Rank-65554 over GF(16)

The equation

The equation of the surface is :

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

(1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(16) is 286335526

General information

Number of lines	3
Number of points	273
Number of singular points	3
Number of Eckardt points	0
Number of double points	3
Number of single points	45
Number of points off lines	225
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^3
Type of lines on points	2^3, 1^{45}, 0^{225}

Singular Points

The surface has 3 singular points:

$0 : P_{36} = \mathbf{P}(1,1,1,0) = \mathbf{P}(1,1,1,0)$
$1 : P_{190} = \mathbf{P}(\delta^5, \delta^{10}, 1, 0) = \mathbf{P}(11,10,1,0)$

$2 : P_{205} = \mathbf{P}(\delta^{10}, \delta^5, 1, 0) = \mathbf{P}(10,11,1,0)$

The 3 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{274} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{274} = \mathbf{Pl}(1,0,1,0,0,1)_{4657}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & \delta^{10} & 0 \\ 0 & 1 & \delta^5 & 0 \end{bmatrix}_{2741} = \begin{bmatrix} 1 & 0 & 10 & 0 \\ 0 & 1 & 11 & 0 \end{bmatrix}_{2741} = \mathbf{Pl}(11,0,10,0,0,1)_{4946}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & \delta^5 & 0 \\ 0 & 1 & \delta^{10} & 0 \end{bmatrix}_{3013} = \begin{bmatrix} 1 & 0 & 11 & 0 \\ 0 & 1 & 10 & 0 \end{bmatrix}_{3013} = \mathbf{Pl}(10,0,11,0,0,1)_{4976}$$

Rank of lines: (274, 2741, 3013)
Rank of points on Klein quadric: (4657, 4946, 4976)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 3 Double points:
The double points on the surface are:

$P_{205} = (10,11,1,0) = \ell_0 \cap \ell_1$ $\qquad\qquad P_{36} = (1,1,1,0) = \ell_1 \cap \ell_2$
$P_{190} = (11,10,1,0) = \ell_0 \cap \ell_2$

Single Points

The surface has 45 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_0
4 : $P_{29} = (10,0,1,0)$ lies on line ℓ_2
5 : $P_{30} = (11,0,1,0)$ lies on line ℓ_1
6 : $P_{35} = (0,1,1,0)$ lies on line ℓ_0
7 : $P_{54} = (3,2,1,0)$ lies on line ℓ_0
8 : $P_{56} = (5,2,1,0)$ lies on line ℓ_2
9 : $P_{57} = (6,2,1,0)$ lies on line ℓ_1
10 : $P_{69} = (2,3,1,0)$ lies on line ℓ_0
11 : $P_{79} = (12,3,1,0)$ lies on line ℓ_1
12 : $P_{81} = (14,3,1,0)$ lies on line ℓ_2
13 : $P_{88} = (5,4,1,0)$ lies on line ℓ_0
14 : $P_{91} = (8,4,1,0)$ lies on line ℓ_1
15 : $P_{96} = (13,4,1,0)$ lies on line ℓ_2
16 : $P_{101} = (2,5,1,0)$ lies on line ℓ_1
17 : $P_{103} = (4,5,1,0)$ lies on line ℓ_0
18 : $P_{105} = (6,5,1,0)$ lies on line ℓ_2
19 : $P_{117} = (2,6,1,0)$ lies on line ℓ_2
20 : $P_{120} = (5,6,1,0)$ lies on line ℓ_1
21 : $P_{122} = (7,6,1,0)$ lies on line ℓ_0
22 : $P_{137} = (6,7,1,0)$ lies on line ℓ_0

23 : $P_{140} = (9,7,1,0)$ lies on line ℓ_2
24 : $P_{146} = (15,7,1,0)$ lies on line ℓ_1
25 : $P_{151} = (4,8,1,0)$ lies on line ℓ_2
26 : $P_{156} = (9,8,1,0)$ lies on line ℓ_0
27 : $P_{160} = (13,8,1,0)$ lies on line ℓ_1
28 : $P_{170} = (7,9,1,0)$ lies on line ℓ_1
29 : $P_{171} = (8,9,1,0)$ lies on line ℓ_0
30 : $P_{178} = (15,9,1,0)$ lies on line ℓ_2
31 : $P_{179} = (0,10,1,0)$ lies on line ℓ_1
32 : $P_{195} = (0,11,1,0)$ lies on line ℓ_2
33 : $P_{214} = (3,12,1,0)$ lies on line ℓ_2
34 : $P_{224} = (13,12,1,0)$ lies on line ℓ_0
35 : $P_{225} = (14,12,1,0)$ lies on line ℓ_1
36 : $P_{231} = (4,13,1,0)$ lies on line ℓ_1
37 : $P_{235} = (8,13,1,0)$ lies on line ℓ_2
38 : $P_{239} = (12,13,1,0)$ lies on line ℓ_0
39 : $P_{246} = (3,14,1,0)$ lies on line ℓ_1
40 : $P_{255} = (12,14,1,0)$ lies on line ℓ_2
41 : $P_{258} = (15,14,1,0)$ lies on line ℓ_0
42 : $P_{266} = (7,15,1,0)$ lies on line ℓ_2
43 : $P_{268} = (9,15,1,0)$ lies on line ℓ_1
44 : $P_{273} = (14,15,1,0)$ lies on line ℓ_0

