Rank-76323 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^2X_2 + X_1^2X_3 + X_1X_2^2 + X_0X_3^2 + X_0X_1X_2 = 0$$

(0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(16) is 287379733

General information

Number of lines	2
Number of points	289
Number of singular points	0
Number of Eckardt points	0
Number of double points	0
Number of single points	34
Number of points off lines	255
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^2
Type of lines on points	1^{34}, 0^{255}

Singular Points

The surface has 0 singular points:

The 2 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_0 = \mathbf{Pl}(1,0,0,0,0,0)_0$$

$$\ell_1 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70160} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70160} = \mathbf{Pl}(0,1,0,0,0,0)_1$$

Rank of lines: (0, 70160)
Rank of points on Klein quadric: (0, 1)

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 34 single points:
The single points on the surface are:

0 : $P_0 = (1,0,0,0)$ lies on line ℓ_0
1 : $P_1 = (0,1,0,0)$ lies on line ℓ_0
2 : $P_2 = (0,0,1,0)$ lies on line ℓ_1
3 : $P_3 = (0,0,0,1)$ lies on line ℓ_1
4 : $P_5 = (1,1,0,0)$ lies on line ℓ_0
5 : $P_6 = (2,1,0,0)$ lies on line ℓ_0
6 : $P_7 = (3,1,0,0)$ lies on line ℓ_0
7 : $P_8 = (4,1,0,0)$ lies on line ℓ_0
8 : $P_9 = (5,1,0,0)$ lies on line ℓ_0
9 : $P_{10} = (6,1,0,0)$ lies on line ℓ_0
10 : $P_{11} = (7,1,0,0)$ lies on line ℓ_0
11 : $P_{12} = (8,1,0,0)$ lies on line ℓ_0
12 : $P_{13} = (9,1,0,0)$ lies on line ℓ_0
13 : $P_{14} = (10,1,0,0)$ lies on line ℓ_0
14 : $P_{15} = (11,1,0,0)$ lies on line ℓ_0
15 : $P_{16} = (12,1,0,0)$ lies on line ℓ_0
16 : $P_{17} = (13,1,0,0)$ lies on line ℓ_0
17 : $P_{18} = (14,1,0,0)$ lies on line ℓ_0
18 : $P_{19} = (15,1,0,0)$ lies on line ℓ_0
19 : $P_{530} = (0,0,1,1)$ lies on line ℓ_1
20 : $P_{785} = (0,0,2,1)$ lies on line ℓ_1
21 : $P_{1041} = (0,0,3,1)$ lies on line ℓ_1
22 : $P_{1297} = (0,0,4,1)$ lies on line ℓ_1
23 : $P_{1553} = (0,0,5,1)$ lies on line ℓ_1
24 : $P_{1809} = (0,0,6,1)$ lies on line ℓ_1
25 : $P_{2065} = (0,0,7,1)$ lies on line ℓ_1
26 : $P_{2321} = (0,0,8,1)$ lies on line ℓ_1
27 : $P_{2577} = (0,0,9,1)$ lies on line ℓ_1
28 : $P_{2833} = (0,0,10,1)$ lies on line ℓ_1
29 : $P_{3089} = (0,0,11,1)$ lies on line ℓ_1
30 : $P_{3345} = (0,0,12,1)$ lies on line ℓ_1
31 : $P_{3601} = (0,0,13,1)$ lies on line ℓ_1
32 : $P_{3857} = (0,0,14,1)$ lies on line ℓ_1
33 : $P_{4113} = (0,0,15,1)$ lies on line ℓ_1

The single points on the surface are:

Points on surface but on no line

The surface has 255 points not on any line:
The points on the surface but not on lines are:

0 : $P_{45} = (10,1,1,0)$
1 : $P_{46} = (11,1,1,0)$
2 : $P_{56} = (5,2,1,0)$
3 : $P_{58} = (7,2,1,0)$
4 : $P_{91} = (8,4,1,0)$
5 : $P_{95} = (12,4,1,0)$
6 : $P_{169} = (6,9,1,0)$
7 : $P_{178} = (15,9,1,0)$
8 : $P_{183} = (4,10,1,0)$
9 : $P_{193} = (14,10,1,0)$

