BLT-sets of $Q(4, 25)$

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Contents

1 Summary 1

2 Invariants 3

3 The BLT-Sets 5
  3.1 Isomorphism Type 0 6
  3.2 Isomorphism Type 1 7
  3.3 Isomorphism Type 2 9
  3.4 Isomorphism Type 3 11
  3.5 Isomorphism Type 4 12
  3.6 Isomorphism Type 5 14

4 The BLT-Sets in Numeric Form 17
Chapter 1

Summary

There are 6 BLT-sets.
Chapter 2

Invariants
Chapter 3

The BLT-Sets
3.1 Isomorphism Type 0

Stabilizer has order 1622400
Plane intersection type is 26
Plane invariant is
\[
\begin{bmatrix}
26 \\
\end{bmatrix}
\]
\[
\begin{array}{c|c|c}
\rightarrow & \downarrow \\
200 & 1 & 26 \\
\end{array}
\]

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

\[
\begin{bmatrix}
26 \\
\end{bmatrix}
\]
\[
\begin{array}{c|c|c}
\rightarrow & \downarrow \\
260 & 1 & 26 \\
\end{array}
\]

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

Column cell 1:
Order of the group that is induced on the object is 31200
Number of ancestors on 5-sets is 7.
Number of orbits on 5-sets is 7.
With 1 orbits on the object
Orbit lengths: 26
The points by ranks:

<table>
<thead>
<tr>
<th>i</th>
<th>Rank</th>
<th>i</th>
<th>Rank</th>
<th>i</th>
<th>Rank</th>
<th>i</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>7</td>
<td>212</td>
<td>14</td>
<td>210</td>
<td>21</td>
<td>213</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>8</td>
<td>215</td>
<td>15</td>
<td>216</td>
<td>22</td>
<td>208</td>
</tr>
<tr>
<td>2</td>
<td>196</td>
<td>9</td>
<td>207</td>
<td>16</td>
<td>201</td>
<td>23</td>
<td>218</td>
</tr>
<tr>
<td>3</td>
<td>197</td>
<td>10</td>
<td>214</td>
<td>17</td>
<td>211</td>
<td>24</td>
<td>209</td>
</tr>
<tr>
<td>4</td>
<td>198</td>
<td>11</td>
<td>204</td>
<td>18</td>
<td>217</td>
<td>25</td>
<td>219</td>
</tr>
<tr>
<td>5</td>
<td>199</td>
<td>12</td>
<td>206</td>
<td>19</td>
<td>202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>205</td>
<td>13</td>
<td>200</td>
<td>20</td>
<td>203</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The points:

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

Stabilizer of order 1622400 is generated by:

\[
g_1 = \begin{bmatrix}
19 & 0 & 0 & 0 & 0 \\
0 & 11 & 0 & 0 & 0 \\
0 & 0 & 11 & 0 & 0 \\
0 & 0 & 0 & 11 & 0 \\
0 & 0 & 0 & 0 & 11 \\
\end{bmatrix}
\]
with 676 fixed points
\[
g_2 = \begin{bmatrix}
11 & 0 & 0 & 0 & 0 \\
0 & 6 & 0 & 0 & 0 \\
0 & 0 & 3 & 0 & 0 \\
0 & 0 & 0 & 6 & 0 \\
0 & 0 & 0 & 0 & 3
\end{bmatrix}
\]

with 36 fixed points
\[
g_3 = \begin{bmatrix}
1 & 0 & 0 & 0 & 0 \\
0 & 3 & 0 & 0 & 0 \\
0 & 0 & 2 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 \\
0 & 0 & 0 & 0 & 1
\end{bmatrix}
\]

with 28 fixed points
\[
g_4 = \begin{bmatrix}
12 & 0 & 0 & 0 & 0 \\
0 & 13 & 0 & 0 & 0 \\
0 & 0 & 16 & 0 & 0 \\
0 & 0 & 0 & 2 & 0 \\
0 & 0 & 0 & 0 & 8
\end{bmatrix}
\]

