Rank-24 over GF(16)

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The equation

The equation of the surface is :

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

(1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
The point rank of the equation over GF(16) is 52

General information

Number of lines	9
Number of points	145
Number of singular points	1
Number of Eckardt points	0
Number of double points	0
Number of single points	144
Number of points off lines	0
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^9
Type of lines on points	$9, 1^{144}$

Singular Points

The surface has 1 singular points:

$0 : P_3 = \mathbf{P}(0,0,0,1) = \mathbf{P}(0,0,0,1)$

The 9 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{545} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{545} = \mathbf{Pl}(0,0,0,1,1,0)_{785}$$

$$\ell_1 = \begin{bmatrix} 1 & \delta^5 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3275} = \begin{bmatrix} 1 & 11 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3275} = \mathbf{Pl}(0,0,0,11,1,0)_{1095}$$

$$\ell_2 = \begin{bmatrix} 1 & \delta^{10} & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3002} = \begin{bmatrix} 1 & 10 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3002} = \mathbf{Pl}(0,0,0,10,1,0)_{1064}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4640} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4640} = \mathbf{Pl}(0,1,0,0,1,0)_{305}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & \delta^{5} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{48320} = \begin{bmatrix} 1 & 0 & 11 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{48320} = \mathbf{Pl}(0,11,0,0,1,0)_{315}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & \delta^{10} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{43952} = \begin{bmatrix} 1 & 0 & 10 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{43952} = \mathbf{Pl}(0,10,0,0,1,0)_{314}$$

$$\ell_6 = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{69921} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{69921} = \mathbf{Pl}(0,1,0,1,0,0)_{49}$$

$$\ell_7 = \begin{bmatrix} 0 & 1 & \delta^{5} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70091} = \begin{bmatrix} 0 & 1 & 11 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70091} = \mathbf{Pl}(0,11,0,1,0,0)_{59}$$

$$\ell_8 = \begin{bmatrix} 0 & 1 & \delta^{10} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70074} = \begin{bmatrix} 0 & 1 & 10 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70074} = \mathbf{Pl}(0,10,0,1,0,0)_{58}$$

Rank of lines: (545, 3275, 3002, 4640, 48320, 43952, 69921, 70091, 70074)
Rank of points on Klein quadric: (785, 1095, 1064, 305, 315, 314, 49, 59, 58)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 0 Double points:
The double points on the surface are:

Single Points

The surface has 144 single points:
The single points on the surface are:

0 : $P_5 = (1,1,0,0)$ lies on line ℓ_0
1 : $P_{14} = (10,1,0,0)$ lies on line ℓ_1
2 : $P_{15} = (11,1,0,0)$ lies on line ℓ_2
3 : $P_{20} = (1,0,1,0)$ lies on line ℓ_3
4 : $P_{29} = (10,0,1,0)$ lies on line ℓ_4
5 : $P_{30} = (11,0,1,0)$ lies on line ℓ_5
6 : $P_{35} = (0,1,1,0)$ lies on line ℓ_6
7 : $P_{179} = (0,10,1,0)$ lies on line ℓ_7
8 : $P_{195} = (0,11,1,0)$ lies on line ℓ_8
9 : $P_{291} = (1,1,0,1)$ lies on line ℓ_0
10 : $P_{300} = (10,1,0,1)$ lies on line ℓ_1
11 : $P_{301} = (11,1,0,1)$ lies on line ℓ_2
12 : $P_{308} = (2,2,0,1)$ lies on line ℓ_0
13 : $P_{319} = (13,2,0,1)$ lies on line ℓ_1

14 : $P_{321} = (15,2,0,1)$ lies on line ℓ_2
15 : $P_{325} = (3,3,0,1)$ lies on line ℓ_0
16 : $P_{326} = (4,3,0,1)$ lies on line ℓ_2
17 : $P_{329} = (7,3,0,1)$ lies on line ℓ_1
18 : $P_{341} = (3,4,0,1)$ lies on line ℓ_1
19 : $P_{342} = (4,4,0,1)$ lies on line ℓ_0
20 : $P_{345} = (7,4,0,1)$ lies on line ℓ_2
21 : $P_{359} = (5,5,0,1)$ lies on line ℓ_0
22 : $P_{363} = (9,5,0,1)$ lies on line ℓ_1
23 : $P_{366} = (12,5,0,1)$ lies on line ℓ_2
24 : $P_{376} = (6,6,0,1)$ lies on line ℓ_0
25 : $P_{378} = (8,6,0,1)$ lies on line ℓ_2
26 : $P_{384} = (14,6,0,1)$ lies on line ℓ_1
27 : $P_{389} = (3,7,0,1)$ lies on line ℓ_2

