

# Rank-74106 over GF(8)

January 15, 2021

## The equation

The equation of the surface is :

$$X_0^3 + X_1^3 + X_2^3 + X_0^2 X_1 + X_0^2 X_2 + X_0^2 X_3 + X_1^2 X_2 + X_0 X_3^2 + X_0 X_1 X_2 = 0$$

( 1, 1, 1, 0, 1, 1, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0 )

The point rank of the equation over GF(8) is 1244209814

## General information

Number of lines	27
Number of points	121
Number of singular points	0
Number of Eckardt points	13
Number of double points	96
Number of single points	12
Number of points off lines	0
Number of Hesse planes	0
Number of axes	16
Type of points on lines	$9^{27}$
Type of lines on points	$3^{13}, 2^{96}, 1^{12}$

## Singular Points

The surface has 0 singular points:

## The 27 Lines

The lines and their Pluecker coordinates are:

$$\begin{aligned}\ell_0 = a_1 &= \left[ \begin{array}{cccc} 1 & 0 & \gamma^3 & 0 \\ 0 & 1 & \gamma^5 & 0 \end{array} \right]_{368} = \left[ \begin{array}{cccc} 1 & 0 & 5 & 0 \\ 0 & 1 & 3 & 0 \end{array} \right]_{368} = \mathbf{Pl}(7, 0, 4, 0, 0, 1)_{716} \\ \ell_1 = a_2 &= \left[ \begin{array}{cccc} 1 & 0 & \gamma^4 & \gamma^4 \\ 0 & 1 & \gamma^5 & \gamma^5 \end{array} \right]_{4626} = \left[ \begin{array}{cccc} 1 & 0 & 7 & 7 \\ 0 & 1 & 3 & 3 \end{array} \right]_{4626} = \mathbf{Pl}(4, 0, 1, 1, 2, 1)_{1830}\end{aligned}$$

$$\begin{aligned}
\ell_2 = a_3 &= \begin{bmatrix} 1 & 0 & \gamma^2 & \gamma^2 \\ 0 & 1 & \gamma^5 & \gamma \end{bmatrix}_{2647} = \begin{bmatrix} 1 & 0 & 4 & 4 \\ 0 & 1 & 3 & 2 \end{bmatrix}_{2647} = \mathbf{Pl}(1, 1, 1, 1, 6, 1)_{3982} \\
\ell_3 = a_4 &= \begin{bmatrix} 0 & 1 & \gamma^6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4734} = \begin{bmatrix} 0 & 1 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4734} = \mathbf{Pl}(0, 6, 0, 1, 0, 0)_{30} \\
\ell_4 = a_5 &= \begin{bmatrix} 1 & 0 & \gamma^4 & \gamma^6 \\ 0 & 1 & \gamma^3 & \gamma^2 \end{bmatrix}_{4052} = \begin{bmatrix} 1 & 0 & 7 & 6 \\ 0 & 1 & 5 & 4 \end{bmatrix}_{4052} = \mathbf{Pl}(5, 7, 3, 4, 3, 1)_{2544} \\
\ell_5 = a_6 &= \begin{bmatrix} 1 & 0 & \gamma^6 & 0 \\ 0 & 1 & \gamma^5 & 1 \end{bmatrix}_{449} = \begin{bmatrix} 1 & 0 & 6 & 0 \\ 0 & 1 & 3 & 1 \end{bmatrix}_{449} = \mathbf{Pl}(1, 1, 3, 0, 2, 1)_{1742} \\
\ell_6 = b_1 &= \begin{bmatrix} 1 & 0 & \gamma^2 & \gamma^2 \\ 0 & 1 & \gamma^6 & \gamma^6 \end{bmatrix}_{2682} = \begin{bmatrix} 1 & 0 & 4 & 4 \\ 0 & 1 & 6 & 6 \end{bmatrix}_{2682} = \mathbf{Pl}(2, 0, 1, 1, 7, 1)_{4348} \\
\ell_7 = b_2 &= \begin{bmatrix} 1 & 0 & \gamma^3 & 0 \\ 0 & 1 & \gamma^6 & 1 \end{bmatrix}_{379} = \begin{bmatrix} 1 & 0 & 5 & 0 \\ 0 & 1 & 6 & 1 \end{bmatrix}_{379} = \mathbf{Pl}(1, 1, 6, 0, 7, 1)_{4283} \\
\ell_8 = b_3 &= \begin{bmatrix} 1 & 0 & \gamma & \gamma^5 \\ 0 & 1 & \gamma^6 & \gamma^4 \end{bmatrix}_{1960} = \begin{bmatrix} 1 & 0 & 2 & 3 \\ 0 & 1 & 6 & 7 \end{bmatrix}_{1960} = \mathbf{Pl}(6, 2, 5, 7, 5, 1)_{3644} \\
\ell_9 = b_4 &= \begin{bmatrix} 1 & 0 & \gamma^4 & \gamma^4 \\ 0 & 1 & \gamma^3 & \gamma^2 \end{bmatrix}_{4636} = \begin{bmatrix} 1 & 0 & 7 & 7 \\ 0 & 1 & 5 & 4 \end{bmatrix}_{4636} = \mathbf{Pl}(1, 1, 1, 1, 3, 1)_{2435} \\
\ell_{10} = b_5 &= \begin{bmatrix} 0 & 1 & \gamma^5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4707} = \begin{bmatrix} 0 & 1 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4707} = \mathbf{Pl}(0, 3, 0, 1, 0, 0)_{27} \\
\ell_{11} = b_6 &= \begin{bmatrix} 1 & 0 & \gamma^5 & 0 \\ 0 & 1 & \gamma^6 & 0 \end{bmatrix}_{225} = \begin{bmatrix} 1 & 0 & 3 & 0 \\ 0 & 1 & 6 & 0 \end{bmatrix}_{225} = \mathbf{Pl}(4, 0, 2, 0, 0, 1)_{683} \\
\ell_{12} = c_{12} &= \begin{bmatrix} 1 & 0 & \gamma & \gamma \\ 0 & 1 & \gamma^3 & \gamma^3 \end{bmatrix}_{1359} = \begin{bmatrix} 1 & 0 & 2 & 2 \\ 0 & 1 & 5 & 5 \end{bmatrix}_{1359} = \mathbf{Pl}(7, 0, 1, 1, 4, 1)_{2841} \\
\ell_{13} = c_{13} &= \begin{bmatrix} 1 & 0 & \gamma^5 & 1 \\ 0 & 1 & \gamma^3 & 1 \end{bmatrix}_{816} = \begin{bmatrix} 1 & 0 & 3 & 1 \\ 0 & 1 & 5 & 1 \end{bmatrix}_{816} = \mathbf{Pl}(6, 2, 3, 4, 4, 1)_{3035} \\
\ell_{14} = c_{14} &= \begin{bmatrix} 1 & 0 & \gamma^2 & \gamma^3 \\ 0 & 1 & \gamma^6 & \gamma^6 \end{bmatrix}_{3266} = \begin{bmatrix} 1 & 0 & 4 & 5 \\ 0 & 1 & 6 & 6 \end{bmatrix}_{3266} = \mathbf{Pl}(5, 7, 6, 2, 7, 1)_{4665} \\
\ell_{15} = c_{15} &= \begin{bmatrix} 1 & 0 & \gamma^3 & 1 \\ 0 & 1 & \gamma^5 & 0 \end{bmatrix}_{952} = \begin{bmatrix} 1 & 0 & 5 & 1 \\ 0 & 1 & 3 & 0 \end{bmatrix}_{952} = \mathbf{Pl}(3, 4, 4, 7, 0, 1)_{1191} \\
\ell_{16} = c_{16} &= \begin{bmatrix} 1 & 0 & \gamma^6 & 0 \\ 0 & 1 & \gamma^3 & 0 \end{bmatrix}_{443} = \begin{bmatrix} 1 & 0 & 6 & 0 \\ 0 & 1 & 5 & 0 \end{bmatrix}_{443} = \mathbf{Pl}(2, 0, 7, 0, 0, 1)_{756} \\
\ell_{17} = c_{23} &= \begin{bmatrix} 1 & 0 & \gamma^6 & 1 \\ 0 & 1 & \gamma^3 & 0 \end{bmatrix}_{1027} = \begin{bmatrix} 1 & 0 & 6 & 1 \\ 0 & 1 & 5 & 0 \end{bmatrix}_{1027} = \mathbf{Pl}(5, 7, 7, 2, 0, 1)_{969} \\
\ell_{18} = c_{24} &= \begin{bmatrix} 1 & 0 & \gamma^3 & 1 \\ 0 & 1 & \gamma^6 & 1 \end{bmatrix}_{963} = \begin{bmatrix} 1 & 0 & 5 & 1 \\ 0 & 1 & 6 & 1 \end{bmatrix}_{963} = \mathbf{Pl}(3, 4, 5, 7, 7, 1)_{4642} \\
\ell_{19} = c_{25} &= \begin{bmatrix} 1 & 0 & \gamma^4 & \gamma^6 \\ 0 & 1 & \gamma^5 & \gamma^5 \end{bmatrix}_{4042} = \begin{bmatrix} 1 & 0 & 7 & 6 \\ 0 & 1 & 3 & 3 \end{bmatrix}_{4042} = \mathbf{Pl}(6, 2, 3, 4, 2, 1)_{2034} \\
\ell_{20} = c_{26} &= \begin{bmatrix} 1 & 0 & \gamma^5 & 0 \\ 0 & 1 & \gamma^3 & 1 \end{bmatrix}_{232} = \begin{bmatrix} 1 & 0 & 3 & 0 \\ 0 & 1 & 5 & 1 \end{bmatrix}_{232} = \mathbf{Pl}(1, 1, 5, 0, 4, 1)_{2764} \\
\ell_{21} = c_{34} &= \begin{bmatrix} 1 & 0 & \gamma & \gamma \\ 0 & 1 & \gamma^6 & \gamma^4 \end{bmatrix}_{1376} = \begin{bmatrix} 1 & 0 & 2 & 2 \\ 0 & 1 & 6 & 7 \end{bmatrix}_{1376} = \mathbf{Pl}(1, 1, 1, 1, 5, 1)_{3457} \\
\ell_{22} = c_{35} &= \begin{bmatrix} 1 & 0 & \gamma^2 & \gamma^3 \\ 0 & 1 & \gamma^5 & \gamma \end{bmatrix}_{3231} = \begin{bmatrix} 1 & 0 & 4 & 5 \\ 0 & 1 & 3 & 2 \end{bmatrix}_{3231} = \mathbf{Pl}(3, 4, 6, 2, 6, 1)_{4166}
\end{aligned}$$