with 4 fixed points
\[
g_5 = \begin{bmatrix}
4 & 0 & 0 & 0 & 0 \\
0 & 4 & 0 & 0 & 0 \\
0 & 0 & 4 & 0 & 0 \\
0 & 0 & 0 & 17 & 0 \\
0 & 0 & 0 & 20 & 0
\end{bmatrix}
\]

with 626 fixed points
\[
g_6 = \begin{bmatrix}
23 & 0 & 0 & 21 & 18 \\
0 & 18 & 0 & 0 & 0 \\
0 & 0 & 18 & 0 & 0 \\
6 & 0 & 0 & 8 & 2 \\
17 & 0 & 0 & 11 & 8
\end{bmatrix}
\]

with 26 fixed points
\[
g_7 = \begin{bmatrix}
1 & 0 & 0 & 4 & 13 \\
0 & 22 & 0 & 0 & 0 \\
0 & 7 & 8 & 23 & 8 \\
9 & 19 & 0 & 5 & 14 \\
2 & 14 & 0 & 13 & 5
\end{bmatrix}
\]

with 2 fixed points
\[
g_8 = \begin{bmatrix}
12 & 0 & 0 & 18 & 23 \\
0 & 0 & 9 & 0 & 0 \\
0 & 10 & 3 & 15 & 3 \\
16 & 0 & 13 & 9 & 20 \\
6 & 0 & 1 & 7 & 9
\end{bmatrix}
\]

3.2 Isomorphism Type 1

Stabilizer has order 124800
Plane intersection type is $6^{130}$
Plane invariant is too big (130 planes)
\[ C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25\}_{26} \]
\[ C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25\}_{26} \]
\[ \rightarrow \begin{array}{c|c}
 26_0 & 0 \\
 26_1 & 130 \\
 \end{array} \]
\[ \downarrow \begin{array}{c|c}
 26_0 & 30 \\
 26_1 & 6 \\
 \end{array} \]
\[ C_0 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25\}_{26} \]
\[ C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25\}_{26} \]

Column cell 1:
Order of the group that is induced on the object is 31200
Number of ancestors on 5-sets is 7.
Number of orbits on 5-sets is 7.
With 1 orbits on the object
Orbit lengths: 26
The points by ranks:

\[
\begin{array}{cccccccc}
 i & \text{Rank} & i & \text{Rank} & i & \text{Rank} & i & \text{Rank} \\
 0 & 0 & 7 & 424 & 14 & 569 & 21 & 589 \\
 1 & 1 & 8 & 303 & 15 & 594 & 22 & 578 \\
 2 & 196 & 9 & 599 & 16 & 432 & 23 & 584 \\
 3 & 197 & 10 & 562 & 17 & 467 & 24 & 470 \\
 4 & 198 & 11 & 309 & 18 & 571 & 25 & 428 \\
 5 & 199 & 12 & 315 & 19 & 481 &  &  \\
 6 & 297 & 13 & 478 & 20 & 420 &  &  \\
\end{array}
\]

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

Stabilizer of order 124800 is generated by:

\[ g_1 = \begin{bmatrix} 18 & 0 & 0 & 0 & 0 \\
 0 & 12 & 0 & 0 & 0 \\
 0 & 0 & 12 & 0 & 0 \\
 0 & 0 & 0 & 12 & 0 \\
 0 & 0 & 0 & 0 & 12 \end{bmatrix} \]

with 676 fixed points

\[ g_2 = \begin{bmatrix} 4 & 0 & 0 & 0 & 0 \\
 0 & 8 & 0 & 0 & 0 \\
 0 & 0 & 6 & 0 & 0 \\
 0 & 0 & 0 & 8 & 0 \\
 0 & 0 & 0 & 0 & 6 \end{bmatrix} \]

