Rank-65874 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^3 + X_1^3 + X_2^3 + X_3^3 + X_0^2X_3 + X_1^2X_2 + X_0X_1X_2 = 0$$

(1, 1, 1, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(16) is 303112742

General information

Number of lines	3
Number of points	241
Number of singular points	0
Number of Eckardt points	0
Number of double points	3
Number of single points	45
Number of points off lines	193
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^{193}

Singular Points

The surface has 0 singular points:

The 3 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4658} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4658} = \mathbf{Pl}(1,0,1,1,1,1)_{9427}$$

$$\ell_1 = \begin{bmatrix} 1 & \delta^5 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{3260} = \begin{bmatrix} 1 & 11 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{3260} = \mathbf{Pl}(0,0,1,1,10,1)_{46146}$$

$$\ell_2 = \begin{bmatrix} 1 & \delta^{10} & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2987} = \begin{bmatrix} 1 & 10 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2987} = \mathbf{Pl}(0,0,1,1,11,1)_{50226}$$

Rank of lines: (4658, 3260, 2987)
Rank of points on Klein quadric: (9427, 46146, 50226)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

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

$P_{700} = (11,10,1,1) = \ell_0 \cap \ell_1$
$P_{715} = (10,11,1,1) = \ell_0 \cap \ell_2$
$P_{530} = (0,0,1,1) = \ell_1 \cap \ell_2$

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 : $P_{531} = (1,0,1,1)$ lies on line ℓ_0
4 : $P_{546} = (0,1,1,1)$ lies on line ℓ_0
5 : $P_{555} = (10,1,1,1)$ lies on line ℓ_1
6 : $P_{556} = (11,1,1,1)$ lies on line ℓ_2
7 : $P_{564} = (3,2,1,1)$ lies on line ℓ_0
8 : $P_{574} = (13,2,1,1)$ lies on line ℓ_1
9 : $P_{576} = (15,2,1,1)$ lies on line ℓ_2
10 : $P_{579} = (2,3,1,1)$ lies on line ℓ_0
11 : $P_{581} = (4,3,1,1)$ lies on line ℓ_2
12 : $P_{584} = (7,3,1,1)$ lies on line ℓ_1
13 : $P_{596} = (3,4,1,1)$ lies on line ℓ_1
14 : $P_{598} = (5,4,1,1)$ lies on line ℓ_0
15 : $P_{600} = (7,4,1,1)$ lies on line ℓ_2
16 : $P_{613} = (4,5,1,1)$ lies on line ℓ_0
17 : $P_{618} = (9,5,1,1)$ lies on line ℓ_1
18 : $P_{621} = (12,5,1,1)$ lies on line ℓ_2
19 : $P_{632} = (7,6,1,1)$ lies on line ℓ_0
20 : $P_{633} = (8,6,1,1)$ lies on line ℓ_2
21 : $P_{639} = (14,6,1,1)$ lies on line ℓ_1
22 : $P_{644} = (3,7,1,1)$ lies on line ℓ_2
23 : $P_{645} = (4,7,1,1)$ lies on line ℓ_1
24 : $P_{647} = (6,7,1,1)$ lies on line ℓ_0
25 : $P_{663} = (6,8,1,1)$ lies on line ℓ_1
26 : $P_{666} = (9,8,1,1)$ lies on line ℓ_0
27 : $P_{671} = (14,8,1,1)$ lies on line ℓ_2
28 : $P_{678} = (5,9,1,1)$ lies on line ℓ_2
29 : $P_{681} = (8,9,1,1)$ lies on line ℓ_0
30 : $P_{685} = (12,9,1,1)$ lies on line ℓ_1
31 : $P_{690} = (1,10,1,1)$ lies on line ℓ_2
32 : $P_{706} = (1,11,1,1)$ lies on line ℓ_1
33 : $P_{726} = (5,12,1,1)$ lies on line ℓ_1
34 : $P_{730} = (9,12,1,1)$ lies on line ℓ_2
35 : $P_{734} = (13,12,1,1)$ lies on line ℓ_0
36 : $P_{739} = (2,13,1,1)$ lies on line ℓ_2
37 : $P_{749} = (12,13,1,1)$ lies on line ℓ_0
38 : $P_{752} = (15,13,1,1)$ lies on line ℓ_1
39 : $P_{759} = (6,14,1,1)$ lies on line ℓ_2
40 : $P_{761} = (8,14,1,1)$ lies on line ℓ_1
41 : $P_{768} = (15,14,1,1)$ lies on line ℓ_0
42 : $P_{771} = (2,15,1,1)$ lies on line ℓ_1
43 : $P_{782} = (13,15,1,1)$ lies on line ℓ_2
44 : $P_{783} = (14,15,1,1)$ lies on line ℓ_0