10 : $P_{197} = (2, 11, 1, 0)$
11 : $P_{204} = (9, 11, 1, 0)$
12 : $P_{246} = (3, 14, 1, 0)$
13 : $P_{256} = (13, 14, 1, 0)$
14 : $P_{291} = (1, 1, 0, 1)$
15 : $P_{310} = (4, 2, 0, 1)$
16 : $P_{327} = (5, 3, 0, 1)$
17 : $P_{347} = (9, 4, 0, 1)$
18 : $P_{362} = (8, 5, 0, 1)$
19 : $P_{383} = (13, 6, 0, 1)$
20 : $P_{398} = (12, 7, 0, 1)$
21 : $P_{417} = (15, 8, 0, 1)$
22 : $P_{432} = (14, 9, 0, 1)$
23 : $P_{445} = (11, 10, 0, 1)$
24 : $P_{460} = (10, 11, 0, 1)$
25 : $P_{472} = (6, 12, 0, 1)$
26 : $P_{489} = (7, 13, 0, 1)$
27 : $P_{500} = (2, 14, 0, 1)$
28 : $P_{517} = (3, 15, 0, 1)$
29 : $P_{531} = (1, 0, 1, 1)$
30 : $P_{546} = (0, 1, 1, 1)$
31 : $P_{585} = (8, 3, 1, 1)$
32 : $P_{587} = (10, 3, 1, 1)$
33 : $P_{620} = (11, 5, 1, 1)$
34 : $P_{624} = (15, 5, 1, 1)$
35 : $P_{660} = (3, 8, 1, 1)$
36 : $P_{667} = (10, 8, 1, 1)$
37 : $P_{692} = (3, 10, 1, 1)$
38 : $P_{697} = (8, 10, 1, 1)$
39 : $P_{710} = (5, 11, 1, 1)$
40 : $P_{720} = (15, 11, 1, 1)$
41 : $P_{774} = (5, 15, 1, 1)$
42 : $P_{780} = (11, 15, 1, 1)$
43 : $P_{797} = (12, 0, 2, 1)$
44 : $P_{849} = (0, 4, 2, 1)$
45 : $P_{857} = (8, 4, 2, 1)$
46 : $P_{870} = (5, 5, 2, 1)$
47 : $P_{877} = (12, 5, 2, 1)$
48 : $P_{937} = (8, 9, 2, 1)$
49 : $P_{942} = (13, 9, 2, 1)$
50 : $P_{963} = (2, 11, 2, 1)$
51 : $P_{966} = (5, 11, 2, 1)$
52 : $P_{991} = (14, 12, 2, 1)$
53 : $P_{1007} = (14, 13, 2, 1)$
54 : $P_{1008} = (15, 13, 2, 1)$
55 : $P_{1022} = (13, 14, 2, 1)$
56 : $P_{1024} = (15, 14, 2, 1)$
57 : $P_{1049} = (8, 0, 3, 1)$
58 : $P_{1109} = (4, 4, 3, 1)$
59 : $P_{1113} = (8, 4, 3, 1)$
60 : $P_{1121} = (0, 5, 3, 1)$
61 : $P_{1134} = (13, 5, 3, 1)$
62 : $P_{1156} = (3, 7, 3, 1)$
63 : $P_{1165} = (12, 7, 3, 1)$
64 : $P_{1171} = (2, 8, 3, 1)$
65 : $P_{1218} = (1, 11, 3, 1)$
66 : $P_{1219} = (2, 11, 3, 1)$
67 : $P_{1250} = (1, 13, 3, 1)$
68 : $P_{1253} = (4, 13, 3, 1)$
69 : $P_{1276} = (11, 14, 3, 1)$
70 : $P_{1278} = (13, 14, 3, 1)$
71 : $P_{1292} = (11, 15, 3, 1)$
72 : $P_{1293} = (12, 15, 3, 1)$
73 : $P_{1303} = (6, 0, 4, 1)$
74 : $P_{1332} = (3, 2, 4, 1)$
75 : $P_{1336} = (7, 2, 4, 1)$
76 : $P_{1395} = (2, 6, 4, 1)$
77 : $P_{1411} = (2, 7, 4, 1)$
78 : $P_{1412} = (3, 7, 4, 1)$
79 : $P_{1431} = (6, 8, 4, 1)$
80 : $P_{1433} = (8, 8, 4, 1)$
81 : $P_{1441} = (0, 9, 4, 1)$
82 : $P_{1456} = (15, 9, 4, 1)$
83 : $P_{1461} = (4, 10, 4, 1)$
84 : $P_{1465} = (8, 10, 4, 1)$
85 : $P_{1528} = (7, 14, 4, 1)$
86 : $P_{1536} = (15, 14, 4, 1)$
87 : $P_{1568} = (15, 0, 5, 1)$
88 : $P_{1592} = (7, 2, 5, 1)$
89 : $P_{1595} = (10, 2, 5, 1)$
90 : $P_{1607} = (6, 3, 5, 1)$
91 : $P_{1611} = (10, 3, 5, 1)$
92 : $P_{1666} = (1, 7, 5, 1)$
93 : $P_{1674} = (9, 7, 5, 1)$
94 : $P_{1681} = (0, 8, 5, 1)$
95 : $P_{1688} = (7, 8, 5, 1)$
96 : $P_{1706} = (9, 9, 5, 1)$
97 : $P_{1712} = (15, 9, 5, 1)$
98 : $P_{1714} = (1, 10, 5, 1)$
99 : $P_{1717} = (4, 10, 5, 1)$
100 : $P_{1750} = (5, 12, 5, 1)$
101 : $P_{1751} = (6, 12, 5, 1)$
102 : $P_{1797} = (4, 15, 5, 1)$
103 : $P_{1813} = (4, 0, 6, 1)$
104 : $P_{1835} = (10, 1, 6, 1)$
105 : $P_{1840} = (15, 1, 6, 1)$
106 : $P_{1851} = (10, 2, 6, 1)$
107 : $P_{1853} = (12, 2, 6, 1)$
108 : $P_{1882} = (9, 4, 6, 1)$
109 : $P_{1903} = (14, 5, 6, 1)$
110 : $P_{1904} = (15, 5, 6, 1)$
111 : $P_{1934} = (13, 7, 6, 1)$
112 : $P_{1935} = (14, 7, 6, 1)$
113 : $P_{2005} = (4, 12, 6, 1)$
114 : $P_{2013} = (12, 12, 6, 1)$
115 : $P_{2017} = (0, 13, 6, 1)$
116 : $P_{2026} = (9, 13, 6, 1)$
117 : $P_{2055} = (6, 15, 6, 1)$