with 36 fixed points

\[ g_3 = \begin{bmatrix} 4 & 0 & 0 & 0 & 0 \\
 0 & 3 & 0 & 0 & 0 \\
 0 & 0 & 2 & 0 & 0 \\
 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 0 & 0 & 1 \end{bmatrix} \]
with 4 fixed points
\[
g_4 = \begin{bmatrix}
1 & 0 & 0 & 0 & 0 \\
0 & 0 & 12 & 0 & 0 \\
0 & 0 & 0 & 3 & 0 \\
0 & 0 & 0 & 0 & 2 \\
\end{bmatrix}
\]

with 8 fixed points
\[
g_5 = \begin{bmatrix}
11 & 0 & 0 & 0 & 0 \\
0 & 0 & 9 & 0 & 0 \\
0 & 0 & 0 & 6 & 0 \\
0 & 0 & 0 & 0 & 3 \\
\end{bmatrix}
\]

with 4 fixed points
\[
g_6 = \begin{bmatrix}
4 & 0 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 \\
0 & 0 & 0 & 0 & 13 \\
0 & 0 & 0 & 5 & 0 \\
\end{bmatrix}
\]

with 26 fixed points
\[
g_7 = \begin{bmatrix}
19 & 0 & 0 & 0 & 0 \\
0 & 12 & 0 & 0 & 0 \\
0 & 21 & 4 & 9 & 4 \\
0 & 24 & 0 & 0 & 9 \\
0 & 17 & 0 & 13 & 0 \\
\end{bmatrix}
\]

with 6 fixed points
\[
g_8 = \begin{bmatrix}
19 & 0 & 0 & 0 & 0 \\
0 & 0 & 5 & 0 & 0 \\
0 & 7 & 8 & 23 & 8 \\
0 & 0 & 10 & 11 & 0 \\
0 & 0 & 11 & 0 & 11 \\
\end{bmatrix}
\]

with 2 fixed points

### 3.3 Isomorphism Type 2

Stabilizer has order 2704
Plane intersection type is $13^2 \ 3^{2028}$
Plane invariant is
\[
\begin{bmatrix}
13 & 0 \\
0 & 13 \\
\end{bmatrix}
\]

\[
\begin{array}{c|c}
21 & 21 \\
26_0 & 26_0 \\
\end{array}
\]

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

\[
\begin{array}{c|c}
21 & 21 \\
26_0 & 26_0 \\
\end{array}
\]

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

Column cell 1:
Order of the group that is induced on the object is 2704
Number of ancestors on 5-sets is 91.
Number of orbits on 5-sets is 91.
With 1 orbits on the object
Orbit lengths: 26
The points by ranks:

<table>
<thead>
<tr>
<th>i</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>196</td>
</tr>
<tr>
<td>3</td>
<td>197</td>
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<tr>
<td>4</td>
<td>198</td>
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<tr>
<td>10</td>
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</tr>
<tr>
<td>11</td>
<td>3519</td>
</tr>
<tr>
<td>12</td>
<td>7654</td>
</tr>
</tbody>
</table>

The points:

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

Stabilizer of order 2704 is generated by:

\[
g_1 = \begin{bmatrix} 4 & 0 & 0 & 6 & 16 \\ 0 & 12 & 0 & 0 & 0 \\ 0 & 0 & 12 & 0 & 0 \\ 7 & 0 & 0 & 8 & 18 \\ 12 & 0 & 0 & 3 & 8 \end{bmatrix}_0
\]

with 26 fixed points

\[
g_2 = \begin{bmatrix} 9 & 0 & 0 & 22 & 5 \\ 0 & 4 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 \\ 15 & 0 & 0 & 10 & 15 \\ 11 & 0 & 0 & 14 & 10 \end{bmatrix}_0
\]

with 626 fixed points

\[
g_3 = \begin{bmatrix} 11 & 0 & 0 & 0 & 0 \\ 0 & 11 & 0 & 0 & 0 \\ 0 & 7 & 11 & 19 & 7 \\ 0 & 9 & 0 & 6 & 0 \\ 0 & 3 & 0 & 0 & 3 \end{bmatrix}_1
\]