The single points on the surface are:

Points on surface but on no line

The surface has 225 points not on any line:
The points on the surface but not on lines are:

$0: P_{275} = (1, 0, 0, 1)$

$1: P_{284} = (10, 0, 0, 1)$

$2: P_{285} = (11, 0, 0, 1)$

$3: P_{290} = (0, 1, 0, 1)$

$4: P_{434} = (0, 10, 0, 1)$

$5: P_{450} = (0, 11, 0, 1)$

$6: P_{530} = (0, 0, 1, 1)$

$7: P_{570} = (9, 2, 1, 1)$

$8: P_{583} = (6, 3, 1, 1)$

$9: P_{607} = (14, 4, 1, 1)$

$10: P_{622} = (13, 5, 1, 1)$

$11: P_{628} = (3, 6, 1, 1)$

$12: P_{649} = (8, 7, 1, 1)$

$13: P_{664} = (7, 8, 1, 1)$

$14: P_{675} = (2, 9, 1, 1)$

$15: P_{736} = (15, 12, 1, 1)$

$16: P_{742} = (5, 13, 1, 1)$

$17: P_{757} = (4, 14, 1, 1)$

$18: P_{781} = (12, 15, 1, 1)$

$19: P_{810} = (9, 1, 2, 1)$

$20: P_{829} = (12, 2, 2, 1)$

$21: P_{870} = (5, 5, 2, 1)$

$22: P_{875} = (10, 5, 2, 1)$

$23: P_{880} = (15, 5, 2, 1)$

$24: P_{930} = (1, 9, 2, 1)$

$25: P_{941} = (12, 9, 2, 1)$

$26: P_{942} = (13, 9, 2, 1)$

$27: P_{950} = (5, 10, 2, 1)$

$28: P_{973} = (12, 11, 2, 1)$

$29: P_{979} = (2, 12, 2, 1)$

$30: P_{986} = (9, 12, 2, 1)$

$31: P_{988} = (11, 12, 2, 1)$

$32: P_{1002} = (9, 13, 2, 1)$

$33: P_{1030} = (5, 15, 2, 1)$

$34: P_{1063} = (6, 1, 3, 1)$

$35: P_{1103} = (14, 3, 3, 1)$

$36: P_{1113} = (8, 4, 3, 1)$

$37: P_{1138} = (1, 6, 3, 1)$

$38: P_{1143} = (6, 6, 3, 1)$

$39: P_{1144} = (7, 6, 3, 1)$

$40: P_{1159} = (6, 7, 3, 1)$

$41: P_{1173} = (4, 8, 3, 1)$

$42: P_{1179} = (10, 8, 3, 1)$

$43: P_{1183} = (14, 8, 3, 1)$

$44: P_{1209} = (8, 10, 3, 1)$

$45: P_{1231} = (14, 11, 3, 1)$

$46: P_{1268} = (3, 14, 3, 1)$

$47: P_{1273} = (8, 14, 3, 1)$

$48: P_{1276} = (11, 14, 3, 1)$

$49: P_{1327} = (14, 1, 4, 1)$

$50: P_{1353} = (8, 3, 4, 1)$

$51: P_{1367} = (6, 4, 4, 1)$

$52: P_{1397} = (4, 6, 4, 1)$

$53: P_{1403} = (10, 6, 4, 1)$

$54: P_{1407} = (14, 6, 4, 1)$

$55: P_{1423} = (14, 7, 4, 1)$

$56: P_{1428} = (3, 8, 4, 1)$

$57: P_{1433} = (8, 8, 4, 1)$

$58: P_{1436} = (11, 8, 4, 1)$

$59: P_{1463} = (6, 10, 4, 1)$

$60: P_{1481} = (8, 11, 4, 1)$

$61: P_{1522} = (1, 14, 4, 1)$

$62: P_{1527} = (6, 14, 4, 1)$

$63: P_{1528} = (7, 14, 4, 1)$

$64: P_{1582} = (13, 1, 5, 1)$

$65: P_{1590} = (5, 2, 5, 1)$

$66: P_{1595} = (10, 2, 5, 1)$

$67: P_{1600} = (15, 2, 5, 1)$

$68: P_{1635} = (2, 5, 5, 1)$

$69: P_{1712} = (15, 9, 5, 1)$

$70: P_{1715} = (2, 10, 5, 1)$

$71: P_{1744} = (15, 11, 5, 1)$