$28: P_{390} = (4, 7, 0, 1)$ lies on line ℓ_1

$29: P_{393} = (7, 7, 0, 1)$ lies on line ℓ_0

$30: P_{408} = (6, 8, 0, 1)$ lies on line ℓ_1

$31: P_{410} = (8, 8, 0, 1)$ lies on line ℓ_0

$32: P_{416} = (14, 8, 0, 1)$ lies on line ℓ_2

$33: P_{423} = (5, 9, 0, 1)$ lies on line ℓ_2

$34: P_{427} = (9, 9, 0, 1)$ lies on line ℓ_0

$35: P_{430} = (12, 9, 0, 1)$ lies on line ℓ_1

$36: P_{435} = (1, 10, 0, 1)$ lies on line ℓ_2

$37: P_{444} = (10, 10, 0, 1)$ lies on line ℓ_0

$38: P_{445} = (11, 10, 0, 1)$ lies on line ℓ_1

$39: P_{451} = (1, 11, 0, 1)$ lies on line ℓ_1

$40: P_{460} = (10, 11, 0, 1)$ lies on line ℓ_2

$41: P_{461} = (11, 11, 0, 1)$ lies on line ℓ_0

$42: P_{471} = (5, 12, 0, 1)$ lies on line ℓ_1

$43: P_{475} = (9, 12, 0, 1)$ lies on line ℓ_2

$44: P_{478} = (12, 12, 0, 1)$ lies on line ℓ_0

$45: P_{484} = (2, 13, 0, 1)$ lies on line ℓ_2

$46: P_{495} = (13, 13, 0, 1)$ lies on line ℓ_0

$47: P_{497} = (15, 13, 0, 1)$ lies on line ℓ_1

$48: P_{504} = (6, 14, 0, 1)$ lies on line ℓ_2

$49: P_{506} = (8, 14, 0, 1)$ lies on line ℓ_1

$50: P_{512} = (14, 14, 0, 1)$ lies on line ℓ_0

$51: P_{516} = (2, 15, 0, 1)$ lies on line ℓ_1

$52: P_{527} = (13, 15, 0, 1)$ lies on line ℓ_2

$53: P_{529} = (15, 15, 0, 1)$ lies on line ℓ_0

$54: P_{531} = (1, 0, 1, 1)$ lies on line ℓ_3

$55: P_{540} = (10, 0, 1, 1)$ lies on line ℓ_4

$56: P_{541} = (11, 0, 1, 1)$ lies on line ℓ_5

$57: P_{546} = (0, 1, 1, 1)$ lies on line ℓ_6

$58: P_{689} = (0, 10, 1, 1)$ lies on line ℓ_7

$59: P_{705} = (0, 11, 1, 1)$ lies on line ℓ_8

$60: P_{787} = (2, 0, 2, 1)$ lies on line ℓ_3

$61: P_{798} = (13, 0, 2, 1)$ lies on line ℓ_4

$62: P_{800} = (15, 0, 2, 1)$ lies on line ℓ_5

$63: P_{817} = (0, 2, 2, 1)$ lies on line ℓ_6

$64: P_{993} = (0, 13, 2, 1)$ lies on line ℓ_7

$65: P_{1025} = (0, 15, 2, 1)$ lies on line ℓ_8

$66: P_{1044} = (3, 0, 3, 1)$ lies on line ℓ_3

$67: P_{1045} = (4, 0, 3, 1)$ lies on line ℓ_5

$68: P_{1048} = (7, 0, 3, 1)$ lies on line ℓ_4

$69: P_{1089} = (0, 3, 3, 1)$ lies on line ℓ_6

$70: P_{1105} = (0, 4, 3, 1)$ lies on line ℓ_8

$71: P_{1153} = (0, 7, 3, 1)$ lies on line ℓ_7

$72: P_{1300} = (3, 0, 4, 1)$ lies on line ℓ_4

$73: P_{1301} = (4, 0, 4, 1)$ lies on line ℓ_3

$74: P_{1304} = (7, 0, 4, 1)$ lies on line ℓ_5

$75: P_{1345} = (0, 3, 4, 1)$ lies on line ℓ_7

$76: P_{1361} = (0, 4, 4, 1)$ lies on line ℓ_6

$77: P_{1409} = (0, 7, 4, 1)$ lies on line ℓ_8

$78: P_{1558} = (5, 0, 5, 1)$ lies on line ℓ_3

$79: P_{1562} = (9, 0, 5, 1)$ lies on line ℓ_4

$80: P_{1565} = (12, 0, 5, 1)$ lies on line ℓ_5

$81: P_{1633} = (0, 5, 5, 1)$ lies on line ℓ_6

$82: P_{1697} = (0, 9, 5, 1)$ lies on line ℓ_7

$83: P_{1745} = (0, 12, 5, 1)$ lies on line ℓ_8

$84: P_{1815} = (6, 0, 6, 1)$ lies on line ℓ_3

$85: P_{1817} = (8, 0, 6, 1)$ lies on line ℓ_5

$86: P_{1823} = (14, 0, 6, 1)$ lies on line ℓ_4