with 8 fixed points

\[
g_4 = \begin{bmatrix} 19 & 0 & 0 & 19 & 23 \\ 0 & 19 & 7 & 8 & 14 \\ 0 & 14 & 18 & 7 & 24 \\ 13 & 8 & 16 & 12 & 17 \\ 4 & 23 & 24 & 9 & 1 \end{bmatrix}_1
\]

with 8 fixed points

\[
g_5 = \begin{bmatrix} 0 & 8 & 1 & 2 & 5 \\ 24 & 10 & 22 & 19 & 24 \\ 19 & 19 & 23 & 19 & 18 \\ 7 & 1 & 3 & 2 & 0 \\ 18 & 19 & 19 & 8 & 6 \end{bmatrix}_1
\]

with 156 fixed points
3.4 Isomorphism Type 3

Stabilizer has order 16
Plane intersection type is $4^{92} 3^{232}$
Plane invariant is too big (92 planes)

<table>
<thead>
<tr>
<th>$\rightarrow$</th>
<th>41</th>
<th>85</th>
<th>164</th>
<th>166</th>
<th>88</th>
<th>327</th>
<th>89</th>
</tr>
</thead>
<tbody>
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<td>20</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>163</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$\downarrow$</th>
<th>41</th>
<th>85</th>
<th>164</th>
<th>166</th>
<th>88</th>
<th>327</th>
<th>89</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>82</td>
<td>2</td>
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<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>163</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

$C_0 = \{4, 14\}_2$
$C_1 = \{5, 38, 45, 67\}_4$
$C_2 = \{0, 2, 5, 15, 16, 17, 18, 22\}_8$
$C_3 = \{1, 3, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 23, 24, 25\}_{16}$
$C_4 = \{8, 10, 16, 23, 26, 35, 44, 49, 50, 63, 65, 66, 69, 79, 83, 88\}_{16}$
$C_5 = \{7, 20, 39, 62, 64, 81, 82, 91\}_8$
$C_6 = \{4, 9, 13, 18, 21, 22, 36, 40, 43, 46, 47, 54, 61, 76, 84, 86\}_{16}$
$C_7 = \{1, 2, 3, 11, 14, 15, 24, 27, 29, 30, 32, 33, 34, 37, 41, 42, 48, 52, 53, 55, 57, 58, 59, 71, 72, 73, 74, 77, 85, 87, 89, 90\}_{32}$
$C_8 = \{6, 17, 19, 28, 68, 70, 75, 78\}_8$
$C_9 = \{0, 12, 25, 31, 51, 56, 60, 80\}_8$

<table>
<thead>
<tr>
<th>$\rightarrow$</th>
<th>41</th>
<th>85</th>
<th>164</th>
<th>166</th>
<th>88</th>
<th>327</th>
<th>89</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8</td>
<td>8</td>
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<tr>
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<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>2</td>
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<th>166</th>
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<th>327</th>
<th>89</th>
</tr>
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<tbody>
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<td>2</td>
<td>1</td>
<td>0</td>
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<tr>
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<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

$C_0 = \{4, 14\}_2$
$C_1 = \{5, 38, 45, 67\}_4$
$C_2 = \{0, 2, 5, 15, 16, 17, 18, 22\}_8$
$C_3 = \{1, 3, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 23, 24, 25\}_{16}$
$C_4 = \{12, 13, 14, 19, 25, 27, 31, 37, 45, 68, 69, 76, 84, 87, 88, 90\}_{16}$
$C_5 = \{18, 32, 38, 53, 64, 74, 89, 91\}_8$
$C_6 = \{15, 16, 17, 23, 42, 47, 49, 52, 55, 62, 63, 65, 70, 78, 81\}_{16}$
$C_7 = \{0, 1, 2, 3, 7, 9, 20, 21, 22, 24, 28, 29, 35, 36, 39, 40, 41, 43, 46, 50, 51, 54, 56, 58, 59, 60, 67, 71, 72, 75, 77, 82\}_{32}$
$C_8 = \{8, 10, 30, 33, 66, 80, 83, 85\}_8$
$C_9 = \{4, 5, 11, 44, 57, 61, 73, 79\}_8$