$72: P_{1758} = (13, 12, 5, 1)$

$73: P_{1762} = (1, 13, 5, 1)$

$74: P_{1773} = (12, 13, 5, 1)$

$75: P_{1774} = (13, 13, 5, 1)$

$76: P_{1795} = (2, 15, 5, 1)$

$77: P_{1802} = (9, 15, 5, 1)$

$78: P_{1804} = (11, 15, 5, 1)$

$79: P_{1828} = (3, 1, 6, 1)$

$80: P_{1858} = (1, 3, 6, 1)$

$81: P_{1863} = (6, 3, 6, 1)$

$82: P_{1864} = (7, 3, 6, 1)$

$83: P_{1877} = (4, 4, 6, 1)$

$84: P_{1883} = (10, 4, 6, 1)$

$85: P_{1887} = (14, 4, 6, 1)$

$86: P_{1908} = (3, 6, 6, 1)$

$87: P_{1924} = (3, 7, 6, 1)$

$88: P_{1929} = (8, 7, 6, 1)$

$89: P_{1932} = (11, 7, 6, 1)$

$90: P_{1944} = (7, 8, 6, 1)$

$91: P_{1973} = (4, 10, 6, 1)$

$92: P_{1992} = (7, 11, 6, 1)$

$93: P_{2037} = (4, 14, 6, 1)$

$94: P_{2089} = (8, 1, 7, 1)$

$95: P_{2119} = (6, 3, 7, 1)$

$96 : P_{2143} = (14, 4, 7, 1)$

$97 : P_{2164} = (3, 6, 7, 1)$

$98 : P_{2169} = (8, 6, 7, 1)$

$99 : P_{2172} = (11, 6, 7, 1)$

$100 : P_{2185} = (8, 7, 7, 1)$

$101 : P_{2194} = (1, 8, 7, 1)$

$102 : P_{2199} = (6, 8, 7, 1)$

$103 : P_{2200} = (7, 8, 7, 1)$

$104 : P_{2239} = (14, 10, 7, 1)$

$105 : P_{2247} = (6, 11, 7, 1)$

$106 : P_{2293} = (4, 14, 7, 1)$

$107 : P_{2299} = (10, 14, 7, 1)$

$108 : P_{2303} = (14, 14, 7, 1)$

$109 : P_{2344} = (7, 1, 8, 1)$

$110 : P_{2373} = (4, 3, 8, 1)$

$111 : P_{2379} = (10, 3, 8, 1)$

$112 : P_{2383} = (14, 3, 8, 1)$

$113 : P_{2388} = (3, 4, 8, 1)$

$114 : P_{2393} = (8, 4, 8, 1)$

$115 : P_{2396} = (11, 4, 8, 1)$

$116 : P_{2424} = (7, 6, 8, 1)$

$117 : P_{2434} = (1, 7, 8, 1)$

$118 : P_{2439} = (6, 7, 8, 1)$

$119 : P_{2440} = (7, 7, 8, 1)$

$120 : P_{2453} = (4, 8, 8, 1)$

$121 : P_{2484} = (3, 10, 8, 1)$

$122 : P_{2501} = (4, 11, 8, 1)$

$123 : P_{2548} = (3, 14, 8, 1)$

$124 : P_{2595} = (2, 1, 9, 1)$

$125 : P_{2610} = (1, 2, 9, 1)$

$126 : P_{2621} = (12, 2, 9, 1)$

$127 : P_{2622} = (13, 2, 9, 1)$

$128 : P_{2672} = (15, 5, 9, 1)$

$129 : P_{2734} = (13, 9, 9, 1)$

$130 : P_{2752} = (15, 10, 9, 1)$

$131 : P_{2766} = (13, 11, 9, 1)$

$132 : P_{2771} = (2, 12, 9, 1)$

$133 : P_{2787} = (2, 13, 9, 1)$

$134 : P_{2794} = (9, 13, 9, 1)$

$135 : P_{2796} = (11, 13, 9, 1)$

$136 : P_{2822} = (5, 15, 9, 1)$

$137 : P_{2827} = (10, 15, 9, 1)$

$138 : P_{2832} = (15, 15, 9, 1)$

$139 : P_{2833} = (0, 0, 10, 1)$

$140 : P_{2870} = (5, 2, 10, 1)$

$141 : P_{2889} = (8, 3, 10, 1)$

$142 : P_{2903} = (6, 4, 10, 1)$

$143 : P_{2915} = (2, 5, 10, 1)$

$144 : P_{2933} = (4, 6, 10, 1)$