$118: P_{2062} = (13, 15, 6, 1)$
$119: P_{2079} = (14, 0, 7, 1)$
$120: P_{2086} = (5, 1, 7, 1)$
$121: P_{2091} = (10, 1, 7, 1)$
$122: P_{2152} = (7, 5, 7, 1)$
$123: P_{2157} = (12, 5, 7, 1)$
$124: P_{2165} = (4, 6, 7, 1)$
$125: P_{2173} = (12, 6, 7, 1)$
$126: P_{2219} = (10, 9, 7, 1)$
$127: P_{2222} = (13, 9, 7, 1)$
$128: P_{2257} = (0, 12, 7, 1)$
$129: P_{2259} = (2, 12, 7, 1)$
$130: P_{2286} = (13, 13, 7, 1)$
$131: P_{2287} = (14, 13, 7, 1)$
$132: P_{2291} = (2, 14, 7, 1)$
$133: P_{2309} = (4, 15, 7, 1)$
$134: P_{2310} = (5, 15, 7, 1)$
$135: P_{2324} = (3, 0, 8, 1)$
$136: P_{2378} = (9, 3, 8, 1)$
$137: P_{2396} = (11, 4, 8, 1)$
$138: P_{2397} = (12, 4, 8, 1)$
$139: P_{2412} = (11, 5, 8, 1)$
$140: P_{2414} = (13, 5, 8, 1)$
$141: P_{2425} = (8, 6, 8, 1)$
$142: P_{2430} = (13, 6, 8, 1)$
$143: P_{2498} = (1, 11, 8, 1)$
$144: P_{2506} = (9, 11, 8, 1)$
$145: P_{2514} = (1, 12, 8, 1)$
$146: P_{2527} = (14, 12, 8, 1)$
$147: P_{2548} = (3, 14, 8, 1)$
$148: P_{2559} = (14, 14, 8, 1)$
$149: P_{2561} = (0, 15, 8, 1)$
$150: P_{2573} = (12, 15, 8, 1)$
$151: P_{2590} = (13, 0, 9, 1)$
$152: P_{2612} = (3, 2, 9, 1)$
$153: P_{2621} = (12, 2, 9, 1)$
$154: P_{2646} = (5, 4, 9, 1)$
$155: P_{2653} = (12, 4, 9, 1)$
$156: P_{2762} = (9, 11, 9, 1)$
$157: P_{2768} = (15, 11, 9, 1)$
$158: P_{2773} = (4, 12, 9, 1)$
$159: P_{2774} = (5, 12, 9, 1)$
$160: P_{2789} = (4, 13, 9, 1)$
$161: P_{2801} = (0, 14, 9, 1)$
$162: P_{2804} = (3, 14, 9, 1)$
$163: P_{2830} = (13, 15, 9, 1)$
$164: P_{2832} = (15, 15, 9, 1)$
$165: P_{2844} = (11, 0, 10, 1)$
$166: P_{2854} = (5, 1, 10, 1)$
$167: P_{2864} = (15, 1, 10, 1)$
$168: P_{2886} = (5, 3, 10, 1)$
$169: P_{2894} = (13, 3, 10, 1)$
$170: P_{2930} = (1, 6, 10, 1)$
$171: P_{2941} = (12, 6, 10, 1)$
$172: P_{2946} = (1, 7, 10, 1)$
$173: P_{2958} = (13, 7, 10, 1)$
$174: P_{2973} = (12, 8, 10, 1)$
$175: P_{2976} = (15, 8, 10, 1)$
$176: P_{3003} = (10, 10, 10, 1)$
$177: P_{3004} = (11, 10, 10, 1)$
$178: P_{3009} = (0, 11, 10, 1)$
$179: P_{3099} = (10, 0, 11, 1)$
$180: P_{3108} = (3, 1, 11, 1)$
$181: P_{3113} = (8, 1, 11, 1)$
$182: P_{3176} = (7, 5, 11, 1)$
$183: P_{3177} = (8, 5, 11, 1)$
$184: P_{3249} = (0, 10, 11, 1)$
$185: P_{3275} = (10, 11, 11, 1)$
$186: P_{3276} = (11, 11, 11, 1)$
$187: P_{3282} = (1, 12, 11, 1)$
$188: P_{3288} = (7, 12, 11, 1)$
$189: P_{3298} = (1, 13, 11, 1)$
$190: P_{3303} = (6, 13, 11, 1)$
$191: P_{3332} = (3, 15, 11, 1)$
$192: P_{3335} = (6, 15, 11, 1)$
$193: P_{3347} = (2, 0, 12, 1)$
$194: P_{3369} = (8, 1, 12, 1)$
$195: P_{3372} = (11, 1, 12, 1)$
$196: P_{3381} = (4, 2, 12, 1)$
$197: P_{3401} = (8, 3, 12, 1)$
$198: P_{3402} = (9, 3, 12, 1)$
$199: P_{3441} = (0, 6, 12, 1)$
$200: P_{3445} = (4, 6, 12, 1)$
$201: P_{3459} = (2, 7, 12, 1)$
$202: P_{3464} = (7, 7, 12, 1)$
$203: P_{3479} = (6, 8, 12, 1)$
$204: P_{3485} = (12, 8, 12, 1)$
$205: P_{3559} = (6, 13, 12, 1)$
$206: P_{3562} = (9, 13, 12, 1)$
$207: P_{3576} = (7, 14, 12, 1)$
$208: P_{3580} = (11, 14, 12, 1)$
$209: P_{3610} = (9, 0, 13, 1)$
$210: P_{3620} = (3, 1, 13, 1)$
$211: P_{3628} = (11, 1, 13, 1)$
$212: P_{3656} = (7, 3, 13, 1)$
$213: P_{3662} = (13, 3, 13, 1)$
$214: P_{3671} = (6, 4, 13, 1)$
$215: P_{3676} = (11, 4, 13, 1)$
$216: P_{3703} = (6, 6, 13, 1)$
$217: P_{3706} = (9, 6, 13, 1)$
$218: P_{3713} = (0, 7, 13, 1)$
$219: P_{3727} = (14, 7, 13, 1)$
$220: P_{3731} = (2, 8, 13, 1)$
$221: P_{3732} = (3, 8, 13, 1)$
$222: P_{3759} = (14, 9, 13, 1)$
$223: P_{3795} = (2, 12, 13, 1)$
$224: P_{3800} = (7, 12, 13, 1)$
$225: P_{3864} = (7, 0, 14, 1)$