$87: P_{1905} = (0, 6, 6, 1)$ lies on line ℓ_6

$88: P_{1937} = (0, 8, 6, 1)$ lies on line ℓ_8

$89: P_{2033} = (0, 14, 6, 1)$ lies on line ℓ_7

$90: P_{2068} = (3, 0, 7, 1)$ lies on line ℓ_5

$91: P_{2069} = (4, 0, 7, 1)$ lies on line ℓ_4

$92: P_{2072} = (7, 0, 7, 1)$ lies on line ℓ_3

$93: P_{2113} = (0, 3, 7, 1)$ lies on line ℓ_8

$94: P_{2129} = (0, 4, 7, 1)$ lies on line ℓ_7

$95: P_{2177} = (0, 7, 7, 1)$ lies on line ℓ_6

$96: P_{2327} = (6, 0, 8, 1)$ lies on line ℓ_4

$97: P_{2329} = (8, 0, 8, 1)$ lies on line ℓ_3

$98: P_{2335} = (14, 0, 8, 1)$ lies on line ℓ_5

$99: P_{2417} = (0, 6, 8, 1)$ lies on line ℓ_7

$100: P_{2449} = (0, 8, 8, 1)$ lies on line ℓ_6

$101: P_{2545} = (0, 14, 8, 1)$ lies on line ℓ_8

$102: P_{2582} = (5, 0, 9, 1)$ lies on line ℓ_5

$103: P_{2586} = (9, 0, 9, 1)$ lies on line ℓ_3

$104: P_{2589} = (12, 0, 9, 1)$ lies on line ℓ_4

$105: P_{2657} = (0, 5, 9, 1)$ lies on line ℓ_8

$106: P_{2721} = (0, 9, 9, 1)$ lies on line ℓ_6

$107: P_{2769} = (0, 12, 9, 1)$ lies on line ℓ_7

$108: P_{2834} = (1, 0, 10, 1)$ lies on line ℓ_5

$109: P_{2843} = (10, 0, 10, 1)$ lies on line ℓ_3

$110: P_{2844} = (11, 0, 10, 1)$ lies on line ℓ_4

$111: P_{2849} = (0, 1, 10, 1)$ lies on line ℓ_8

$112: P_{2993} = (0, 10, 10, 1)$ lies on line ℓ_6

$113: P_{3009} = (0, 11, 10, 1)$ lies on line ℓ_7

$114: P_{3090} = (1, 0, 11, 1)$ lies on line ℓ_4

$115: P_{3099} = (10, 0, 11, 1)$ lies on line ℓ_5

$116: P_{3100} = (11, 0, 11, 1)$ lies on line ℓ_3

$117: P_{3105} = (0, 1, 11, 1)$ lies on line ℓ_7

$118: P_{3249} = (0, 10, 11, 1)$ lies on line ℓ_8

$119: P_{3265} = (0, 11, 11, 1)$ lies on line ℓ_6

$120: P_{3350} = (5, 0, 12, 1)$ lies on line ℓ_4

$121: P_{3354} = (9, 0, 12, 1)$ lies on line ℓ_5

$122: P_{3357} = (12, 0, 12, 1)$ lies on line ℓ_3

$123: P_{3425} = (0, 5, 12, 1)$ lies on line ℓ_7

$124: P_{3489} = (0, 9, 12, 1)$ lies on line ℓ_8

$125: P_{3537} = (0, 12, 12, 1)$ lies on line ℓ_6

$126: P_{3603} = (2, 0, 13, 1)$ lies on line ℓ_5

$127: P_{3614} = (13, 0, 13, 1)$ lies on line ℓ_3

$128: P_{3616} = (15, 0, 13, 1)$ lies on line ℓ_4

$129: P_{3633} = (0, 2, 13, 1)$ lies on line ℓ_8

$130: P_{3809} = (0, 13, 13, 1)$ lies on line ℓ_6

$131: P_{3841} = (0, 15, 13, 1)$ lies on line ℓ_7

$132: P_{3863} = (6, 0, 14, 1)$ lies on line ℓ_5

$133: P_{3865} = (8, 0, 14, 1)$ lies on line ℓ_4

$134: P_{3871} = (14, 0, 14, 1)$ lies on line ℓ_3

$135: P_{3953} = (0, 6, 14, 1)$ lies on line ℓ_8

136 : $P_{3985} = (0, 8, 14, 1)$ lies on line ℓ_7
137 : $P_{4081} = (0, 14, 14, 1)$ lies on line ℓ_6
138 : $P_{4115} = (2, 0, 15, 1)$ lies on line ℓ_4
139 : $P_{4126} = (13, 0, 15, 1)$ lies on line ℓ_5
140 : $P_{4128} = (15, 0, 15, 1)$ lies on line ℓ_3

141 : $P_{4145} = (0, 2, 15, 1)$ lies on line ℓ_7
142 : $P_{4321} = (0, 13, 15, 1)$ lies on line ℓ_8
143 : $P_{4353} = (0, 15, 15, 1)$ lies on line ℓ_6