The single points on the surface are:

Points on surface but on no line

The surface has 193 points not on any line:
The points on the surface but not on lines are:

0 : $P_{20} = (1, 0, 1, 0)$
1 : $P_{29} = (10, 0, 1, 0)$
2 : $P_{30} = (11, 0, 1, 0)$
3 : $P_{126} = (11, 6, 1, 0)$
4 : $P_{142} = (11, 7, 1, 0)$
5 : $P_{180} = (1, 10, 1, 0)$
6 : $P_{185} = (6, 10, 1, 0)$
7 : $P_{186} = (7, 10, 1, 0)$
8 : $P_{196} = (1, 11, 1, 0)$
9 : $P_{207} = (12, 11, 1, 0)$
10 : $P_{208} = (13, 11, 1, 0)$
11 : $P_{221} = (10, 12, 1, 0)$
12 : $P_{237} = (10, 13, 1, 0)$
13 : $P_{290} = (0, 1, 0, 1)$
14 : $P_{291} = (1, 1, 0, 1)$
15 : $P_{434} = (0, 10, 0, 1)$
16 : $P_{435} = (1, 10, 0, 1)$
17 : $P_{450} = (0, 11, 0, 1)$
18 : $P_{451} = (1, 11, 0, 1)$
19 : $P_{823} = (6, 2, 2, 1)$
20 : $P_{827} = (10, 2, 2, 1)$
21 : $P_{830} = (13, 2, 2, 1)$
22 : $P_{838} = (5, 3, 2, 1)$
23 : $P_{853} = (4, 4, 2, 1)$
24 : $P_{891} = (10, 6, 2, 1)$
25 : $P_{903} = (6, 7, 2, 1)$
26 : $P_{905} = (8, 7, 2, 1)$
27 : $P_{912} = (15, 7, 2, 1)$
28 : $P_{968} = (7, 11, 2, 1)$
29 : $P_{996} = (3, 13, 2, 1)$
30 : $P_{1002} = (9, 13, 2, 1)$
31 : $P_{1004} = (11, 13, 2, 1)$
32 : $P_{1026} = (1, 15, 2, 1)$
33 : $P_{1038} = (13, 15, 2, 1)$
34 : $P_{1071} = (14, 1, 3, 1)$
35 : $P_{1086} = (13, 2, 3, 1)$
36 : $P_{1117} = (12, 4, 3, 1)$
37 : $P_{1141} = (4, 6, 3, 1)$
38 : $P_{1159} = (6, 7, 3, 1)$
39 : $P_{1194} = (9, 9, 3, 1)$
40 : $P_{1254} = (5, 13, 3, 1)$
41 : $P_{1278} = (13, 14, 3, 1)$
42 : $P_{1294} = (13, 15, 3, 1)$
43 : $P_{1346} = (1, 3, 4, 1)$
44 : $P_{1352} = (7, 3, 4, 1)$
45 : $P_{1368} = (7, 4, 4, 1)$