$$\begin{aligned}
\ell_{23} = c_{36} &= \begin{bmatrix} 1 & 0 & \gamma & \gamma^5 \\ 0 & 1 & \gamma^3 & \gamma^3 \end{bmatrix}_{1943} = \begin{bmatrix} 1 & 0 & 2 & 3 \\ 0 & 1 & 5 & 5 \end{bmatrix}_{1943} = \mathbf{Pl}(3, 4, 5, 7, 4, 1)_{3144} \\
\ell_{24} = c_{45} &= \begin{bmatrix} 0 & 1 & \gamma^3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4725} = \begin{bmatrix} 0 & 1 & 5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4725} = \mathbf{Pl}(0, 5, 0, 1, 0, 0)_{29} \\
\ell_{25} = c_{46} &= \begin{bmatrix} 1 & 0 & \gamma^5 & 1 \\ 0 & 1 & \gamma^6 & 0 \end{bmatrix}_{809} = \begin{bmatrix} 1 & 0 & 3 & 1 \\ 0 & 1 & 6 & 0 \end{bmatrix}_{809} = \mathbf{Pl}(6, 2, 2, 4, 0, 1)_{1033} \\
\ell_{26} = c_{56} &= \begin{bmatrix} 1 & 0 & \gamma^6 & 1 \\ 0 & 1 & \gamma^5 & 1 \end{bmatrix}_{1033} = \begin{bmatrix} 1 & 0 & 6 & 1 \\ 0 & 1 & 3 & 1 \end{bmatrix}_{1033} = \mathbf{Pl}(5, 7, 6, 2, 2, 1)_{2173}
\end{aligned}$$

Rank of lines: ( 368, 4626, 2647, 4734, 4052, 449, 2682, 379, 1960, 4636, 4707, 225, 1359, 816, 3266, 952, 443, 1027, 963, 4042, 232, 1376, 3231, 1943, 4725, 809, 1033 )