Column cell 1:
Column cell 4:
Column cell 5:
Column cell 6:
Column cell 7:
Column cell 8:
Column cell 9:

Order of the group that is induced on the object is 16
Number of ancestors on 5-sets is 4154.
Number of orbits on 5-sets is 4154.
With 3 orbits on the object
Orbit lengths: 2, 8, 16
The points by ranks:
The points:

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

Stabilizer of order 16 is generated by:

\[ g_1 = \begin{bmatrix}
4 & 0 & 0 & 0 & 0 \\
0 & 4 & 0 & 0 & 0 \\
0 & 20 & 4 & 15 & 3 \\
0 & 3 & 0 & 1 & 0 \\
0 & 15 & 0 & 0 & 1 \\
\end{bmatrix}_0 \]

with 28 fixed points

\[ g_2 = \begin{bmatrix}
19 & 0 & 0 & 0 & 0 \\
0 & 1 & 17 & 4 & 17 \\
0 & 16 & 1 & 3 & 23 \\
0 & 23 & 17 & 4 & 22 \\
0 & 3 & 4 & 2 & 4 \\
\end{bmatrix}_0 \]

with 28 fixed points

\[ g_3 = \begin{bmatrix}
4 & 15 & 17 & 4 & 17 \\
21 & 11 & 16 & 10 & 13 \\
20 & 23 & 11 & 15 & 2 \\
21 & 2 & 13 & 23 & 12 \\
2 & 15 & 10 & 1 & 23 \\
\end{bmatrix}_0 \]

with 28 fixed points

\[ g_4 = \begin{bmatrix}
8 & 2 & 9 & 17 & 18 \\
13 & 17 & 8 & 17 & 5 \\
18 & 22 & 13 & 5 & 16 \\
3 & 20 & 14 & 15 & 19 \\
9 & 14 & 13 & 19 & 7 \\
\end{bmatrix}_1 \]

with 156 fixed points

### 3.5 Isomorphism Type 4

Stabilizer has order 8

Plane intersection type is $5^2 4^{92} 3^{2212}$

Plane invariant is

\[ \begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix} \]
\[
\begin{array}{c|c|c}
\rightarrow & 2_1 & \downarrow 2_1 \\
10_0 & 1 & 10_0 \\
16_2 & 0 & 16_2 \\
\end{array}
\]

\[
C_0 = \{0, 1, 5, 6, 7, 9, 13, 18, 19, 21\}_{10}
\]

\[
C_1 = \{0, 1\}_2
\]

\[
C_2 = \{2, 3, 4, 8, 10, 11, 12, 14, 15, 16, 17, 20, 22, 23, 24, 25\}_{16}
\]

<table>
<thead>
<tr>
<th>\rightarrow</th>
<th>2_1</th>
<th>8_2</th>
<th>4_7</th>
<th>16_8</th>
<th>16_9</th>
<th>8_6</th>
<th>4_{10}</th>
<th>8_{11}</th>
<th>10_{12}</th>
<th>16_{13}</th>
<th>2_{14}</th>
</tr>
</thead>
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<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2_{14}</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8_3</td>
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<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>8_5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

\[
C_0 = \{0, 1, 6, 7, 9, 13, 18, 19\}_8
\]

\[
C_1 = \{5, 59\}_2
\]

\[
C_2 = \{2, 21, 24, 27, 51, 60, 66, 77\}_8
\]

\[
C_3 = \{2, 4, 10, 11, 14, 17, 20, 25\}_8
\]

\[
C_4 = \{5, 21\}_2
\]

\[
C_5 = \{3, 8, 12, 15, 16, 22, 23, 24\}_8
\]

\[
C_6 = \{23, 25, 29, 35, 52, 63, 89, 92\}_8
\]