46 : $P_{1372} = (11, 4, 4, 1)$
47 : $P_{1374} = (13, 4, 4, 1)$
48 : $P_{1385} = (8, 5, 4, 1)$
49 : $P_{1414} = (5, 7, 4, 1)$
50 : $P_{1419} = (10, 7, 4, 1)$
51 : $P_{1423} = (14, 7, 4, 1)$
52 : $P_{1450} = (9, 9, 4, 1)$
53 : $P_{1469} = (12, 10, 4, 1)$
54 : $P_{1492} = (3, 12, 4, 1)$
55 : $P_{1502} = (13, 12, 4, 1)$
56 : $P_{1504} = (15, 12, 4, 1)$
57 : $P_{1516} = (11, 13, 4, 1)$
58 : $P_{1571} = (2, 1, 5, 1)$
59 : $P_{1592} = (7, 2, 5, 1)$
60 : $P_{1608} = (7, 3, 5, 1)$
61 : $P_{1624} = (7, 4, 5, 1)$
62 : $P_{1673} = (8, 7, 5, 1)$
63 : $P_{1703} = (6, 9, 5, 1)$
64 : $P_{1758} = (13, 12, 5, 1)$
65 : $P_{1770} = (9, 13, 5, 1)$
66 : $P_{1791} = (14, 14, 5, 1)$
67 : $P_{1836} = (11, 1, 6, 1)$
68 : $P_{1843} = (2, 2, 6, 1)$
69 : $P_{1865} = (8, 3, 6, 1)$
70 : $P_{1908} = (3, 6, 6, 1)$
71 : $P_{1930} = (9, 7, 6, 1)$
72 : $P_{1939} = (2, 8, 6, 1)$
73 : $P_{1980} = (11, 10, 6, 1)$
74 : $P_{1988} = (3, 11, 6, 1)$
75 : $P_{2003} = (2, 12, 6, 1)$
76 : $P_{2005} = (4, 12, 6, 1)$
77 : $P_{2008} = (7, 12, 6, 1)$
78 : $P_{2028} = (11, 13, 6, 1)$
79 : $P_{2059} = (10, 15, 6, 1)$
80 : $P_{2092} = (11, 1, 7, 1)$
81 : $P_{2122} = (9, 3, 7, 1)$
82 : $P_{2155} = (10, 5, 7, 1)$
83 : $P_{2163} = (2, 6, 7, 1)$
84 : $P_{2185} = (8, 7, 7, 1)$
85 : $P_{2196} = (3, 8, 7, 1)$
86 : $P_{2218} = (9, 9, 7, 1)$
87 : $P_{2236} = (11, 10, 7, 1)$
88 : $P_{2249} = (8, 11, 7, 1)$
89 : $P_{2268} = (11, 12, 7, 1)$
90 : $P_{2279} = (6, 13, 7, 1)$
91 : $P_{2282} = (9, 13, 7, 1)$
92 : $P_{2287} = (14, 13, 7, 1)$
93 : $P_{2341} = (4, 1, 8, 1)$
94 : $P_{2355} = (2, 2, 8, 1)$
95 : $P_{2397} = (12, 4, 8, 1)$

