3 = \begin{pmatrix} 10024 \\ 02000 \\ 00200 \\ 20032 \\ 10033 \end{pmatrix}$$

with 36 fixed points

$$g_4 = \begin{pmatrix} 10031 \\ 03000 \\ 00300 \\ 30011 \\ 40041 \end{pmatrix}$$

with 26 fixed points

$$g_5 = \begin{pmatrix} 30000 \\ 03000 \\ 01321 \\ 01020 \\ 02002 \end{pmatrix}$$

with 8 fixed points

$$g_6 = \begin{pmatrix} 10000 \\ 01242 \\ 00100 \\ 00202 \\ 00430 \end{pmatrix}$$

with 26 fixed points

$$g_7 = \begin{pmatrix} 20000 \\ 04234 \\ 02434 \\ 04433 \\ 03323 \end{pmatrix}$$

with 36 fixed points

3.2 Isomorphism Type 1

Stabilizer has order 48

Plane intersection type is 3^{20}

Plane invariant is too big (20 planes)

$$\begin{array}{c|c} \rightarrow & 20_1 \\ \hline 6_0 & 10 \end{array} \quad \begin{array}{c|c} \downarrow & 20_1 \\ \hline 6_0 & 3 \end{array}$$

$C_0 = \{0, 1, 2, 3, 4, 5\}_6$

$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19\}_{20}$

Order of the group that is induced on the object is 48

Number of ancestors on 4-sets is 3.

Number of orbits on 4-sets is 3.

With 2 orbits on the object

Orbit lengths: 2, 4

The points by ranks:

i	Rank	i	Rank	i	Rank	i	Rank
0	0	2	24	4	152		
1	1	3	114	5	140		

The points:

$$P_0 = (0, 1, 0, 0, 0) P_1 = (0, 0, 1, 0, 0) P_2 = (0, 1, 2, 4, 2) P_3 = (1, 1, 2, 2, 1)$$

$$P_4 = (1, 3, 1, 4, 4) P_5 = (1, 3, 1, 3, 2)$$

Stabilizer of order 48 is generated by:

$$g_1 = \begin{pmatrix} 20034 \\ 01000 \\ 00100 \\ 20023 \\ 40022 \end{pmatrix}$$

with 26 fixed points

$$g_2 = \begin{pmatrix} 30000 \\ 03000 \\ 00300 \\ 00004 \\ 00010 \end{pmatrix}$$

with 26 fixed points

$$g_3 = \begin{pmatrix} 10000 \\ 01000 \\ 03121 \\ 01002 \\ 02030 \end{pmatrix}$$

with 26 fixed points

$$g_4 = \begin{pmatrix} 10042 \\ 33113 \\ 04000 \\ 43041 \\ 31044 \end{pmatrix}$$

with 2 fixed points

Chapter 4

The BLT-Sets in Numeric Form

0, 1, 24, 25, 26, 27
0, 1, 24, 114, 152, 140

```
INT BLT_5_size = 6;
INT BLT_5_nb_reps = 2;
INT BLT_5_reps[] = {
0, 1, 24, 25, 26, 27,
0, 1, 24, 114, 152, 140,
};
const BYTE *BLT_5_stab_order[] = {
"1440",
"48",
};
INT BLT_5_stab_gens[] = {
4, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1,
2, 0, 0, 0, 0, 0, 4, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 0, 2,
1, 0, 0, 2, 4, 0, 2, 0, 0, 0, 0, 0, 2, 0, 0, 2, 0, 0, 3, 2, 1, 0, 0, 3, 3,
1, 0, 0, 3, 1, 0, 3, 0, 0, 0, 0, 0, 3, 0, 0, 3, 0, 0, 1, 1, 4, 0, 0, 4, 1,
3, 0, 0, 0, 0, 0, 3, 0, 0, 0, 0, 1, 3, 2, 1, 0, 1, 0, 2, 0, 0, 2, 0, 0, 2, 0, 0, 2,
1, 0, 0, 0, 0, 0, 1, 2, 4, 2, 0, 0, 1, 0, 0, 0, 0, 2, 0, 2, 0, 0, 4, 3, 0,
2, 0, 0, 0, 0, 0, 4, 2, 3, 4, 0, 2, 4, 3, 4, 0, 4, 4, 3, 3, 0, 3, 3, 2, 3,
2, 0, 0, 3, 4, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 2, 0, 0, 2, 3, 4, 0, 0, 2, 2,
3, 0, 0, 0, 0, 0, 3, 0, 0, 0, 0, 3, 0, 0, 0, 0, 0, 4, 0, 0, 0, 1, 0,
1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 3, 1, 2, 1, 0, 1, 0, 0, 2, 0, 2, 0, 3, 0,
1, 0, 0, 4, 2, 3, 3, 1, 1, 3, 0, 4, 0, 0, 4, 3, 0, 4, 1, 3, 1, 0, 4, 4,
};
INT BLT_5_stab_gens_fst[] = { 0, 7};
INT BLT_5_stab_gens_len[] = { 7, 4};
INT BLT_5_make_element_size = 0;
```