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
0|0 1 1 1 1 1 1 1 1
1|1 0 1 1 1 1 1 1 1
2|1 1 0 1 1 1 1 1 1
3|1 1 1 0 1 1 1 1 1
4|1 1 1 1 0 1 1 1 1
5|1 1 1 1 1 0 1 1 1
6|1 1 1 1 1 1 0 1 1
7|1 1 1 1 1 1 1 0 1
8|1 1 1 1 1 1 1 1 0
```

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_5	ℓ_6	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 5 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_6	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 6 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 7 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_8
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 8 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

The surface has 145 points:
The points on the surface are:

$0: P_3 = (0,0,0,1)$

$1: P_5 = (1,1,0,0)$

$2: P_{14} = (10,1,0,0)$

$3: P_{15} = (11,1,0,0)$

$4: P_{20} = (1,0,1,0)$

$5: P_{29} = (10,0,1,0)$

$6: P_{30} = (11,0,1,0)$

$7: P_{35} = (0,1,1,0)$

$8: P_{179} = (0,10,1,0)$

$9: P_{195} = (0,11,1,0)$

$10: P_{291} = (1,1,0,1)$

$11: P_{300} = (10,1,0,1)$

$12: P_{301} = (11,1,0,1)$

$13: P_{308} = (2,2,0,1)$

$14: P_{319} = (13,2,0,1)$

$15: P_{321} = (15,2,0,1)$

$16: P_{325} = (3,3,0,1)$

$17: P_{326} = (4,3,0,1)$

$18: P_{329} = (7,3,0,1)$

$19: P_{341} = (3,4,0,1)$

$20: P_{342} = (4,4,0,1)$

$21: P_{345} = (7,4,0,1)$

$22: P_{359} = (5,5,0,1)$

$23: P_{363} = (9,5,0,1)$

$24: P_{366} = (12,5,0,1)$

$25: P_{376} = (6,6,0,1)$

$26: P_{378} = (8,6,0,1)$

$27: P_{384} = (14,6,0,1)$

$28: P_{389} = (3,7,0,1)$

$29: P_{390} = (4,7,0,1)$

$30: P_{393} = (7,7,0,1)$

$31: P_{408} = (6,8,0,1)$

$32: P_{410} = (8,8,0,1)$

$33: P_{416} = (14,8,0,1)$

$34: P_{423} = (5,9,0,1)$

$35: P_{427} = (9,9,0,1)$

$36: P_{430} = (12,9,0,1)$

$37: P_{435} = (1,10,0,1)$

$38: P_{444} = (10,10,0,1)$

$39: P_{445} = (11,10,0,1)$

$40: P_{451} = (1,11,0,1)$

$41: P_{460} = (10,11,0,1)$

$42: P_{461} = (11,11,0,1)$

$43: P_{471} = (5,12,0,1)$

$44: P_{475} = (9,12,0,1)$

$45: P_{478} = (12,12,0,1)$

$46: P_{484} = (2,13,0,1)$

$47: P_{495} = (13,13,0,1)$

$48: P_{497} = (15,13,0,1)$

$49: P_{504} = (6,14,0,1)$

$50: P_{506} = (8,14,0,1)$

$51: P_{512} = (14,14,0,1)$

$52: P_{516} = (2,15,0,1)$

$53: P_{527} = (13,15,0,1)$

$54: P_{529} = (15,15,0,1)$

$55: P_{531} = (1,0,1,1)$

$56: P_{540} = (10,0,1,1)$

$57: P_{541} = (11,0,1,1)$

$58: P_{546} = (0,1,1,1)$

$59: P_{689} = (0,10,1,1)$

$60: P_{705} = (0,11,1,1)$

$61: P_{787} = (2,0,2,1)$