96 : $P_{2413} = (12, 5, 8, 1)$
97 : $P_{2424} = (7, 6, 8, 1)$
98 : $P_{2447} = (14, 7, 8, 1)$
99 : $P_{2477} = (12, 9, 8, 1)$
100 : $P_{2528} = (15, 12, 8, 1)$
101 : $P_{2558} = (13, 14, 8, 1)$
102 : $P_{2658} = (1, 5, 9, 1)$
103 : $P_{2669} = (12, 5, 9, 1)$
104 : $P_{2676} = (3, 6, 9, 1)$
105 : $P_{2678} = (5, 6, 9, 1)$
106 : $P_{2680} = (7, 6, 9, 1)$
107 : $P_{2699} = (10, 7, 9, 1)$
108 : $P_{2720} = (15, 8, 9, 1)$
109 : $P_{2728} = (7, 9, 9, 1)$
110 : $P_{2731} = (10, 9, 9, 1)$
111 : $P_{2733} = (12, 9, 9, 1)$
112 : $P_{2759} = (6, 11, 9, 1)$
113 : $P_{2771} = (2, 12, 9, 1)$
114 : $P_{2777} = (8, 12, 9, 1)$
115 : $P_{2780} = (11, 12, 9, 1)$
116 : $P_{2815} = (14, 14, 9, 1)$
117 : $P_{2833} = (0, 0, 10, 1)$
118 : $P_{2834} = (1, 0, 10, 1)$
119 : $P_{2872} = (7, 2, 10, 1)$
120 : $P_{2895} = (14, 3, 10, 1)$
121 : $P_{2898} = (1, 4, 10, 1)$
122 : $P_{2912} = (15, 4, 10, 1)$
123 : $P_{2965} = (4, 8, 10, 1)$
124 : $P_{2983} = (6, 9, 10, 1)$
125 : $P_{2993} = (0, 10, 10, 1)$
126 : $P_{2999} = (6, 10, 10, 1)$
127 : $P_{3000} = (7, 10, 10, 1)$
128 : $P_{3058} = (1, 14, 10, 1)$
129 : $P_{3062} = (5, 14, 10, 1)$
130 : $P_{3089} = (0, 0, 11, 1)$
131 : $P_{3090} = (1, 0, 11, 1)$
132 : $P_{3122} = (1, 2, 11, 1)$
133 : $P_{3129} = (8, 2, 11, 1)$
134 : $P_{3165} = (12, 4, 11, 1)$
135 : $P_{3171} = (2, 5, 11, 1)$
136 : $P_{3234} = (1, 9, 11, 1)$
137 : $P_{3236} = (3, 9, 11, 1)$
138 : $P_{3265} = (0, 11, 11, 1)$
139 : $P_{3277} = (12, 11, 11, 1)$
140 : $P_{3278} = (13, 11, 11, 1)$
141 : $P_{3326} = (13, 14, 11, 1)$
142 : $P_{3338} = (9, 15, 11, 1)$
143 : $P_{3371} = (10, 1, 12, 1)$
144 : $P_{3439} = (14, 5, 12, 1)$