$145 : P_{2959} = (14, 7, 10, 1)$

$146 : P_{2964} = (3, 8, 10, 1)$

$147 : P_{2992} = (15, 9, 10, 1)$

$148 : P_{3038} = (13, 12, 10, 1)$

$149 : P_{3053} = (12, 13, 10, 1)$

$150 : P_{3064} = (7, 14, 10, 1)$

$151 : P_{3082} = (9, 15, 10, 1)$

$152 : P_{3089} = (0, 0, 11, 1)$

$153 : P_{3133} = (12, 2, 11, 1)$

$154 : P_{3151} = (14, 3, 11, 1)$

$155 : P_{3161} = (8, 4, 11, 1)$

$156 : P_{3184} = (15, 5, 11, 1)$

$157 : P_{3192} = (7, 6, 11, 1)$

$158 : P_{3207} = (6, 7, 11, 1)$

$159 : P_{3221} = (4, 8, 11, 1)$

$160 : P_{3246} = (13, 9, 11, 1)$

$161 : P_{3283} = (2, 12, 11, 1)$

$162 : P_{3306} = (9, 13, 11, 1)$

$163 : P_{3316} = (3, 14, 11, 1)$

$164 : P_{3334} = (5, 15, 11, 1)$

$165 : P_{3376} = (15, 1, 12, 1)$

$166 : P_{3379} = (2, 2, 12, 1)$

$167 : P_{3386} = (9, 2, 12, 1)$

$168 : P_{3388} = (11, 2, 12, 1)$

$169 : P_{3438} = (13, 5, 12, 1)$

$170 : P_{3491} = (2, 9, 12, 1)$

$171 : P_{3518} = (13, 10, 12, 1)$

$172 : P_{3523} = (2, 11, 12, 1)$

$173 : P_{3552} = (15, 12, 12, 1)$

$174 : P_{3558} = (5, 13, 12, 1)$

$175 : P_{3563} = (10, 13, 12, 1)$

$176 : P_{3568} = (15, 13, 12, 1)$

$177 : P_{3586} = (1, 15, 12, 1)$

$178 : P_{3597} = (12, 15, 12, 1)$

$179 : P_{3598} = (13, 15, 12, 1)$

$180 : P_{3622} = (5, 1, 13, 1)$

$181 : P_{3642} = (9, 2, 13, 1)$

$182 : P_{3682} = (1, 5, 13, 1)$

$183 : P_{3693} = (12, 5, 13, 1)$

$184 : P_{3694} = (13, 5, 13, 1)$

$185 : P_{3747} = (2, 9, 13, 1)$

$186 : P_{3754} = (9, 9, 13, 1)$

$187 : P_{3756} = (11, 9, 13, 1)$

$188 : P_{3773} = (12, 10, 13, 1)$

$189 : P_{3786} = (9, 11, 13, 1)$

$190 : P_{3798} = (5, 12, 13, 1)$

$191 : P_{3803} = (10, 12, 13, 1)$

$192 : P_{3808} = (15, 12, 13, 1)$

$193 : P_{3814} = (5, 13, 13, 1)$

$194 : P_{3853} = (12, 15, 13, 1)$

$195 : P_{3877} = (4, 1, 14, 1)$

$196 : P_{3908} = (3, 3, 14, 1)$

$197 : P_{3913} = (8, 3, 14, 1)$

$198 : P_{3916} = (11, 3, 14, 1)$

$199 : P_{3922} = (1, 4, 14, 1)$

$200 : P_{3927} = (6, 4, 14, 1)$

$201 : P_{3928} = (7, 4, 14, 1)$

$202 : P_{3957} = (4, 6, 14, 1)$

$203 : P_{3973} = (4, 7, 14, 1)$

204 : $P_{3979} = (10, 7, 14, 1)$
205 : $P_{3983} = (14, 7, 14, 1)$
206 : $P_{3988} = (3, 8, 14, 1)$
207 : $P_{4024} = (7, 10, 14, 1)$
208 : $P_{4036} = (3, 11, 14, 1)$
209 : $P_{4088} = (7, 14, 14, 1)$
210 : $P_{4141} = (12, 1, 15, 1)$
211 : $P_{4150} = (5, 2, 15, 1)$
212 : $P_{4195} = (2, 5, 15, 1)$
213 : $P_{4202} = (9, 5, 15, 1)$
214 : $P_{4204} = (11, 5, 15, 1)$