\[
C_7 = \{6, 14, 20, 75\}_4
\]

\[
C_8 = \{4, 12, 16, 18, 19, 22, 32, 40, 41, 53, 72, 76, 78, 79, 83, 93\}_{16}
\]

\[
C_9 = \{3, 8, 15, 28, 30, 31, 39, 44, 58, 64, 71, 81, 82, 88, 90, 91\}_{16}
\]

\[
C_{10} = \{36, 48, 67, 73\}_4
\]

\[
C_{11} = \{9, 10, 45, 46, 47, 49, 85, 86\}_8
\]

\[
C_{12} = \{0, 13, 17, 26, 42, 56, 65, 69, 70\}_{10}
\]

\[
C_{13} = \{1, 7, 11, 33, 34, 37, 38, 43, 50, 54, 55, 61, 62, 68, 74, 87\}_{16}
\]

\[
C_{14} = \{80, 84\}_2
\]

Column cell 1:
Column cell 2:
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:

Order of the group that is induced on the object is 8
Number of ancestors on 5-sets is 8242.
Number of orbits on 5-sets is 8242.
With 4 orbits on the object
Orbit lengths: 2, 8
The points by ranks:
The points:

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

Stabilizer of order 8 is generated by:

\[
g_1 = \begin{bmatrix} 11 & 0 & 0 & 14 & 2 \\ 0 & 0 & 3 & 0 & 0 \\ 0 & 22 & 0 & 0 & 0 \\ 1 & 0 & 0 & 16 & 23 \\ 7 & 0 & 0 & 16 & 16 \end{bmatrix}_0
\]

with 26 fixed points

\[
g_2 = \begin{bmatrix} 16 & 5 & 20 & 8 & 19 \\ 10 & 14 & 4 & 6 & 20 \\ 15 & 11 & 14 & 1 & 12 \\ 22 & 12 & 20 & 21 & 18 \\ 19 & 1 & 6 & 9 & 21 \end{bmatrix}_0
\]

with 26 fixed points

\[
g_3 = \begin{bmatrix} 19 & 21 & 14 & 11 & 17 \\ 21 & 15 & 4 & 12 & 5 \\ 18 & 1 & 23 & 18 & 20 \\ 11 & 11 & 2 & 20 & 2 \\ 15 & 16 & 13 & 13 & 7 \end{bmatrix}_1
\]

with 8 fixed points

### 3.6 Isomorphism Type 5

Stabilizer has order 100

Plane intersection type is $4^{75} \cdot 3^{2300}$

Plane invariant is too big (75 planes)
$C_2 = \{23\}_1$

\[
\begin{array}{c|cc}
\rightarrow & 75_1 \\
25_0 & 12 \\
1_2 & 0 \\
\end{array}
\]

\[
\begin{array}{c|cc}
\downarrow & 75_1 \\
25_0 & 4 \\
1_2 & 0 \\
\end{array}
\]

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

$C_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75\}$

$C_2 = \{23\}_1$

Column cell 1:

Order of the group that is induced on the object is 100

Number of ancestors on 5-sets is 730.

Number of orbits on 5-sets is 698.

With 2 orbits on the object

Orbit lengths: 1, 25

The points by ranks:

<table>
<thead>
<tr>
<th>$i$</th>
<th>Rank</th>
<th>$i$</th>
<th>Rank</th>
<th>$i$</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
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<td>7261</td>
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<tr>
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<td>1</td>
<td>8</td>
<td>10966</td>
<td>15</td>
<td>10026</td>
</tr>
<tr>
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<td>196</td>
<td>9</td>
<td>7248</td>
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<td>10837</td>
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<tr>
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<td>17</td>
<td>7356</td>
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<tr>
<td>4</td>
<td>245</td>
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<td>453</td>
<td>18</td>
<td>15333</td>
</tr>
<tr>
<td>5</td>
<td>9872</td>
<td>12</td>
<td>11253</td>
<td>19</td>
<td>7787</td>
</tr>
<tr>
<td>6</td>
<td>7917</td>
<td>13</td>
<td>7434</td>
<td>20</td>
<td>12635</td>
</tr>
</tbody>
</table>