Rank of points on Klein quadric: ( 716, 1830, 3982, 30, 2544, 1742, 4348, 4283, 3644, 2435, 27, 683, 2841, 3035, 4665, 1191, 756, 969, 4642, 2034, 2764, 3457, 4166, 3144, 29, 1033, 2173 )

### Eckardt Points

The surface has 13 Eckardt points:

$$\begin{aligned}
0 : E_{45} &= a_4 \cap b_5 \cap c_{45} = P_3 = \mathbf{P}(0, 0, 0, 1) = \mathbf{P}(0, 0, 0, 1), \\
1 : E_{46} &= a_4 \cap b_6 \cap c_{46} = P_{27} = \mathbf{P}(0, \gamma, 1, 0) = \mathbf{P}(0, 2, 1, 0), \\
2 : E_{15} &= a_1 \cap b_5 \cap c_{15} = P_{43} = \mathbf{P}(0, \gamma^2, 1, 0) = \mathbf{P}(0, 4, 1, 0), \\
3 : E_{16,23,45} &= c_{16} \cap c_{23} \cap c_{45} = P_{67} = \mathbf{P}(0, \gamma^4, 1, 0) = \mathbf{P}(0, 7, 1, 0), \\
4 : E_{41} &= a_4 \cap b_1 \cap c_{14} = P_{153} = \mathbf{P}(0, \gamma, 1, 1) = \mathbf{P}(0, 2, 1, 1), \\
5 : E_{25} &= a_2 \cap b_5 \cap c_{25} = P_{169} = \mathbf{P}(0, \gamma^2, 1, 1) = \mathbf{P}(0, 4, 1, 1), \\
6 : E_{12,36,45} &= c_{12} \cap c_{36} \cap c_{45} = P_{193} = \mathbf{P}(0, \gamma^4, 1, 1) = \mathbf{P}(0, 7, 1, 1), \\
7 : E_{54} &= a_5 \cap b_4 \cap c_{45} = P_{225} = \mathbf{P}(0, \gamma^5, \gamma, 1) = \mathbf{P}(0, 3, 2, 1), \\
8 : E_{65} &= a_6 \cap b_5 \cap c_{56} = P_{273} = \mathbf{P}(0, 1, \gamma^5, 1) = \mathbf{P}(0, 1, 3, 1), \\
9 : E_{43} &= a_4 \cap b_3 \cap c_{34} = P_{369} = \mathbf{P}(0, \gamma^3, \gamma^2, 1) = \mathbf{P}(0, 5, 4, 1), \\
10 : E_{13,26,45} &= c_{13} \cap c_{26} \cap c_{45} = P_{401} = \mathbf{P}(0, 1, \gamma^3, 1) = \mathbf{P}(0, 1, 5, 1), \\
11 : E_{42} &= a_4 \cap b_2 \cap c_{24} = P_{465} = \mathbf{P}(0, 1, \gamma^6, 1) = \mathbf{P}(0, 1, 6, 1), \\
12 : E_{35} &= a_3 \cap b_5 \cap c_{35} = P_{569} = \mathbf{P}(0, \gamma^6, \gamma^4, 1) = \mathbf{P}(0, 6, 7, 1).
\end{aligned}$$

### Double Points

The surface has 96 Double points:

The double points on the surface are:

$$\begin{aligned}
P_{18} &= (7, 0, 1, 0) = \ell_0 \cap \ell_7 = a_1 \cap b_2 & P_{199} &= (6, 7, 1, 1) = \ell_1 \cap \ell_{18} = a_2 \cap c_{24} \\
P_{55} &= (4, 5, 1, 0) = \ell_0 \cap \ell_8 = a_1 \cap b_3 & P_{152} &= (7, 1, 1, 1) = \ell_1 \cap \ell_{20} = a_2 \cap c_{26} \\
P_{22} &= (3, 1, 1, 0) = \ell_0 \cap \ell_9 = a_1 \cap b_4 & P_{141} &= (3, 0, 1, 1) = \ell_2 \cap \ell_6 = a_3 \cap b_1 \\
P_{64} &= (5, 6, 1, 0) = \ell_0 \cap \ell_{11} = a_1 \cap b_6 & P_{87} &= (5, 1, 0, 1) = \ell_2 \cap \ell_7 = a_3 \cap b_2 \\
P_8 &= (4, 1, 0, 0) = \ell_0 \cap \ell_{12} = a_1 \cap c_{12} & P_{376} &= (7, 5, 4, 1) = \ell_2 \cap \ell_9 = a_3 \cap b_4 \\
P_{29} &= (2, 2, 1, 0) = \ell_0 \cap \ell_{13} = a_1 \cap c_{13} & P_{25} &= (6, 1, 1, 0) = \ell_2 \cap \ell_{11} = a_3 \cap b_6 \\
P_{68} &= (1, 7, 1, 0) = \ell_0 \cap \ell_{14} = a_1 \cap c_{14} & P_{519} &= (6, 7, 6, 1) = \ell_2 \cap \ell_{13} = a_3 \cap c_{13} \\
P_{41} &= (6, 3, 1, 0) = \ell_0 \cap \ell_{16} = a_1 \cap c_{16} & P_{426} &= (1, 4, 5, 1) = \ell_2 \cap \ell_{17} = a_3 \cap c_{23} \\
P_{179} &= (2, 5, 1, 1) = \ell_1 \cap \ell_6 = a_2 \cap b_1 & P_{229} &= (4, 3, 2, 1) = \ell_2 \cap \ell_{21} = a_3 \cap c_{34} \\
P_{164} &= (3, 3, 1, 1) = \ell_1 \cap \ell_8 = a_2 \cap b_3 & P_{283} &= (2, 2, 3, 1) = \ell_2 \cap \ell_{23} = a_3 \cap c_{36} \\
P_{143} &= (5, 0, 1, 1) = \ell_1 \cap \ell_9 = a_2 \cap b_4 & P_{191} &= (6, 6, 1, 1) = \ell_4 \cap \ell_6 = a_5 \cap b_1 \\
P_6 &= (2, 1, 0, 0) = \ell_1 \cap \ell_{11} = a_2 \cap b_6 & P_{536} &= (7, 1, 7, 1) = \ell_4 \cap \ell_7 = a_5 \cap b_2 \\
P_{189} &= (4, 6, 1, 1) = \ell_1 \cap \ell_{12} = a_2 \cap c_{12} & P_{478} &= (5, 2, 6, 1) = \ell_4 \cap \ell_8 = a_5 \cap b_3 \\
P_{154} &= (1, 2, 1, 1) = \ell_1 \cap \ell_{17} = a_2 \cap c_{23} & P_{37} &= (2, 3, 1, 0) = \ell_4 \cap \ell_{11} = a_5 \cap b_6
\end{aligned}$$