215 : $P_{4262} = (5, 9, 15, 1)$
216 : $P_{4267} = (10, 9, 15, 1)$
217 : $P_{4272} = (15, 9, 15, 1)$
218 : $P_{4282} = (9, 10, 15, 1)$
219 : $P_{4294} = (5, 11, 15, 1)$
220 : $P_{4306} = (1, 12, 15, 1)$
221 : $P_{4317} = (12, 12, 15, 1)$
222 : $P_{4318} = (13, 12, 15, 1)$
223 : $P_{4333} = (12, 13, 15, 1)$
224 : $P_{4362} = (9, 15, 15, 1)$

Line Intersection Graph

	0	1	2
0	0	1	1
1	1	0	1
2	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2
in point	P_{205}	P_{190}

Line 1 intersects

Line	ℓ_0	ℓ_2
in point	P_{205}	P_{36}

Line 2 intersects

Line	ℓ_0	ℓ_1
in point	P_{190}	P_{36}

The surface has 273 points:
The points on the surface are:

0 : $P_5 = (1, 1, 0, 0)$
1 : $P_{14} = (10, 1, 0, 0)$
2 : $P_{15} = (11, 1, 0, 0)$
3 : $P_{20} = (1, 0, 1, 0)$
4 : $P_{29} = (10, 0, 1, 0)$
5 : $P_{30} = (11, 0, 1, 0)$
6 : $P_{35} = (0, 1, 1, 0)$
7 : $P_{36} = (1, 1, 1, 0)$
8 : $P_{54} = (3, 2, 1, 0)$
9 : $P_{56} = (5, 2, 1, 0)$
10 : $P_{57} = (6, 2, 1, 0)$
11 : $P_{69} = (2, 3, 1, 0)$
12 : $P_{79} = (12, 3, 1, 0)$
13 : $P_{81} = (14, 3, 1, 0)$
14 : $P_{88} = (5, 4, 1, 0)$
15 : $P_{91} = (8, 4, 1, 0)$
16 : $P_{96} = (13, 4, 1, 0)$
17 : $P_{101} = (2, 5, 1, 0)$
18 : $P_{103} = (4, 5, 1, 0)$
19 : $P_{105} = (6, 5, 1, 0)$
20 : $P_{117} = (2, 6, 1, 0)$

21 : $P_{120} = (5, 6, 1, 0)$
22 : $P_{122} = (7, 6, 1, 0)$
23 : $P_{137} = (6, 7, 1, 0)$
24 : $P_{140} = (9, 7, 1, 0)$
25 : $P_{146} = (15, 7, 1, 0)$
26 : $P_{151} = (4, 8, 1, 0)$
27 : $P_{156} = (9, 8, 1, 0)$
28 : $P_{160} = (13, 8, 1, 0)$
29 : $P_{170} = (7, 9, 1, 0)$
30 : $P_{171} = (8, 9, 1, 0)$
31 : $P_{178} = (15, 9, 1, 0)$
32 : $P_{179} = (0, 10, 1, 0)$
33 : $P_{190} = (11, 10, 1, 0)$
34 : $P_{195} = (0, 11, 1, 0)$
35 : $P_{205} = (10, 11, 1, 0)$
36 : $P_{214} = (3, 12, 1, 0)$
37 : $P_{224} = (13, 12, 1, 0)$
38 : $P_{225} = (14, 12, 1, 0)$
39 : $P_{231} = (4, 13, 1, 0)$
40 : $P_{235} = (8, 13, 1, 0)$
41 : $P_{239} = (12, 13, 1, 0)$