The points:

$P_0 = (0, 1, 0, 0, 0)P_1 = (0, 0, 1, 0, 0)P_2 = (0, 1, 17, 4, 17)P_3 = (0, 1, 7, 22, 20)$

$P_4 = (0, 1, 16, 2, 7)P_5 = (1, 11, 13, 15, 5)P_6 = (1, 21, 11, 24, 10)P_7 = (1, 18, 9, 5, 6)$

$P_8 = (1, 9, 12, 22, 21)P_9 = (1, 1, 15, 13, 6)P_{10} = (1, 6, 17, 21, 3)P_{11} = (0, 1, 16, 19, 5)$

$P_{12} = (1, 14, 11, 14, 21)P_{13} = (1, 6, 21, 1, 6)P_{14} = (1, 8, 9, 1, 14)P_{15} = (1, 12, 21, 6, 5)$

$P_{16} = (1, 1, 9, 11, 21)P_{17} = (1, 2, 10, 15, 6)P_{18} = (1, 10, 11, 9, 14)P_{19} = (1, 14, 6, 22, 10)$

$P_{20} = (1, 16, 6, 4, 11)P_{21} = (1, 20, 2, 12, 9)P_{22} = (1, 21, 3, 14, 4)P_{23} = (1, 3, 10, 20, 14)$

$P_{24} = (1, 11, 10, 4, 8)P_{25} = (1, 1, 5, 5, 16)$

Stabilizer of order 100 is generated by:

$$g_1 = \begin{bmatrix}
23 & 3 & 0 & 19 & 20 \\
0 & 19 & 0 & 0 & 0 \\
4 & 9 & 19 & 6 & 15 \\
10 & 15 & 0 & 24 & 18 \\
22 & 6 & 0 & 2 & 24
\end{bmatrix}$$

with 28 fixed points

$$g_2 = \begin{bmatrix}
20 & 3 & 0 & 7 & 4 \\
0 & 18 & 0 & 0 & 0 \\
15 & 21 & 11 & 15 & 12 \\
5 & 9 & 0 & 2 & 11 \\
22 & 8 & 0 & 1 & 18
\end{bmatrix}$$
with 8 fixed points

$$g_3 = \begin{bmatrix}
19 & 0 & 0 & 2 & 9 \\
0 & 0 & 5 & 0 & 0 \\
0 & 13 & 0 & 0 & 0 \\
17 & 0 & 0 & 5 & 16 \\
1 & 0 & 0 & 17 & 5
\end{bmatrix}_0$$

with 28 fixed points

$$g_4 = \begin{bmatrix}
18 & 0 & 0 & 0 & 0 \\
0 & 19 & 10 & 11 & 10 \\
0 & 17 & 19 & 9 & 8 \\
0 & 8 & 10 & 11 & 20 \\
0 & 9 & 11 & 21 & 11
\end{bmatrix}_0$$

with 28 fixed points

$$g_5 = \begin{bmatrix}
4 & 0 & 7 & 19 & 17 \\
16 & 2 & 10 & 13 & 18 \\
0 & 15 & 2 & 10 & 2 \\
21 & 2 & 18 & 7 & 0 \\
22 & 10 & 13 & 3 & 7
\end{bmatrix}_0$$