$$\begin{aligned}
P_{362} &= (1, 4, 4, 1) = \ell_4 \cap \ell_{15} = a_5 \cap c_{15} \\
P_{267} &= (2, 0, 3, 1) = \ell_4 \cap \ell_{19} = a_5 \cap c_{25} \\
P_{452} &= (3, 7, 5, 1) = \ell_4 \cap \ell_{22} = a_5 \cap c_{35} \\
P_{118} &= (4, 5, 0, 1) = \ell_4 \cap \ell_{26} = a_5 \cap c_{56} \\
P_{149} &= (4, 1, 1, 1) = \ell_5 \cap \ell_6 = a_6 \cap b_1 \\
P_{340} &= (3, 1, 4, 1) = \ell_5 \cap \ell_7 = a_6 \cap b_2 \\
P_{211} &= (2, 1, 2, 1) = \ell_5 \cap \ell_8 = a_6 \cap b_3 \\
P_{88} &= (6, 1, 0, 1) = \ell_5 \cap \ell_9 = a_6 \cap b_4 \\
P_{13} &= (2, 0, 1, 0) = \ell_5 \cap \ell_{16} = a_6 \cap c_{16} \\
P_{534} &= (5, 1, 7, 1) = \ell_5 \cap \ell_{20} = a_6 \cap c_{26} \\
P_{472} &= (7, 1, 6, 1) = \ell_5 \cap \ell_{23} = a_6 \cap c_{36} \\
P_{402} &= (1, 1, 5, 1) = \ell_5 \cap \ell_{25} = a_6 \cap c_{46} \\
P_{168} &= (7, 3, 1, 1) = \ell_6 \cap \ell_{12} = b_1 \cap c_{12} \\
P_{174} &= (5, 4, 1, 1) = \ell_6 \cap \ell_{13} = b_1 \cap c_{13} \\
P_{194} &= (1, 7, 1, 1) = \ell_6 \cap \ell_{15} = b_1 \cap c_{15} \\
P_{11} &= (7, 1, 0, 0) = \ell_6 \cap \ell_{16} = b_1 \cap c_{16} \\
P_{147} &= (2, 1, 1, 1) = \ell_7 \cap \ell_{12} = b_2 \cap c_{12} \\
P_{274} &= (1, 1, 3, 1) = \ell_7 \cap \ell_{17} = b_2 \cap c_{23} \\
P_{405} &= (4, 1, 5, 1) = \ell_7 \cap \ell_{19} = b_2 \cap c_{25} \\
P_{215} &= (6, 1, 2, 1) = \ell_7 \cap \ell_{20} = b_2 \cap c_{26} \\
P_{129} &= (7, 6, 0, 1) = \ell_8 \cap \ell_{13} = b_3 \cap c_{13} \\
P_{578} &= (1, 7, 7, 1) = \ell_8 \cap \ell_{17} = b_3 \cap c_{23} \\
P_{303} &= (6, 4, 3, 1) = \ell_8 \cap \ell_{22} = b_3 \cap c_{35} \\
P_{397} &= (4, 0, 5, 1) = \ell_8 \cap \ell_{23} = b_3 \cap c_{36} \\
P_{429} &= (4, 4, 5, 1) = \ell_9 \cap \ell_{14} = b_4 \cap c_{14} \\
P_{284} &= (3, 2, 3, 1) = \ell_9 \cap \ell_{18} = b_4 \cap c_{24} \\
P_{571} &= (2, 6, 7, 1) = \ell_9 \cap \ell_{21} = b_4 \cap c_{34} \\
P_{514} &= (1, 7, 6, 1) = \ell_9 \cap \ell_{25} = b_4 \cap c_{46} \\
P_{54} &= (3, 5, 1, 0) = \ell_{11} \cap \ell_{16} = b_6 \cap c_{16} \\
P_{15} &= (4, 0, 1, 0) = \ell_{11} \cap \ell_{20} = b_6 \cap c_{26} \\
P_{44} &= (1, 4, 1, 0) = \ell_{11} \cap \ell_{23} = b_6 \cap c_{36} \\
P_{74} &= (7, 7, 1, 0) = \ell_{11} \cap \ell_{26} = b_6 \cap c_{56} \\
P_{144} &= (6, 0, 1, 1) = \ell_{12} \cap \ell_{21} = c_{12} \cap c_{34} \\
P_{182} &= (5, 5, 1, 1) = \ell_{12} \cap \ell_{22} = c_{12} \cap c_{35} \\
P_{170} &= (1, 4, 1, 1) = \ell_{12} \cap \ell_{25} = c_{12} \cap c_{46}
\end{aligned}$$