42 : $P_{246} = (3, 14, 1, 0)$
43 : $P_{255} = (12, 14, 1, 0)$
44 : $P_{258} = (15, 14, 1, 0)$
45 : $P_{266} = (7, 15, 1, 0)$
46 : $P_{268} = (9, 15, 1, 0)$
47 : $P_{273} = (14, 15, 1, 0)$
48 : $P_{275} = (1, 0, 0, 1)$
49 : $P_{284} = (10, 0, 0, 1)$
50 : $P_{285} = (11, 0, 0, 1)$
51 : $P_{290} = (0, 1, 0, 1)$
52 : $P_{434} = (0, 10, 0, 1)$
53 : $P_{450} = (0, 11, 0, 1)$
54 : $P_{530} = (0, 0, 1, 1)$
55 : $P_{570} = (9, 2, 1, 1)$
56 : $P_{583} = (6, 3, 1, 1)$
57 : $P_{607} = (14, 4, 1, 1)$
58 : $P_{622} = (13, 5, 1, 1)$
59 : $P_{628} = (3, 6, 1, 1)$
60 : $P_{649} = (8, 7, 1, 1)$
61 : $P_{664} = (7, 8, 1, 1)$
62 : $P_{675} = (2, 9, 1, 1)$

$63 : P_{736} = (15, 12, 1, 1)$
$64 : P_{742} = (5, 13, 1, 1)$
$65 : P_{757} = (4, 14, 1, 1)$
$66 : P_{781} = (12, 15, 1, 1)$
$67 : P_{810} = (9, 1, 2, 1)$
$68 : P_{829} = (12, 2, 2, 1)$
$69 : P_{870} = (5, 5, 2, 1)$
$70 : P_{875} = (10, 5, 2, 1)$
$71 : P_{880} = (15, 5, 2, 1)$
$72 : P_{930} = (1, 9, 2, 1)$
$73 : P_{941} = (12, 9, 2, 1)$
$74 : P_{942} = (13, 9, 2, 1)$
$75 : P_{950} = (5, 10, 2, 1)$
$76 : P_{973} = (12, 11, 2, 1)$
$77 : P_{979} = (2, 12, 2, 1)$
$78 : P_{986} = (9, 12, 2, 1)$
$79 : P_{988} = (11, 12, 2, 1)$
$80 : P_{1002} = (9, 13, 2, 1)$
$81 : P_{1030} = (5, 15, 2, 1)$
$82 : P_{1063} = (6, 1, 3, 1)$
$83 : P_{1103} = (14, 3, 3, 1)$
$84 : P_{1113} = (8, 4, 3, 1)$
$85 : P_{1138} = (1, 6, 3, 1)$
$86 : P_{1143} = (6, 6, 3, 1)$
$87 : P_{1144} = (7, 6, 3, 1)$
$88 : P_{1159} = (6, 7, 3, 1)$
$89 : P_{1173} = (4, 8, 3, 1)$
$90 : P_{1179} = (10, 8, 3, 1)$
$91 : P_{1183} = (14, 8, 3, 1)$
$92 : P_{1209} = (8, 10, 3, 1)$
$93 : P_{1231} = (14, 11, 3, 1)$
$94 : P_{1268} = (3, 14, 3, 1)$
$95 : P_{1273} = (8, 14, 3, 1)$
$96 : P_{1276} = (11, 14, 3, 1)$
$97 : P_{1327} = (14, 1, 4, 1)$
$98 : P_{1353} = (8, 3, 4, 1)$
$99 : P_{1367} = (6, 4, 4, 1)$
$100 : P_{1397} = (4, 6, 4, 1)$
$101 : P_{1403} = (10, 6, 4, 1)$
$102 : P_{1407} = (14, 6, 4, 1)$
$103 : P_{1423} = (14, 7, 4, 1)$
$104 : P_{1428} = (3, 8, 4, 1)$
$105 : P_{1433} = (8, 8, 4, 1)$
$106 : P_{1436} = (11, 8, 4, 1)$
$107 : P_{1463} = (6, 10, 4, 1)$
$108 : P_{1481} = (8, 11, 4, 1)$
$109 : P_{1522} = (1, 14, 4, 1)$
$110 : P_{1527} = (6, 14, 4, 1)$
$111 : P_{1528} = (7, 14, 4, 1)$
$112 : P_{1582} = (13, 1, 5, 1)$
$113 : P_{1590} = (5, 2, 5, 1)$
$114 : P_{1595} = (10, 2, 5, 1)$
$115 : P_{1600} = (15, 2, 5, 1)$
$116 : P_{1635} = (2, 5, 5, 1)$