226 : $P_{3889} = (0, 2, 14, 1)$
227 : $P_{3894} = (5, 2, 14, 1)$
228 : $P_{3908} = (3, 3, 14, 1)$
229 : $P_{3912} = (7, 3, 14, 1)$
230 : $P_{3926} = (5, 4, 14, 1)$
231 : $P_{3927} = (6, 4, 14, 1)$
232 : $P_{3961} = (8, 6, 14, 1)$
233 : $P_{3962} = (9, 6, 14, 1)$
234 : $P_{3978} = (9, 7, 14, 1)$
235 : $P_{4007} = (6, 9, 14, 1)$
236 : $P_{4009} = (8, 9, 14, 1)$
237 : $P_{4020} = (3, 10, 14, 1)$
238 : $P_{4031} = (14, 10, 14, 1)$
239 : $P_{4118} = (5, 0, 15, 1)$
240 : $P_{4147} = (2, 2, 15, 1)$
241 : $P_{4150} = (5, 2, 15, 1)$
242 : $P_{4161} = (0, 3, 15, 1)$
243 : $P_{4167} = (6, 3, 15, 1)$
244 : $P_{4207} = (14, 5, 15, 1)$
245 : $P_{4210} = (1, 6, 15, 1)$
246 : $P_{4211} = (2, 6, 15, 1)$
247 : $P_{4248} = (7, 8, 15, 1)$
248 : $P_{4251} = (10, 8, 15, 1)$
249 : $P_{4263} = (6, 9, 15, 1)$
250 : $P_{4267} = (10, 9, 15, 1)$
251 : $P_{4274} = (1, 10, 15, 1)$
252 : $P_{4287} = (14, 10, 15, 1)$
253 : $P_{4328} = (7, 13, 15, 1)$
254 : $P_{4336} = (15, 13, 15, 1)$