145 : $P_{3451} = (10, 6, 12, 1)$
146 : $P_{3459} = (2, 7, 12, 1)$
147 : $P_{3470} = (13, 7, 12, 1)$
148 : $P_{3471} = (14, 7, 12, 1)$
149 : $P_{3484} = (11, 8, 12, 1)$
150 : $P_{3520} = (15, 10, 12, 1)$
151 : $P_{3531} = (10, 11, 12, 1)$
152 : $P_{3552} = (15, 12, 12, 1)$
153 : $P_{3557} = (4, 13, 12, 1)$
154 : $P_{3583} = (14, 14, 12, 1)$
155 : $P_{3590} = (5, 15, 12, 1)$
156 : $P_{3627} = (10, 1, 13, 1)$
157 : $P_{3660} = (11, 3, 13, 1)$
158 : $P_{3669} = (4, 4, 13, 1)$
159 : $P_{3696} = (15, 5, 13, 1)$
160 : $P_{3701} = (4, 6, 13, 1)$
161 : $P_{3706} = (9, 6, 13, 1)$
162 : $P_{3709} = (12, 6, 13, 1)$
163 : $P_{3723} = (10, 7, 13, 1)$
164 : $P_{3766} = (5, 10, 13, 1)$
165 : $P_{3787} = (10, 11, 13, 1)$
166 : $P_{3807} = (14, 12, 13, 1)$
167 : $P_{3814} = (5, 13, 13, 1)$
168 : $P_{3845} = (4, 15, 13, 1)$
169 : $P_{3891} = (2, 2, 14, 1)$
170 : $P_{3957} = (4, 6, 14, 1)$
171 : $P_{3963} = (10, 6, 14, 1)$
172 : $P_{3968} = (15, 6, 14, 1)$
173 : $P_{3986} = (1, 8, 14, 1)$
174 : $P_{3991} = (6, 8, 14, 1)$
175 : $P_{4030} = (13, 10, 14, 1)$
176 : $P_{4060} = (11, 12, 14, 1)$
177 : $P_{4070} = (5, 13, 14, 1)$
178 : $P_{4073} = (8, 13, 14, 1)$
179 : $P_{4077} = (12, 13, 14, 1)$
180 : $P_{4087} = (6, 14, 14, 1)$
181 : $P_{4092} = (11, 14, 14, 1)$
182 : $P_{4093} = (12, 14, 14, 1)$
183 : $P_{4100} = (3, 15, 14, 1)$
184 : $P_{4138} = (9, 1, 15, 1)$
185 : $P_{4152} = (7, 2, 15, 1)$
186 : $P_{4181} = (4, 4, 15, 1)$
187 : $P_{4212} = (3, 6, 15, 1)$
188 : $P_{4247} = (6, 8, 15, 1)$
189 : $P_{4263} = (6, 9, 15, 1)$
190 : $P_{4307} = (2, 12, 15, 1)$
191 : $P_{4333} = (12, 13, 15, 1)$
192 : $P_{4343} = (6, 14, 15, 1)$