$$\begin{aligned}
P_{156} &= (3, 2, 1, 1) = \ell_{12} \cap \ell_{26} = c_{12} \cap c_{56} \\
P_{565} &= (4, 5, 7, 1) = \ell_{13} \cap \ell_{18} = c_{13} \cap c_{24} \\
P_{220} &= (3, 2, 2, 1) = \ell_{13} \cap \ell_{19} = c_{13} \cap c_{25} \\
P_{266} &= (1, 0, 3, 1) = \ell_{13} \cap \ell_{25} = c_{13} \cap c_{46} \\
P_{355} &= (2, 3, 4, 1) = \ell_{13} \cap \ell_{26} = c_{13} \cap c_{56} \\
P_{115} &= (1, 5, 0, 1) = \ell_{14} \cap \ell_{17} = c_{14} \cap c_{23} \\
P_{358} &= (5, 3, 4, 1) = \ell_{14} \cap \ell_{19} = c_{14} \cap c_{25} \\
P_{275} &= (2, 1, 3, 1) = \ell_{14} \cap \ell_{20} = c_{14} \cap c_{26} \\
P_{464} &= (7, 0, 6, 1) = \ell_{14} \cap \ell_{22} = c_{14} \cap c_{35} \\
P_{252} &= (3, 6, 2, 1) = \ell_{14} \cap \ell_{23} = c_{14} \cap c_{36} \\
P_{583} &= (6, 7, 7, 1) = \ell_{14} \cap \ell_{26} = c_{14} \cap c_{56} \\
P_{250} &= (1, 6, 2, 1) = \ell_{15} \cap \ell_{17} = c_{15} \cap c_{23} \\
P_{394} &= (1, 0, 5, 1) = \ell_{15} \cap \ell_{18} = c_{15} \cap c_{24} \\
P_{466} &= (1, 1, 6, 1) = \ell_{15} \cap \ell_{20} = c_{15} \cap c_{26} \\
P_{282} &= (1, 2, 3, 1) = \ell_{15} \cap \ell_{21} = c_{15} \cap c_{34} \\
P_{99} &= (1, 3, 0, 1) = \ell_{15} \cap \ell_{23} = c_{15} \cap c_{36} \\
P_{562} &= (1, 5, 7, 1) = \ell_{15} \cap \ell_{25} = c_{15} \cap c_{46} \\
P_{47} &= (4, 4, 1, 0) = \ell_{16} \cap \ell_{18} = c_{16} \cap c_{24} \\
P_{28} &= (1, 2, 1, 0) = \ell_{16} \cap \ell_{19} = c_{16} \cap c_{25} \\
P_{24} &= (5, 1, 1, 0) = \ell_{16} \cap \ell_{21} = c_{16} \cap c_{34} \\
P_{66} &= (7, 6, 1, 0) = \ell_{16} \cap \ell_{22} = c_{16} \cap c_{35} \\
P_{354} &= (1, 3, 4, 1) = \ell_{17} \cap \ell_{25} = c_{23} \cap c_{46} \\
P_{458} &= (1, 0, 6, 1) = \ell_{17} \cap \ell_{26} = c_{23} \cap c_{56} \\
P_{100} &= (2, 3, 0, 1) = \ell_{18} \cap \ell_{22} = c_{24} \cap c_{35} \\
P_{366} &= (5, 4, 4, 1) = \ell_{18} \cap \ell_{23} = c_{24} \cap c_{36} \\
P_{256} &= (7, 6, 2, 1) = \ell_{18} \cap \ell_{26} = c_{24} \cap c_{56} \\
P_{520} &= (7, 7, 6, 1) = \ell_{19} \cap \ell_{21} = c_{25} \cap c_{34} \\
P_{567} &= (6, 5, 7, 1) = \ell_{19} \cap \ell_{23} = c_{25} \cap c_{36} \\
P_{123} &= (1, 6, 0, 1) = \ell_{19} \cap \ell_{25} = c_{25} \cap c_{46} \\
P_{85} &= (3, 1, 0, 1) = \ell_{20} \cap \ell_{21} = c_{26} \cap c_{34} \\
P_{341} &= (4, 1, 4, 1) = \ell_{20} \cap \ell_{22} = c_{26} \cap c_{35} \\
P_{430} &= (5, 4, 5, 1) = \ell_{21} \cap \ell_{26} = c_{34} \cap c_{56} \\
P_{218} &= (1, 2, 2, 1) = \ell_{22} \cap \ell_{25} = c_{35} \cap c_{46}
\end{aligned}$$

### Single Points

The surface has 12 single points:  
The single points on the surface are:

$$\begin{aligned}
0 : P_{233} &= (0, 4, 2, 1) \text{ lies on line } a_4 \\
1 : P_{241} &= (0, 5, 2, 1) \text{ lies on line } b_5 \\
2 : P_{297} &= (0, 4, 3, 1) \text{ lies on line } c_{45} \\
3 : P_{313} &= (0, 6, 3, 1) \text{ lies on line } a_4 \\
4 : P_{377} &= (0, 6, 4, 1) \text{ lies on line } c_{45} \\
5 : P_{385} &= (0, 7, 4, 1) \text{ lies on line } b_5 \\
6 : P_{417} &= (0, 3, 5, 1) \text{ lies on line } b_5
\end{aligned}$$

$$\begin{aligned}
7 : P_{449} &= (0, 7, 5, 1) \text{ lies on line } a_4 \\
8 : P_{473} &= (0, 2, 6, 1) \text{ lies on line } b_5 \\
9 : P_{497} &= (0, 5, 6, 1) \text{ lies on line } c_{45} \\
10 : P_{537} &= (0, 2, 7, 1) \text{ lies on line } c_{45} \\
11 : P_{545} &= (0, 3, 7, 1) \text{ lies on line } a_4
\end{aligned}$$

The single points on the surface are:

### Points on surface but on no line

The surface has 0 points not on any line:

The points on the surface but not on lines are:

### Line Intersection Graph

		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
		$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$a_6$	$b_1$	$b_2$	$b_3$	$b_4$	$b_5$	$b_6$	$c_{12}$	$c_{13}$	$c_{14}$	$c_{15}$	$c_{16}$	$c_{23}$	$c_{24}$	$c_{25}$	$c_{26}$	$c_{34}$	$c_{35}$	$c_{36}$	$c_{45}$	$c_{46}$	$c_{56}$
0	$a_1$	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
1	$a_2$	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0
2	$a_3$	0	0	0	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0	1	0	0	0	1	1	1	0	0
3	$a_4$	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1
4	$a_5$	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	0
5	$a_6$	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1
6	$b_1$	0	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0
7	$b_2$	1	0	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	0	0	0	0	0
8	$b_3$	1	1	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	1	0	0
9	$b_4$	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0
10	$b_5$	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0
11	$b_6$	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1
12	$c_{12}$	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
13	$c_{13}$	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1
14	$c_{14}$	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	0	0
15	$c_{15}$	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	1	0	1	0	1
16	$c_{16}$	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	1	1	0	1	0
17	$c_{23}$	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1
18	$c_{24}$	0	1	0	1	0	0	0	0	1	0	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0
19	$c_{25}$	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	1	0	1	0	0	0	0	1	0	1	0	1
20	$c_{26}$	0	1	0	0	0	1	0	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0	1	1	0	1	0
21	$c_{34}$	0	0	1	1	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	1	1	0	0	0	0	1
22	$c_{35}$	0	0	1	0	1	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	1
23	$c_{36}$	0	0	1	0	0	1	0	0	1	0	0	1	1	0	1	1	0	0	1	1	0	0	0	0	0	1	0
24	$c_{45}$	0	0	0	1	1	0	0	0	0	1	1	0	1	1	0	0	1	1	0	0	1	0	0	1	0	0	0
25	$c_{46}$	0	0	0	1	0	1	0	0	0	1	0	1	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0
26	$c_{56}$	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{18}$	$P_{55}$	$P_{22}$	$P_{43}$	$P_{64}$	$P_8$	$P_{29}$	$P_{68}$	$P_{43}$	$P_{41}$