$62: P_{798} = (13,0,2,1)$

$63: P_{800} = (15,0,2,1)$

$64: P_{817} = (0,2,2,1)$

$65: P_{993} = (0,13,2,1)$

$66: P_{1025} = (0,15,2,1)$

$67: P_{1044} = (3,0,3,1)$

$68: P_{1045} = (4,0,3,1)$

$69: P_{1048} = (7,0,3,1)$

$70: P_{1089} = (0,3,3,1)$

$71: P_{1105} = (0,4,3,1)$

$72: P_{1153} = (0,7,3,1)$

$73: P_{1300} = (3,0,4,1)$

$74: P_{1301} = (4,0,4,1)$

$75: P_{1304} = (7,0,4,1)$

$76: P_{1345} = (0,3,4,1)$

$77: P_{1361} = (0,4,4,1)$

$78: P_{1409} = (0,7,4,1)$

$79: P_{1558} = (5,0,5,1)$

$80: P_{1562} = (9,0,5,1)$

$81: P_{1565} = (12,0,5,1)$

$82: P_{1633} = (0,5,5,1)$

$83: P_{1697} = (0,9,5,1)$

$84: P_{1745} = (0,12,5,1)$

$85: P_{1815} = (6,0,6,1)$

$86: P_{1817} = (8,0,6,1)$

$87: P_{1823} = (14,0,6,1)$

$88: P_{1905} = (0,6,6,1)$

$89: P_{1937} = (0,8,6,1)$

$90: P_{2033} = (0,14,6,1)$

$91: P_{2068} = (3,0,7,1)$

$92: P_{2069} = (4,0,7,1)$

$93: P_{2072} = (7,0,7,1)$

$94: P_{2113} = (0,3,7,1)$

$95: P_{2129} = (0,4,7,1)$

$96: P_{2177} = (0,7,7,1)$

$97: P_{2327} = (6,0,8,1)$

$98: P_{2329} = (8,0,8,1)$

$99: P_{2335} = (14,0,8,1)$

$100: P_{2417} = (0,6,8,1)$

$101: P_{2449} = (0,8,8,1)$

$102: P_{2545} = (0,14,8,1)$

$103: P_{2582} = (5,0,9,1)$

$104: P_{2586} = (9,0,9,1)$

$105: P_{2589} = (12,0,9,1)$

$106: P_{2657} = (0,5,9,1)$

$107: P_{2721} = (0,9,9,1)$

$108: P_{2769} = (0,12,9,1)$

$109: P_{2834} = (1,0,10,1)$

$110: P_{2843} = (10,0,10,1)$

$111: P_{2844} = (11,0,10,1)$

$112: P_{2849} = (0,1,10,1)$

$113: P_{2993} = (0,10,10,1)$

$114: P_{3009} = (0,11,10,1)$

$115: P_{3090} = (1,0,11,1)$

$116: P_{3099} = (10,0,11,1)$

$117: P_{3100} = (11,0,11,1)$

$118: P_{3105} = (0,1,11,1)$

$119: P_{3249} = (0,10,11,1)$

$120: P_{3265} = (0,11,11,1)$

$121: P_{3350} = (5,0,12,1)$

$122: P_{3354} = (9,0,12,1)$

$123: P_{3357} = (12,0,12,1)$

$124: P_{3425} = (0,5,12,1)$

$125: P_{3489} = (0,9,12,1)$

$126: P_{3537} = (0,12,12,1)$

$127: P_{3603} = (2,0,13,1)$

$128: P_{3614} = (13,0,13,1)$

$129: P_{3616} = (15,0,13,1)$

$130: P_{3633} = (0,2,13,1)$

$131: P_{3809} = (0,13,13,1)$

$132: P_{3841} = (0,15,13,1)$

$133: P_{3863} = (6,0,14,1)$

$134: P_{3865} = (8,0,14,1)$

$135: P_{3871} = (14,0,14,1)$

$136: P_{3953} = (0,6,14,1)$

$137: P_{3985} = (0,8,14,1)$

$138: P_{4081} = (0,14,14,1)$

$139: P_{4115} = (2,0,15,1)$

$140: P_{4126} = (13,0,15,1)$

$141: P_{4128} = (15, 0, 15, 1)$ $143: P_{4321} = (0, 13, 15, 1)$

$142: P_{4145} = (0, 2, 15, 1)$ $144: P_{4353} = (0, 15, 15, 1)$