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_{700}	P_{715}

Line 1 intersects

Line	ℓ_0	ℓ_2
in point	P_{700}	P_{530}

Line 2 intersects

Line	ℓ_0	ℓ_1
in point	P_{715}	P_{530}

The surface has 241 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 : $P_{126} = (11, 6, 1, 0)$
7 : $P_{142} = (11, 7, 1, 0)$
8 : $P_{180} = (1, 10, 1, 0)$
9 : $P_{185} = (6, 10, 1, 0)$
10 : $P_{186} = (7, 10, 1, 0)$
11 : $P_{196} = (1, 11, 1, 0)$
12 : $P_{207} = (12, 11, 1, 0)$
13 : $P_{208} = (13, 11, 1, 0)$
14 : $P_{221} = (10, 12, 1, 0)$
15 : $P_{237} = (10, 13, 1, 0)$
16 : $P_{290} = (0, 1, 0, 1)$
17 : $P_{291} = (1, 1, 0, 1)$
18 : $P_{434} = (0, 10, 0, 1)$
19 : $P_{435} = (1, 10, 0, 1)$
20 : $P_{450} = (0, 11, 0, 1)$
21 : $P_{451} = (1, 11, 0, 1)$
22 : $P_{530} = (0, 0, 1, 1)$
23 : $P_{531} = (1, 0, 1, 1)$
24 : $P_{546} = (0, 1, 1, 1)$
25 : $P_{555} = (10, 1, 1, 1)$
26 : $P_{556} = (11, 1, 1, 1)$
27 : $P_{564} = (3, 2, 1, 1)$
28 : $P_{574} = (13, 2, 1, 1)$
29 : $P_{576} = (15, 2, 1, 1)$
30 : $P_{579} = (2, 3, 1, 1)$
31 : $P_{581} = (4, 3, 1, 1)$
32 : $P_{584} = (7, 3, 1, 1)$
33 : $P_{596} = (3, 4, 1, 1)$
34 : $P_{598} = (5, 4, 1, 1)$
35 : $P_{600} = (7, 4, 1, 1)$
36 : $P_{613} = (4, 5, 1, 1)$
37 : $P_{618} = (9, 5, 1, 1)$
38 : $P_{621} = (12, 5, 1, 1)$
39 : $P_{632} = (7, 6, 1, 1)$
40 : $P_{633} = (8, 6, 1, 1)$
41 : $P_{639} = (14, 6, 1, 1)$
42 : $P_{644} = (3, 7, 1, 1)$
43 : $P_{645} = (4, 7, 1, 1)$
44 : $P_{647} = (6, 7, 1, 1)$
45 : $P_{663} = (6, 8, 1, 1)$
46 : $P_{666} = (9, 8, 1, 1)$
47 : $P_{671} = (14, 8, 1, 1)$
48 : $P_{678} = (5, 9, 1, 1)$
49 : $P_{681} = (8, 9, 1, 1)$
50 : $P_{685} = (12, 9, 1, 1)$
51 : $P_{690} = (1, 10, 1, 1)$
52 : $P_{700} = (11, 10, 1, 1)$
53 : $P_{706} = (1, 11, 1, 1)$
54 : $P_{715} = (10, 11, 1, 1)$
55 : $P_{726} = (5, 12, 1, 1)$
56 : $P_{730} = (9, 12, 1, 1)$
57 : $P_{734} = (13, 12, 1, 1)$
58 : $P_{739} = (2, 13, 1, 1)$
59 : $P_{749} = (12, 13, 1, 1)$
60 : $P_{752} = (15, 13, 1, 1)$
61 : $P_{759} = (6, 14, 1, 1)$
62 : $P_{761} = (8, 14, 1, 1)$
63 : $P_{768} = (15, 14, 1, 1)$
64 : $P_{771} = (2, 15, 1, 1)$
65 : $P_{782} = (13, 15, 1, 1)$
66 : $P_{783} = (14, 15, 1, 1)$
67 : $P_{823} = (6, 2, 2, 1)$
68 : $P_{827} = (10, 2, 2, 1)$
69 : $P_{830} = (13, 2, 2, 1)$
70 : $P_{838} = (5, 3, 2, 1)$
71 : $P_{853} = (4, 4, 2, 1)$
72 : $P_{891} = (10, 6, 2, 1)$
73 : $P_{903} = (6, 7, 2, 1)$
74 : $P_{905} = (8, 7, 2, 1)$
75 : $P_{912} = (15, 7, 2, 1)$
76 : $P_{968} = (7, 11, 2, 1)$
77 : $P_{996} = (3, 13, 2, 1)$
78 : $P_{1002} = (9, 13, 2, 1)$
79 : $P_{1004} = (11, 13, 2, 1)$
80 : $P_{1026} = (1, 15, 2, 1)$
81 : $P_{1038} = (13, 15, 2, 1)$
82 : $P_{1071} = (14, 1, 3, 1)$
83 : $P_{1086} = (13, 2, 3, 1)$
84 : $P_{1117} = (12, 4, 3, 1)$
85 : $P_{1141} = (4, 6, 3, 1)$
86 : $P_{1159} = (6, 7, 3, 1)$
87 : $P_{1194} = (9, 9, 3, 1)$
88 : $P_{1254} = (5, 13, 3, 1)$
89 : $P_{1278} = (13, 14, 3, 1)$
90 : $P_{1294} = (13, 15, 3, 1)$
91 : $P_{1346} = (1, 3, 4, 1)$
92 : $P_{1352} = (7, 3, 4, 1)$
93 : $P_{1368} = (7, 4, 4, 1)$
94 : $P_{1372} = (11, 4, 4, 1)$
95 : $P_{1374} = (13, 4, 4, 1)$
96 : $P_{1385} = (8, 5, 4, 1)$
97 : $P_{1414} = (5, 7, 4, 1)$
98 : $P_{1419} = (10, 7, 4, 1)$