Line 1 intersects

Line	$\ell_6$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$
in point	$P_{179}$	$P_{164}$	$P_{143}$	$P_{169}$	$P_6$	$P_{189}$	$P_{154}$	$P_{199}$	$P_{169}$	$P_{152}$

Line 2 intersects

Line	$\ell_6$	$\ell_7$	$\ell_9$	$\ell_{10}$	$\ell_{11}$	$\ell_{13}$	$\ell_{17}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$
in point	$P_{141}$	$P_{87}$	$P_{376}$	$P_{569}$	$P_{25}$	$P_{519}$	$P_{426}$	$P_{229}$	$P_{569}$	$P_{283}$

Line 3 intersects

Line	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_{10}$	$\ell_{11}$	$\ell_{14}$	$\ell_{18}$	$\ell_{21}$	$\ell_{24}$	$\ell_{25}$
in point	$P_{153}$	$P_{465}$	$P_{369}$	$P_3$	$P_{27}$	$P_{153}$	$P_{465}$	$P_{369}$	$P_3$	$P_{27}$

Line 4 intersects

Line	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{11}$	$\ell_{15}$	$\ell_{19}$	$\ell_{22}$	$\ell_{24}$	$\ell_{26}$
in point	$P_{191}$	$P_{536}$	$P_{478}$	$P_{225}$	$P_{37}$	$P_{362}$	$P_{267}$	$P_{452}$	$P_{225}$	$P_{118}$

Line 5 intersects

Line	$\ell_6$	$\ell_7$	$\ell_8$	$\ell_9$	$\ell_{10}$	$\ell_{16}$	$\ell_{20}$	$\ell_{23}$	$\ell_{25}$	$\ell_{26}$
in point	$P_{149}$	$P_{340}$	$P_{211}$	$P_{88}$	$P_{273}$	$P_{13}$	$P_{534}$	$P_{472}$	$P_{402}$	$P_{273}$

Line 6 intersects

Line	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$
in point	$P_{179}$	$P_{141}$	$P_{153}$	$P_{191}$	$P_{149}$	$P_{168}$	$P_{174}$	$P_{153}$	$P_{194}$	$P_{11}$

Line 7 intersects

Line	$\ell_0$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_{12}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$
in point	$P_{18}$	$P_{87}$	$P_{465}$	$P_{536}$	$P_{340}$	$P_{147}$	$P_{274}$	$P_{465}$	$P_{405}$	$P_{215}$

Line 8 intersects

Line	$\ell_0$	$\ell_1$	$\ell_3$	$\ell_4$	$\ell_5$	$\ell_{13}$	$\ell_{17}$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$
in point	$P_{55}$	$P_{164}$	$P_{369}$	$P_{478}$	$P_{211}$	$P_{129}$	$P_{578}$	$P_{369}$	$P_{303}$	$P_{397}$

Line 9 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_4$	$\ell_5$	$\ell_{14}$	$\ell_{18}$	$\ell_{21}$	$\ell_{24}$	$\ell_{25}$
in point	$P_{22}$	$P_{143}$	$P_{376}$	$P_{225}$	$P_{88}$	$P_{429}$	$P_{284}$	$P_{571}$	$P_{225}$	$P_{514}$

Line 10 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_5$	$\ell_{15}$	$\ell_{19}$	$\ell_{22}$	$\ell_{24}$	$\ell_{26}$
in point	$P_{43}$	$P_{169}$	$P_{569}$	$P_3$	$P_{273}$	$P_{43}$	$P_{169}$	$P_{569}$	$P_3$	$P_{273}$

Line 11 intersects

Line	$\ell_0$	$\ell_1$	$\ell_2$	$\ell_3$	$\ell_4$	$\ell_{16}$	$\ell_{20}$	$\ell_{23}$	$\ell_{25}$	$\ell_{26}$
in point	$P_{64}$	$P_6$	$P_{25}$	$P_{27}$	$P_{37}$	$P_{54}$	$P_{15}$	$P_{44}$	$P_{27}$	$P_{74}$

Line 12 intersects

Line	$\ell_0$	$\ell_1$	$\ell_6$	$\ell_7$	$\ell_{21}$	$\ell_{22}$	$\ell_{23}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$
in point	$P_8$	$P_{189}$	$P_{168}$	$P_{147}$	$P_{144}$	$P_{182}$	$P_{193}$	$P_{193}$	$P_{170}$	$P_{156}$

Line 13 intersects

Line	$\ell_0$	$\ell_2$	$\ell_6$	$\ell_8$	$\ell_{18}$	$\ell_{19}$	$\ell_{20}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$
in point	$P_{29}$	$P_{519}$	$P_{174}$	$P_{129}$	$P_{565}$	$P_{220}$	$P_{401}$	$P_{401}$	$P_{266}$	$P_{355}$

Line 14 intersects

Line	$\ell_0$	$\ell_3$	$\ell_6$	$\ell_9$	$\ell_{17}$	$\ell_{19}$	$\ell_{20}$	$\ell_{22}$	$\ell_{23}$	$\ell_{26}$
in point	$P_{68}$	$P_{153}$	$P_{153}$	$P_{429}$	$P_{115}$	$P_{358}$	$P_{275}$	$P_{464}$	$P_{252}$	$P_{583}$

Line 15 intersects

Line	$\ell_0$	$\ell_4$	$\ell_6$	$\ell_{10}$	$\ell_{17}$	$\ell_{18}$	$\ell_{20}$	$\ell_{21}$	$\ell_{23}$	$\ell_{25}$
in point	$P_{43}$	$P_{362}$	$P_{194}$	$P_{43}$	$P_{250}$	$P_{394}$	$P_{466}$	$P_{282}$	$P_{99}$	$P_{562}$

Line 16 intersects

Line	$\ell_0$	$\ell_5$	$\ell_6$	$\ell_{11}$	$\ell_{17}$	$\ell_{18}$	$\ell_{19}$	$\ell_{21}$	$\ell_{22}$	$\ell_{24}$
in point	$P_{41}$	$P_{13}$	$P_{11}$	$P_{54}$	$P_{67}$	$P_{47}$	$P_{28}$	$P_{24}$	$P_{66}$	$P_{67}$