Line Intersection Graph

	0	1
0	0	0
1	0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

Line 1 intersects

Line
in point

The surface has 289 points:
The points on the surface are:

0 : $P_0 = (1, 0, 0, 0)$
1 : $P_1 = (0, 1, 0, 0)$
2 : $P_2 = (0, 0, 1, 0)$
3 : $P_3 = (0, 0, 0, 1)$
4 : $P_5 = (1, 1, 0, 0)$
5 : $P_6 = (2, 1, 0, 0)$
6 : $P_7 = (3, 1, 0, 0)$
7 : $P_8 = (4, 1, 0, 0)$
8 : $P_9 = (5, 1, 0, 0)$
9 : $P_{10} = (6, 1, 0, 0)$
10 : $P_{11} = (7, 1, 0, 0)$
11 : $P_{12} = (8, 1, 0, 0)$
12 : $P_{13} = (9, 1, 0, 0)$
13 : $P_{14} = (10, 1, 0, 0)$
14 : $P_{15} = (11, 1, 0, 0)$
15 : $P_{16} = (12, 1, 0, 0)$
16 : $P_{17} = (13, 1, 0, 0)$
17 : $P_{18} = (14, 1, 0, 0)$
18 : $P_{19} = (15, 1, 0, 0)$
19 : $P_{45} = (10, 1, 1, 0)$
20 : $P_{46} = (11, 1, 1, 0)$
21 : $P_{56} = (5, 2, 1, 0)$
22 : $P_{58} = (7, 2, 1, 0)$
23 : $P_{91} = (8, 4, 1, 0)$
24 : $P_{95} = (12, 4, 1, 0)$
25 : $P_{169} = (6, 9, 1, 0)$
26 : $P_{178} = (15, 9, 1, 0)$
27 : $P_{183} = (4, 10, 1, 0)$
28 : $P_{193} = (14, 10, 1, 0)$
29 : $P_{197} = (2, 11, 1, 0)$
30 : $P_{204} = (9, 11, 1, 0)$
31 : $P_{246} = (3, 14, 1, 0)$
32 : $P_{256} = (13, 14, 1, 0)$
33 : $P_{291} = (1, 1, 0, 1)$
34 : $P_{310} = (4, 2, 0, 1)$
35 : $P_{327} = (5, 3, 0, 1)$
36 : $P_{347} = (9, 4, 0, 1)$
37 : $P_{362} = (8, 5, 0, 1)$
38 : $P_{383} = (13, 6, 0, 1)$
39 : $P_{398} = (12, 7, 0, 1)$
40 : $P_{417} = (15, 8, 0, 1)$
41 : $P_{432} = (14, 9, 0, 1)$
42 : $P_{445} = (11, 10, 0, 1)$
43 : $P_{460} = (10, 11, 0, 1)$
44 : $P_{472} = (6, 12, 0, 1)$
45 : $P_{489} = (7, 13, 0, 1)$
46 : $P_{500} = (2, 14, 0, 1)$
47 : $P_{517} = (3, 15, 0, 1)$
48 : $P_{530} = (0, 0, 1, 1)$
49 : $P_{531} = (1, 0, 1, 1)$
50 : $P_{546} = (0, 1, 1, 1)$
51 : $P_{585} = (8, 3, 1, 1)$
52 : $P_{587} = (10, 3, 1, 1)$
53 : $P_{620} = (11, 5, 1, 1)$
54 : $P_{624} = (15, 5, 1, 1)$
55 : $P_{660} = (3, 8, 1, 1)$
56 : $P_{667} = (10, 8, 1, 1)$
57 : $P_{692} = (3, 10, 1, 1)$
58 : $P_{697} = (8, 10, 1, 1)$
59 : $P_{710} = (5, 11, 1, 1)$
60 : $P_{720} = (15, 11, 1, 1)$
61 : $P_{774} = (5, 15, 1, 1)$
62 : $P_{780} = (11, 15, 1, 1)$