$117 : P_{1712} = (15, 9, 5, 1)$
$118 : P_{1715} = (2, 10, 5, 1)$
$119 : P_{1744} = (15, 11, 5, 1)$
$120 : P_{1758} = (13, 12, 5, 1)$
$121 : P_{1762} = (1, 13, 5, 1)$
$122 : P_{1773} = (12, 13, 5, 1)$
$123 : P_{1774} = (13, 13, 5, 1)$
$124 : P_{1795} = (2, 15, 5, 1)$
$125 : P_{1802} = (9, 15, 5, 1)$
$126 : P_{1804} = (11, 15, 5, 1)$
$127 : P_{1828} = (3, 1, 6, 1)$
$128 : P_{1858} = (1, 3, 6, 1)$
$129 : P_{1863} = (6, 3, 6, 1)$
$130 : P_{1864} = (7, 3, 6, 1)$
$131 : P_{1877} = (4, 4, 6, 1)$
$132 : P_{1883} = (10, 4, 6, 1)$
$133 : P_{1887} = (14, 4, 6, 1)$
$134 : P_{1908} = (3, 6, 6, 1)$
$135 : P_{1924} = (3, 7, 6, 1)$
$136 : P_{1929} = (8, 7, 6, 1)$
$137 : P_{1932} = (11, 7, 6, 1)$
$138 : P_{1944} = (7, 8, 6, 1)$
$139 : P_{1973} = (4, 10, 6, 1)$
$140 : P_{1992} = (7, 11, 6, 1)$
$141 : P_{2037} = (4, 14, 6, 1)$
$142 : P_{2089} = (8, 1, 7, 1)$
$143 : P_{2119} = (6, 3, 7, 1)$
$144 : P_{2143} = (14, 4, 7, 1)$
$145 : P_{2164} = (3, 6, 7, 1)$
$146 : P_{2169} = (8, 6, 7, 1)$
$147 : P_{2172} = (11, 6, 7, 1)$
$148 : P_{2185} = (8, 7, 7, 1)$
$149 : P_{2194} = (1, 8, 7, 1)$
$150 : P_{2199} = (6, 8, 7, 1)$
$151 : P_{2200} = (7, 8, 7, 1)$
$152 : P_{2239} = (14, 10, 7, 1)$
$153 : P_{2247} = (6, 11, 7, 1)$
$154 : P_{2293} = (4, 14, 7, 1)$
$155 : P_{2299} = (10, 14, 7, 1)$
$156 : P_{2303} = (14, 14, 7, 1)$
$157 : P_{2344} = (7, 1, 8, 1)$
$158 : P_{2373} = (4, 3, 8, 1)$
$159 : P_{2379} = (10, 3, 8, 1)$
$160 : P_{2383} = (14, 3, 8, 1)$
$161 : P_{2388} = (3, 4, 8, 1)$
$162 : P_{2393} = (8, 4, 8, 1)$
$163 : P_{2396} = (11, 4, 8, 1)$
$164 : P_{2424} = (7, 6, 8, 1)$
$165 : P_{2434} = (1, 7, 8, 1)$
$166 : P_{2439} = (6, 7, 8, 1)$
$167 : P_{2440} = (7, 7, 8, 1)$
$168 : P_{2453} = (4, 8, 8, 1)$
$169 : P_{2484} = (3, 10, 8, 1)$
$170 : P_{2501} = (4, 11, 8, 1)$

$171 : P_{2548} = (3, 14, 8, 1)$
$172 : P_{2595} = (2, 1, 9, 1)$
$173 : P_{2610} = (1, 2, 9, 1)$
$174 : P_{2621} = (12, 2, 9, 1)$
$175 : P_{2622} = (13, 2, 9, 1)$
$176 : P_{2672} = (15, 5, 9, 1)$
$177 : P_{2734} = (13, 9, 9, 1)$
$178 : P_{2752} = (15, 10, 9, 1)$
$179 : P_{2766} = (13, 11, 9, 1)$
$180 : P_{2771} = (2, 12, 9, 1)$
$181 : P_{2787} = (2, 13, 9, 1)$
$182 : P_{2794} = (9, 13, 9, 1)$
$183 : P_{2796} = (11, 13, 9, 1)$
$184 : P_{2822} = (5, 15, 9, 1)$
$185 : P_{2827} = (10, 15, 9, 1)$
$186 : P_{2832} = (15, 15, 9, 1)$
$187 : P_{2833} = (0, 0, 10, 1)$
$188 : P_{2870} = (5, 2, 10, 1)$
$189 : P_{2889} = (8, 3, 10, 1)$
$190 : P_{2903} = (6, 4, 10, 1)$
$191 : P_{2915} = (2, 5, 10, 1)$
$192 : P_{2933} = (4, 6, 10, 1)$
$193 : P_{2959} = (14, 7, 10, 1)$
$194 : P_{2964} = (3, 8, 10, 1)$
$195 : P_{2992} = (15, 9, 10, 1)$
$196 : P_{3038} = (13, 12, 10, 1)$
$197 : P_{3053} = (12, 13, 10, 1)$
$198 : P_{3064} = (7, 14, 10, 1)$
$199 : P_{3082} = (9, 15, 10, 1)$
$200 : P_{3089} = (0, 0, 11, 1)$
$201 : P_{3133} = (12, 2, 11, 1)$
$202 : P_{3151} = (14, 3, 11, 1)$
$203 : P_{3161} = (8, 4, 11, 1)$
$204 : P_{3184} = (15, 5, 11, 1)$
$205 : P_{3192} = (7, 6, 11, 1)$
$206 : P_{3207} = (6, 7, 11, 1)$
$207 : P_{3221} = (4, 8, 11, 1)$
$208 : P_{3246} = (13, 9, 11, 1)$
$209 : P_{3283} = (2, 12, 11, 1)$
$210 : P_{3306} = (9, 13, 11, 1)$
$211 : P_{3316} = (3, 14, 11, 1)$
$212 : P_{3334} = (5, 15, 11, 1)$
$213 : P_{3376} = (15, 1, 12, 1)$
$214 : P_{3379} = (2, 2, 12, 1)$
$215 : P_{3386} = (9, 2, 12, 1)$
$216 : P_{3388} = (11, 2, 12, 1)$
$217 : P_{3438} = (13, 5, 12, 1)$
$218 : P_{3491} = (2, 9, 12, 1)$
$219 : P_{3518} = (13, 10, 12, 1)$
$220 : P_{3523} = (2, 11, 12, 1)$
$221 : P_{3552} = (15, 12, 12, 1)$
$222 : P_{3558} = (5, 13, 12, 1)$
$223 : P_{3563} = (10, 13, 12, 1)$
$224 : P_{3568} = (15, 13, 12, 1)$