Line 17 intersects

Line	$\ell_1$	$\ell_2$	$\ell_7$	$\ell_8$	$\ell_{14}$	$\ell_{15}$	$\ell_{16}$	$\ell_{24}$	$\ell_{25}$	$\ell_{26}$
in point	$P_{154}$	$P_{426}$	$P_{274}$	$P_{578}$	$P_{115}$	$P_{250}$	$P_{67}$	$P_{67}$	$P_{354}$	$P_{458}$

Line 18 intersects

Line	$\ell_1$	$\ell_3$	$\ell_7$	$\ell_9$	$\ell_{13}$	$\ell_{15}$	$\ell_{16}$	$\ell_{22}$	$\ell_{23}$	$\ell_{26}$
in point	$P_{199}$	$P_{465}$	$P_{465}$	$P_{284}$	$P_{565}$	$P_{394}$	$P_{47}$	$P_{100}$	$P_{366}$	$P_{256}$

Line 19 intersects

Line	$\ell_1$	$\ell_4$	$\ell_7$	$\ell_{10}$	$\ell_{13}$	$\ell_{14}$	$\ell_{16}$	$\ell_{21}$	$\ell_{23}$	$\ell_{25}$
in point	$P_{169}$	$P_{267}$	$P_{405}$	$P_{169}$	$P_{220}$	$P_{358}$	$P_{28}$	$P_{520}$	$P_{567}$	$P_{123}$

Line 20 intersects

Line	$\ell_1$	$\ell_5$	$\ell_7$	$\ell_{11}$	$\ell_{13}$	$\ell_{14}$	$\ell_{15}$	$\ell_{21}$	$\ell_{22}$	$\ell_{24}$
in point	$P_{152}$	$P_{534}$	$P_{215}$	$P_{15}$	$P_{401}$	$P_{275}$	$P_{466}$	$P_{85}$	$P_{341}$	$P_{401}$

Line 21 intersects

Line	$\ell_2$	$\ell_3$	$\ell_8$	$\ell_9$	$\ell_{12}$	$\ell_{15}$	$\ell_{16}$	$\ell_{19}$	$\ell_{20}$	$\ell_{26}$
in point	$P_{229}$	$P_{369}$	$P_{369}$	$P_{571}$	$P_{144}$	$P_{282}$	$P_{24}$	$P_{520}$	$P_{85}$	$P_{430}$

Line 22 intersects

Line	$\ell_2$	$\ell_4$	$\ell_8$	$\ell_{10}$	$\ell_{12}$	$\ell_{14}$	$\ell_{16}$	$\ell_{18}$	$\ell_{20}$	$\ell_{25}$
in point	$P_{569}$	$P_{452}$	$P_{303}$	$P_{569}$	$P_{182}$	$P_{464}$	$P_{66}$	$P_{100}$	$P_{341}$	$P_{218}$

Line 23 intersects

Line	$\ell_2$	$\ell_5$	$\ell_8$	$\ell_{11}$	$\ell_{12}$	$\ell_{14}$	$\ell_{15}$	$\ell_{18}$	$\ell_{19}$	$\ell_{24}$
in point	$P_{283}$	$P_{472}$	$P_{397}$	$P_{44}$	$P_{193}$	$P_{252}$	$P_{99}$	$P_{366}$	$P_{567}$	$P_{193}$

Line 24 intersects

Line	$\ell_3$	$\ell_4$	$\ell_9$	$\ell_{10}$	$\ell_{12}$	$\ell_{13}$	$\ell_{16}$	$\ell_{17}$	$\ell_{20}$	$\ell_{23}$
in point	$P_3$	$P_{225}$	$P_{225}$	$P_3$	$P_{193}$	$P_{401}$	$P_{67}$	$P_{67}$	$P_{401}$	$P_{193}$

Line 25 intersects

Line	$\ell_3$	$\ell_5$	$\ell_9$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{15}$	$\ell_{17}$	$\ell_{19}$	$\ell_{22}$
in point	$P_{27}$	$P_{402}$	$P_{514}$	$P_{27}$	$P_{170}$	$P_{266}$	$P_{562}$	$P_{354}$	$P_{123}$	$P_{218}$

Line 26 intersects

Line	$\ell_4$	$\ell_5$	$\ell_{10}$	$\ell_{11}$	$\ell_{12}$	$\ell_{13}$	$\ell_{14}$	$\ell_{17}$	$\ell_{18}$	$\ell_{21}$
in point	$P_{118}$	$P_{273}$	$P_{273}$	$P_{74}$	$P_{156}$	$P_{355}$	$P_{583}$	$P_{458}$	$P_{256}$	$P_{430}$

The surface has 121 points:

The points on the surface are:

$$\begin{array}{lll}
0 : P_3 = (0, 0, 0, 1) & 5 : P_{15} = (4, 0, 1, 0) & 10 : P_{27} = (0, 2, 1, 0) \\
1 : P_6 = (2, 1, 0, 0) & 6 : P_{18} = (7, 0, 1, 0) & 11 : P_{28} = (1, 2, 1, 0) \\
2 : P_8 = (4, 1, 0, 0) & 7 : P_{22} = (3, 1, 1, 0) & 12 : P_{29} = (2, 2, 1, 0) \\
3 : P_{11} = (7, 1, 0, 0) & 8 : P_{24} = (5, 1, 1, 0) & 13 : P_{37} = (2, 3, 1, 0) \\
4 : P_{13} = (2, 0, 1, 0) & 9 : P_{25} = (6, 1, 1, 0) & 14 : P_{41} = (6, 3, 1, 0)
\end{array}$$