63 : $P_{785} = (0, 0, 2, 1)$
64 : $P_{797} = (12, 0, 2, 1)$
65 : $P_{849} = (0, 4, 2, 1)$
66 : $P_{857} = (8, 4, 2, 1)$
67 : $P_{870} = (5, 5, 2, 1)$
68 : $P_{877} = (12, 5, 2, 1)$
69 : $P_{937} = (8, 9, 2, 1)$
70 : $P_{942} = (13, 9, 2, 1)$
71 : $P_{963} = (2, 11, 2, 1)$
72 : $P_{966} = (5, 11, 2, 1)$
73 : $P_{991} = (14, 12, 2, 1)$
74 : $P_{1007} = (14, 13, 2, 1)$
75 : $P_{1008} = (15, 13, 2, 1)$
76 : $P_{1022} = (13, 14, 2, 1)$
77 : $P_{1024} = (15, 14, 2, 1)$
78 : $P_{1041} = (0, 0, 3, 1)$
79 : $P_{1049} = (8, 0, 3, 1)$
80 : $P_{1109} = (4, 4, 3, 1)$
81 : $P_{1113} = (8, 4, 3, 1)$
82 : $P_{1121} = (0, 5, 3, 1)$
83 : $P_{1134} = (13, 5, 3, 1)$
84 : $P_{1156} = (3, 7, 3, 1)$
85 : $P_{1165} = (12, 7, 3, 1)$
86 : $P_{1171} = (2, 8, 3, 1)$
87 : $P_{1218} = (1, 11, 3, 1)$
88 : $P_{1219} = (2, 11, 3, 1)$
89 : $P_{1250} = (1, 13, 3, 1)$
90 : $P_{1253} = (4, 13, 3, 1)$
91 : $P_{1276} = (11, 14, 3, 1)$
92 : $P_{1278} = (13, 14, 3, 1)$
93 : $P_{1292} = (11, 15, 3, 1)$
94 : $P_{1293} = (12, 15, 3, 1)$
95 : $P_{1297} = (0, 0, 4, 1)$
96 : $P_{1303} = (6, 0, 4, 1)$
97 : $P_{1332} = (3, 2, 4, 1)$
98 : $P_{1336} = (7, 2, 4, 1)$
99 : $P_{1395} = (2, 6, 4, 1)$
100 : $P_{1411} = (2, 7, 4, 1)$
101 : $P_{1412} = (3, 7, 4, 1)$
102 : $P_{1431} = (6, 8, 4, 1)$
103 : $P_{1433} = (8, 8, 4, 1)$
104 : $P_{1441} = (0, 9, 4, 1)$
105 : $P_{1456} = (15, 9, 4, 1)$
106 : $P_{1461} = (4, 10, 4, 1)$
107 : $P_{1465} = (8, 10, 4, 1)$
108 : $P_{1528} = (7, 14, 4, 1)$
109 : $P_{1536} = (15, 14, 4, 1)$
110 : $P_{1553} = (0, 0, 5, 1)$
111 : $P_{1568} = (15, 0, 5, 1)$
112 : $P_{1592} = (7, 2, 5, 1)$
113 : $P_{1595} = (10, 2, 5, 1)$
114 : $P_{1607} = (6, 3, 5, 1)$
115 : $P_{1611} = (10, 3, 5, 1)$
116 : $P_{1666} = (1, 7, 5, 1)$
117 : $P_{1674} = (9, 7, 5, 1)$
118 : $P_{1681} = (0, 8, 5, 1)$
119 : $P_{1688} = (7, 8, 5, 1)$
120 : $P_{1706} = (9, 9, 5, 1)$
121 : $P_{1712} = (15, 9, 5, 1)$
122 : $P_{1714} = (1, 10, 5, 1)$
123 : $P_{1717} = (4, 10, 5, 1)$
124 : $P_{1750} = (5, 12, 5, 1)$
125 : $P_{1751} = (6, 12, 5, 1)$
126 : $P_{1797} = (4, 15, 5, 1)$
127 : $P_{1809} = (0, 0, 6, 1)$
128 : $P_{1813} = (4, 0, 6, 1)$
129 : $P_{1835} = (10, 1, 6, 1)$
130 : $P_{1840} = (15, 1, 6, 1)$
131 : $P_{1851} = (10, 2, 6, 1)$
132 : $P_{1853} = (12, 2, 6, 1)$
133 : $P_{1882} = (9, 4, 6, 1)$
134 : $P_{1903} = (14, 5, 6, 1)$
135 : $P_{1904} = (15, 5, 6, 1)$
136 : $P_{1934} = (13, 7, 6, 1)$
137 : $P_{1935} = (14, 7, 6, 1)$
138 : $P_{2005} = (4, 12, 6, 1)$
139 : $P_{2013} = (12, 12, 6, 1)$
140 : $P_{2017} = (0, 13, 6, 1)$
141 : $P_{2026} = (9, 13, 6, 1)$
142 : $P_{2055} = (6, 15, 6, 1)$
143 : $P_{2062} = (13, 15, 6, 1)$
144 : $P_{2065} = (0, 0, 7, 1)$