with 28 fixed points
Chapter 4

The BLT-Sets in Numeric Form

0, 1, 196, 197, 198, 199, 205, 212, 215, 207, 214, 204, 206, 200, 210, 216, 201, 211, 217, 202, 203, 213, 208, 219, 209, 219
0, 1, 196, 197, 198, 199, 297, 424, 303, 599, 562, 309, 315, 478, 569, 594, 432, 467, 571, 481, 420, 589, 578, 584, 470, 428
0, 1, 196, 197, 3519, 7654, 13726, 200, 8532, 13367, 215, 8152, 10143, 201, 211, 202, 212, 5639, 203, 12162, 208, 14370, 13500, 12871, 9256
0, 1, 196, 197, 3814, 11975, 7246, 15647, 6445, 15017, 266, 492, 3576, 427, 14179, 9194, 8210, 15163, 8854, 15630, 15925, 11254, 14526, 15929, 8376
0, 1, 196, 197, 254, 6452, 4482, 6489, 9802, 11690, 11681, 14999, 15959, 6543, 6555, 14067, 15636, 16193, 13343, 6636, 5325, 8400, 7946, 8743, 16186, 8109
0, 1, 196, 201, 245, 9872, 7917, 7261, 10966, 7248, 3959, 453, 11253, 7434, 15517, 10026, 10837, 7356, 15333, 7787, 12635, 8334, 4973, 15276, 5940, 6448

INT BLT_25_size = 26;
INT BLT_25_nb_reps = 6;
INT BLT_25_reps[] = {
0, 1, 196, 197, 198, 199, 205, 212, 215, 207, 214, 204, 206, 200, 210, 216, 201, 211, 217, 202, 203, 213, 208, 219, 209, 219,
0, 1, 196, 197, 198, 199, 297, 424, 303, 599, 562, 309, 315, 478, 569, 594, 432, 467, 571, 481, 420, 589, 578, 584, 470, 428,
0, 1, 196, 197, 3519, 7654, 13726, 200, 8532, 13367, 215, 8152, 10143, 201, 211, 202, 212, 5639, 203, 12162, 208, 14370, 13500, 12871, 9256,
0, 1, 196, 197, 254, 3814, 11975, 7246, 15647, 6445, 15017, 266, 492, 3576, 427, 14179, 9194, 8210, 15163, 8854, 15630, 15925, 11254, 14526, 15929, 8376,
0, 1, 196, 197, 254, 6452, 4482, 6489, 9802, 11690, 11681, 14999, 15959, 6543, 6555, 14067, 15636, 16193, 13343, 6636, 5325, 8400, 7946, 8743, 16186, 8109,
0, 1, 196, 201, 245, 9872, 7917, 7261, 10966, 7248, 3959, 453, 11253, 7434, 15517, 10026, 10837, 7356, 15333, 7787, 12635, 8334, 4973, 15276, 5940, 6448,
};

const BYTE *BLT_25_stab_order[] = {
"1622400",
"124800",
"2704",
"16",
"8",
"100",
};

INT BLT_25_stab_gens[] = {
19, 0, 0, 0, 0, 0, 11, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 11, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
1, 0, 196, 197, 198, 199, 297, 424, 303, 599, 562, 309, 315, 478, 569, 594, 432, 467, 571, 481, 420, 589, 578, 584, 470, 428,
0, 1, 196, 197, 198, 3519, 7654, 13726, 200, 8532, 13367, 215, 8152, 10143, 201, 211, 202, 212, 5639, 203, 12162, 208, 14370, 13500, 12871, 9256,
0, 1, 196, 197, 254, 3814, 11975, 7246, 15647, 6445, 15017, 266, 492, 3576, 427, 14179, 9194, 8210, 15163, 8854, 15630, 15925, 11254, 14526, 15929, 8376,
0, 1, 196, 197, 254, 6452, 4482, 6489, 9802, 11690, 11681, 14999, 15959, 6543, 6555, 14067, 15636, 16193, 13343, 6636, 5325, 8400, 7946, 8743, 16186, 8109,
0, 1, 196, 201, 245, 9872, 7917, 7261, 10966, 7248, 3959, 453, 11253, 7434, 15517, 10026, 10837, 7356, 15333, 7787, 12635, 8334, 4973, 15276, 5940, 6448,
};
INT BLT_25_stab_gens_fst[] = { 0, 8, 16, 21, 25, 28};
INT BLT_25_stab_gens_len[] = { 8, 8, 5, 4, 3, 5};
INT BLT_28_make_element_size = 0;