15 :  $P_{43} = (0, 4, 1, 0)$   
 16 :  $P_{44} = (1, 4, 1, 0)$   
 17 :  $P_{47} = (4, 4, 1, 0)$   
 18 :  $P_{54} = (3, 5, 1, 0)$   
 19 :  $P_{55} = (4, 5, 1, 0)$   
 20 :  $P_{64} = (5, 6, 1, 0)$   
 21 :  $P_{66} = (7, 6, 1, 0)$   
 22 :  $P_{67} = (0, 7, 1, 0)$   
 23 :  $P_{68} = (1, 7, 1, 0)$   
 24 :  $P_{74} = (7, 7, 1, 0)$   
 25 :  $P_{85} = (3, 1, 0, 1)$   
 26 :  $P_{87} = (5, 1, 0, 1)$   
 27 :  $P_{88} = (6, 1, 0, 1)$   
 28 :  $P_{99} = (1, 3, 0, 1)$   
 29 :  $P_{100} = (2, 3, 0, 1)$   
 30 :  $P_{115} = (1, 5, 0, 1)$   
 31 :  $P_{118} = (4, 5, 0, 1)$   
 32 :  $P_{123} = (1, 6, 0, 1)$   
 33 :  $P_{129} = (7, 6, 0, 1)$   
 34 :  $P_{141} = (3, 0, 1, 1)$   
 35 :  $P_{143} = (5, 0, 1, 1)$   
 36 :  $P_{144} = (6, 0, 1, 1)$   
 37 :  $P_{147} = (2, 1, 1, 1)$   
 38 :  $P_{149} = (4, 1, 1, 1)$   
 39 :  $P_{152} = (7, 1, 1, 1)$   
 40 :  $P_{153} = (0, 2, 1, 1)$   
 41 :  $P_{154} = (1, 2, 1, 1)$   
 42 :  $P_{156} = (3, 2, 1, 1)$   
 43 :  $P_{164} = (3, 3, 1, 1)$   
 44 :  $P_{168} = (7, 3, 1, 1)$   
 45 :  $P_{169} = (0, 4, 1, 1)$   
 46 :  $P_{170} = (1, 4, 1, 1)$   
 47 :  $P_{174} = (5, 4, 1, 1)$   
 48 :  $P_{179} = (2, 5, 1, 1)$   
 49 :  $P_{182} = (5, 5, 1, 1)$   
 50 :  $P_{189} = (4, 6, 1, 1)$

51 :  $P_{191} = (6, 6, 1, 1)$   
 52 :  $P_{193} = (0, 7, 1, 1)$   
 53 :  $P_{194} = (1, 7, 1, 1)$   
 54 :  $P_{199} = (6, 7, 1, 1)$   
 55 :  $P_{211} = (2, 1, 2, 1)$   
 56 :  $P_{215} = (6, 1, 2, 1)$   
 57 :  $P_{218} = (1, 2, 2, 1)$   
 58 :  $P_{220} = (3, 2, 2, 1)$   
 59 :  $P_{225} = (0, 3, 2, 1)$   
 60 :  $P_{229} = (4, 3, 2, 1)$   
 61 :  $P_{233} = (0, 4, 2, 1)$   
 62 :  $P_{241} = (0, 5, 2, 1)$   
 63 :  $P_{250} = (1, 6, 2, 1)$   
 64 :  $P_{252} = (3, 6, 2, 1)$   
 65 :  $P_{256} = (7, 6, 2, 1)$   
 66 :  $P_{266} = (1, 0, 3, 1)$   
 67 :  $P_{267} = (2, 0, 3, 1)$   
 68 :  $P_{273} = (0, 1, 3, 1)$   
 69 :  $P_{274} = (1, 1, 3, 1)$   
 70 :  $P_{275} = (2, 1, 3, 1)$   
 71 :  $P_{282} = (1, 2, 3, 1)$   
 72 :  $P_{283} = (2, 2, 3, 1)$   
 73 :  $P_{284} = (3, 2, 3, 1)$   
 74 :  $P_{297} = (0, 4, 3, 1)$   
 75 :  $P_{303} = (6, 4, 3, 1)$   
 76 :  $P_{313} = (0, 6, 3, 1)$   
 77 :  $P_{340} = (3, 1, 4, 1)$   
 78 :  $P_{341} = (4, 1, 4, 1)$   
 79 :  $P_{354} = (1, 3, 4, 1)$   
 80 :  $P_{355} = (2, 3, 4, 1)$   
 81 :  $P_{358} = (5, 3, 4, 1)$   
 82 :  $P_{362} = (1, 4, 4, 1)$   
 83 :  $P_{366} = (5, 4, 4, 1)$   
 84 :  $P_{369} = (0, 5, 4, 1)$   
 85 :  $P_{376} = (7, 5, 4, 1)$   
 86 :  $P_{377} = (0, 6, 4, 1)$

87 :  $P_{385} = (0, 7, 4, 1)$   
 88 :  $P_{394} = (1, 0, 5, 1)$   
 89 :  $P_{397} = (4, 0, 5, 1)$   
 90 :  $P_{401} = (0, 1, 5, 1)$   
 91 :  $P_{402} = (1, 1, 5, 1)$   
 92 :  $P_{405} = (4, 1, 5, 1)$   
 93 :  $P_{417} = (0, 3, 5, 1)$   
 94 :  $P_{426} = (1, 4, 5, 1)$   
 95 :  $P_{429} = (4, 4, 5, 1)$   
 96 :  $P_{430} = (5, 4, 5, 1)$   
 97 :  $P_{449} = (0, 7, 5, 1)$   
 98 :  $P_{452} = (3, 7, 5, 1)$   
 99 :  $P_{458} = (1, 0, 6, 1)$   
 100 :  $P_{464} = (7, 0, 6, 1)$   
 101 :  $P_{465} = (0, 1, 6, 1)$   
 102 :  $P_{466} = (1, 1, 6, 1)$   
 103 :  $P_{472} = (7, 1, 6, 1)$   
 104 :  $P_{473} = (0, 2, 6, 1)$   
 105 :  $P_{478} = (5, 2, 6, 1)$   
 106 :  $P_{497} = (0, 5, 6, 1)$   
 107 :  $P_{514} = (1, 7, 6, 1)$   
 108 :  $P_{519} = (6, 7, 6, 1)$   
 109 :  $P_{520} = (7, 7, 6, 1)$   
 110 :  $P_{534} = (5, 1, 7, 1)$   
 111 :  $P_{536} = (7, 1, 7, 1)$   
 112 :  $P_{537} = (0, 2, 7, 1)$   
 113 :  $P_{545} = (0, 3, 7, 1)$   
 114 :  $P_{562} = (1, 5, 7, 1)$   
 115 :  $P_{565} = (4, 5, 7, 1)$   
 116 :  $P_{567} = (6, 5, 7, 1)$   
 117 :  $P_{569} = (0, 6, 7, 1)$   
 118 :  $P_{571} = (2, 6, 7, 1)$   
 119 :  $P_{578} = (1, 7, 7, 1)$   
 120 :  $P_{583} = (6, 7, 7, 1)$