145 : $P_{2079} = (14, 0, 7, 1)$
146 : $P_{2086} = (5, 1, 7, 1)$
147 : $P_{2091} = (10, 1, 7, 1)$
148 : $P_{2152} = (7, 5, 7, 1)$
149 : $P_{2157} = (12, 5, 7, 1)$
150 : $P_{2165} = (4, 6, 7, 1)$
151 : $P_{2173} = (12, 6, 7, 1)$
152 : $P_{2219} = (10, 9, 7, 1)$
153 : $P_{2222} = (13, 9, 7, 1)$
154 : $P_{2257} = (0, 12, 7, 1)$
155 : $P_{2259} = (2, 12, 7, 1)$
156 : $P_{2286} = (13, 13, 7, 1)$
157 : $P_{2287} = (14, 13, 7, 1)$
158 : $P_{2291} = (2, 14, 7, 1)$
159 : $P_{2309} = (4, 15, 7, 1)$
160 : $P_{2310} = (5, 15, 7, 1)$
161 : $P_{2321} = (0, 0, 8, 1)$
162 : $P_{2324} = (3, 0, 8, 1)$
163 : $P_{2378} = (9, 3, 8, 1)$
164 : $P_{2396} = (11, 4, 8, 1)$
165 : $P_{2397} = (12, 4, 8, 1)$
166 : $P_{2412} = (11, 5, 8, 1)$
167 : $P_{2414} = (13, 5, 8, 1)$
168 : $P_{2425} = (8, 6, 8, 1)$
169 : $P_{2430} = (13, 6, 8, 1)$
170 : $P_{2498} = (1, 11, 8, 1)$
171 : $P_{2506} = (9, 11, 8, 1)$
172 : $P_{2514} = (1, 12, 8, 1)$
173 : $P_{2527} = (14, 12, 8, 1)$
174 : $P_{2548} = (3, 14, 8, 1)$
175 : $P_{2559} = (14, 14, 8, 1)$
176 : $P_{2561} = (0, 15, 8, 1)$
177 : $P_{2573} = (12, 15, 8, 1)$
178 : $P_{2577} = (0, 0, 9, 1)$
179 : $P_{2590} = (13, 0, 9, 1)$
180 : $P_{2612} = (3, 2, 9, 1)$
181 : $P_{2621} = (12, 2, 9, 1)$
182 : $P_{2646} = (5, 4, 9, 1)$
183 : $P_{2653} = (12, 4, 9, 1)$
184 : $P_{2762} = (9, 11, 9, 1)$
185 : $P_{2768} = (15, 11, 9, 1)$
186 : $P_{2773} = (4, 12, 9, 1)$
187 : $P_{2774} = (5, 12, 9, 1)$
188 : $P_{2789} = (4, 13, 9, 1)$
189 : $P_{2801} = (0, 14, 9, 1)$
190 : $P_{2804} = (3, 14, 9, 1)$
191 : $P_{2830} = (13, 15, 9, 1)$
192 : $P_{2832} = (15, 15, 9, 1)$
193 : $P_{2833} = (0, 0, 10, 1)$
194 : $P_{2844} = (11, 0, 10, 1)$
195 : $P_{2854} = (5, 1, 10, 1)$
196 : $P_{2864} = (15, 1, 10, 1)$
197 : $P_{2886} = (5, 3, 10, 1)$
198 : $P_{2894} = (13, 3, 10, 1)$
199 : $P_{2930} = (1, 6, 10, 1)$
200 : $P_{2941} = (12, 6, 10, 1)$
201 : $P_{2946} = (1, 7, 10, 1)$
202 : $P_{2958} = (13, 7, 10, 1)$
203 : $P_{2973} = (12, 8, 10, 1)$
204 : $P_{2976} = (15, 8, 10, 1)$
205 : $P_{3003} = (10, 10, 10, 1)$
206 : $P_{3004} = (11, 10, 10, 1)$
207 : $P_{3009} = (0, 11, 10, 1)$
208 : $P_{3089} = (0, 0, 11, 1)$
209 : $P_{3099} = (10, 0, 11, 1)$
210 : $P_{3108} = (3, 1, 11, 1)$
211 : $P_{3113} = (8, 1, 11, 1)$
212 : $P_{3176} = (7, 5, 11, 1)$
213 : $P_{3177} = (8, 5, 11, 1)$
214 : $P_{3249} = (0, 10, 11, 1)$
215 : $P_{3275} = (10, 11, 11, 1)$
216 : $P_{3276} = (11, 11, 11, 1)$
217 : $P_{3282} = (1, 12, 11, 1)$
218 : $P_{3288} = (7, 12, 11, 1)$
219 : $P_{3298} = (1, 13, 11, 1)$
220 : $P_{3303} = (6, 13, 11, 1)$
221 : $P_{3332} = (3, 15, 11, 1)$
222 : $P_{3335} = (6, 15, 11, 1)$
223 : $P_{3345} = (0, 0, 12, 1)$
224 : $P_{3347} = (2, 0, 12, 1)$