99 : $P_{1423} = (14, 7, 4, 1)$
100 : $P_{1450} = (9, 9, 4, 1)$
101 : $P_{1469} = (12, 10, 4, 1)$
102 : $P_{1492} = (3, 12, 4, 1)$
103 : $P_{1502} = (13, 12, 4, 1)$
104 : $P_{1504} = (15, 12, 4, 1)$
105 : $P_{1516} = (11, 13, 4, 1)$
106 : $P_{1571} = (2, 1, 5, 1)$
107 : $P_{1592} = (7, 2, 5, 1)$
108 : $P_{1608} = (7, 3, 5, 1)$
109 : $P_{1624} = (7, 4, 5, 1)$
110 : $P_{1673} = (8, 7, 5, 1)$
111 : $P_{1703} = (6, 9, 5, 1)$
112 : $P_{1758} = (13, 12, 5, 1)$
113 : $P_{1770} = (9, 13, 5, 1)$
114 : $P_{1791} = (14, 14, 5, 1)$
115 : $P_{1836} = (11, 1, 6, 1)$
116 : $P_{1843} = (2, 2, 6, 1)$
117 : $P_{1865} = (8, 3, 6, 1)$
118 : $P_{1908} = (3, 6, 6, 1)$
119 : $P_{1930} = (9, 7, 6, 1)$
120 : $P_{1939} = (2, 8, 6, 1)$
121 : $P_{1980} = (11, 10, 6, 1)$
122 : $P_{1988} = (3, 11, 6, 1)$
123 : $P_{2003} = (2, 12, 6, 1)$
124 : $P_{2005} = (4, 12, 6, 1)$
125 : $P_{2008} = (7, 12, 6, 1)$
126 : $P_{2028} = (11, 13, 6, 1)$
127 : $P_{2059} = (10, 15, 6, 1)$
128 : $P_{2092} = (11, 1, 7, 1)$
129 : $P_{2122} = (9, 3, 7, 1)$
130 : $P_{2155} = (10, 5, 7, 1)$
131 : $P_{2163} = (2, 6, 7, 1)$
132 : $P_{2185} = (8, 7, 7, 1)$
133 : $P_{2196} = (3, 8, 7, 1)$
134 : $P_{2218} = (9, 9, 7, 1)$
135 : $P_{2236} = (11, 10, 7, 1)$
136 : $P_{2249} = (8, 11, 7, 1)$
137 : $P_{2268} = (11, 12, 7, 1)$
138 : $P_{2279} = (6, 13, 7, 1)$
139 : $P_{2282} = (9, 13, 7, 1)$
140 : $P_{2287} = (14, 13, 7, 1)$
141 : $P_{2341} = (4, 1, 8, 1)$
142 : $P_{2355} = (2, 2, 8, 1)$
143 : $P_{2397} = (12, 4, 8, 1)$
144 : $P_{2413} = (12, 5, 8, 1)$
145 : $P_{2424} = (7, 6, 8, 1)$
146 : $P_{2447} = (14, 7, 8, 1)$
147 : $P_{2477} = (12, 9, 8, 1)$
148 : $P_{2528} = (15, 12, 8, 1)$
149 : $P_{2558} = (13, 14, 8, 1)$
150 : $P_{2658} = (1, 5, 9, 1)$
151 : $P_{2669} = (12, 5, 9, 1)$
152 : $P_{2676} = (3, 6, 9, 1)$
153 : $P_{2678} = (5, 6, 9, 1)$
154 : $P_{2680} = (7, 6, 9, 1)$
155 : $P_{2699} = (10, 7, 9, 1)$
156 : $P_{2720} = (15, 8, 9, 1)$
157 : $P_{2728} = (7, 9, 9, 1)$
158 : $P_{2731} = (10, 9, 9, 1)$
159 : $P_{2733} = (12, 9, 9, 1)$
160 : $P_{2759} = (6, 11, 9, 1)$
161 : $P_{2771} = (2, 12, 9, 1)$
162 : $P_{2777} = (8, 12, 9, 1)$
163 : $P_{2780} = (11, 12, 9, 1)$
164 : $P_{2815} = (14, 14, 9, 1)$
165 : $P_{2833} = (0, 0, 10, 1)$
166 : $P_{2834} = (1, 0, 10, 1)$
167 : $P_{2872} = (7, 2, 10, 1)$
168 : $P_{2895} = (14, 3, 10, 1)$
169 : $P_{2898} = (1, 4, 10, 1)$
170 : $P_{2912} = (15, 4, 10, 1)$