$225: P_{3586} = (1, 15, 12, 1)$

$226: P_{3597} = (12, 15, 12, 1)$

$227: P_{3598} = (13, 15, 12, 1)$

$228: P_{3622} = (5, 1, 13, 1)$

$229: P_{3642} = (9, 2, 13, 1)$

$230: P_{3682} = (1, 5, 13, 1)$

$231: P_{3693} = (12, 5, 13, 1)$

$232: P_{3694} = (13, 5, 13, 1)$

$233: P_{3747} = (2, 9, 13, 1)$

$234: P_{3754} = (9, 9, 13, 1)$

$235: P_{3756} = (11, 9, 13, 1)$

$236: P_{3773} = (12, 10, 13, 1)$

$237: P_{3786} = (9, 11, 13, 1)$

$238: P_{3798} = (5, 12, 13, 1)$

$239: P_{3803} = (10, 12, 13, 1)$

$240: P_{3808} = (15, 12, 13, 1)$

$241: P_{3814} = (5, 13, 13, 1)$

$242: P_{3853} = (12, 15, 13, 1)$

$243: P_{3877} = (4, 1, 14, 1)$

$244: P_{3908} = (3, 3, 14, 1)$

$245: P_{3913} = (8, 3, 14, 1)$

$246: P_{3916} = (11, 3, 14, 1)$

$247: P_{3922} = (1, 4, 14, 1)$

$248: P_{3927} = (6, 4, 14, 1)$

$249: P_{3928} = (7, 4, 14, 1)$

$250: P_{3957} = (4, 6, 14, 1)$

$251: P_{3973} = (4, 7, 14, 1)$

$252: P_{3979} = (10, 7, 14, 1)$

$253: P_{3983} = (14, 7, 14, 1)$

$254: P_{3988} = (3, 8, 14, 1)$

$255: P_{4024} = (7, 10, 14, 1)$

$256: P_{4036} = (3, 11, 14, 1)$

$257: P_{4088} = (7, 14, 14, 1)$

$258: P_{4141} = (12, 1, 15, 1)$

$259: P_{4150} = (5, 2, 15, 1)$

$260: P_{4195} = (2, 5, 15, 1)$

$261: P_{4202} = (9, 5, 15, 1)$

$262: P_{4204} = (11, 5, 15, 1)$

$263: P_{4262} = (5, 9, 15, 1)$

$264: P_{4267} = (10, 9, 15, 1)$

$265: P_{4272} = (15, 9, 15, 1)$

$266: P_{4282} = (9, 10, 15, 1)$

$267: P_{4294} = (5, 11, 15, 1)$

$268: P_{4306} = (1, 12, 15, 1)$

$269: P_{4317} = (12, 12, 15, 1)$

$270: P_{4318} = (13, 12, 15, 1)$

$271: P_{4333} = (12, 13, 15, 1)$

$272: P_{4362} = (9, 15, 15, 1)$