171 : $P_{2965} = (4, 8, 10, 1)$
172 : $P_{2983} = (6, 9, 10, 1)$
173 : $P_{2993} = (0, 10, 10, 1)$
174 : $P_{2999} = (6, 10, 10, 1)$
175 : $P_{3000} = (7, 10, 10, 1)$
176 : $P_{3058} = (1, 14, 10, 1)$
177 : $P_{3062} = (5, 14, 10, 1)$
178 : $P_{3089} = (0, 0, 11, 1)$
179 : $P_{3090} = (1, 0, 11, 1)$
180 : $P_{3122} = (1, 2, 11, 1)$
181 : $P_{3129} = (8, 2, 11, 1)$
182 : $P_{3165} = (12, 4, 11, 1)$
183 : $P_{3171} = (2, 5, 11, 1)$
184 : $P_{3234} = (1, 9, 11, 1)$
185 : $P_{3236} = (3, 9, 11, 1)$
186 : $P_{3265} = (0, 11, 11, 1)$
187 : $P_{3277} = (12, 11, 11, 1)$
188 : $P_{3278} = (13, 11, 11, 1)$
189 : $P_{3326} = (13, 14, 11, 1)$
190 : $P_{3338} = (9, 15, 11, 1)$
191 : $P_{3371} = (10, 1, 12, 1)$
192 : $P_{3439} = (14, 5, 12, 1)$
193 : $P_{3451} = (10, 6, 12, 1)$
194 : $P_{3459} = (2, 7, 12, 1)$
195 : $P_{3470} = (13, 7, 12, 1)$
196 : $P_{3471} = (14, 7, 12, 1)$
197 : $P_{3484} = (11, 8, 12, 1)$
198 : $P_{3520} = (15, 10, 12, 1)$
199 : $P_{3531} = (10, 11, 12, 1)$
200 : $P_{3552} = (15, 12, 12, 1)$
201 : $P_{3557} = (4, 13, 12, 1)$
202 : $P_{3583} = (14, 14, 12, 1)$
203 : $P_{3590} = (5, 15, 12, 1)$
204 : $P_{3627} = (10, 1, 13, 1)$
205 : $P_{3660} = (11, 3, 13, 1)$
206 : $P_{3669} = (4, 4, 13, 1)$
207 : $P_{3696} = (15, 5, 13, 1)$
208 : $P_{3701} = (4, 6, 13, 1)$
209 : $P_{3706} = (9, 6, 13, 1)$
210 : $P_{3709} = (12, 6, 13, 1)$
211 : $P_{3723} = (10, 7, 13, 1)$
212 : $P_{3766} = (5, 10, 13, 1)$
213 : $P_{3787} = (10, 11, 13, 1)$
214 : $P_{3807} = (14, 12, 13, 1)$
215 : $P_{3814} = (5, 13, 13, 1)$
216 : $P_{3845} = (4, 15, 13, 1)$
217 : $P_{3891} = (2, 2, 14, 1)$
218 : $P_{3957} = (4, 6, 14, 1)$
219 : $P_{3963} = (10, 6, 14, 1)$
220 : $P_{3968} = (15, 6, 14, 1)$
221 : $P_{3986} = (1, 8, 14, 1)$
222 : $P_{3991} = (6, 8, 14, 1)$
223 : $P_{4030} = (13, 10, 14, 1)$
224 : $P_{4060} = (11, 12, 14, 1)$
225 : $P_{4070} = (5, 13, 14, 1)$
226 : $P_{4073} = (8, 13, 14, 1)$
227 : $P_{4077} = (12, 13, 14, 1)$
228 : $P_{4087} = (6, 14, 14, 1)$
229 : $P_{4092} = (11, 14, 14, 1)$
230 : $P_{4093} = (12, 14, 14, 1)$
231 : $P_{4100} = (3, 15, 14, 1)$
232 : $P_{4138} = (9, 1, 15, 1)$
233 : $P_{4152} = (7, 2, 15, 1)$
234 : $P_{4181} = (4, 4, 15, 1)$
235 : $P_{4212} = (3, 6, 15, 1)$
236 : $P_{4247} = (6, 8, 15, 1)$
237 : $P_{4263} = (6, 9, 15, 1)$
238 : $P_{4307} = (2, 12, 15, 1)$
239 : $P_{4333} = (12, 13, 15, 1)$
240 : $P_{4343} = (6, 14, 15, 1)$