225 : $P_{3369} = (8, 1, 12, 1)$
226 : $P_{3372} = (11, 1, 12, 1)$
227 : $P_{3381} = (4, 2, 12, 1)$
228 : $P_{3401} = (8, 3, 12, 1)$
229 : $P_{3402} = (9, 3, 12, 1)$
230 : $P_{3441} = (0, 6, 12, 1)$
231 : $P_{3445} = (4, 6, 12, 1)$
232 : $P_{3459} = (2, 7, 12, 1)$
233 : $P_{3464} = (7, 7, 12, 1)$
234 : $P_{3479} = (6, 8, 12, 1)$
235 : $P_{3485} = (12, 8, 12, 1)$
236 : $P_{3559} = (6, 13, 12, 1)$
237 : $P_{3562} = (9, 13, 12, 1)$
238 : $P_{3576} = (7, 14, 12, 1)$
239 : $P_{3580} = (11, 14, 12, 1)$
240 : $P_{3601} = (0, 0, 13, 1)$
241 : $P_{3610} = (9, 0, 13, 1)$
242 : $P_{3620} = (3, 1, 13, 1)$
243 : $P_{3628} = (11, 1, 13, 1)$
244 : $P_{3656} = (7, 3, 13, 1)$
245 : $P_{3662} = (13, 3, 13, 1)$
246 : $P_{3671} = (6, 4, 13, 1)$
247 : $P_{3676} = (11, 4, 13, 1)$
248 : $P_{3703} = (6, 6, 13, 1)$
249 : $P_{3706} = (9, 6, 13, 1)$
250 : $P_{3713} = (0, 7, 13, 1)$
251 : $P_{3727} = (14, 7, 13, 1)$
252 : $P_{3731} = (2, 8, 13, 1)$
253 : $P_{3732} = (3, 8, 13, 1)$
254 : $P_{3759} = (14, 9, 13, 1)$
255 : $P_{3795} = (2, 12, 13, 1)$
256 : $P_{3800} = (7, 12, 13, 1)$
257 : $P_{3857} = (0, 0, 14, 1)$
258 : $P_{3864} = (7, 0, 14, 1)$
259 : $P_{3889} = (0, 2, 14, 1)$
260 : $P_{3894} = (5, 2, 14, 1)$
261 : $P_{3908} = (3, 3, 14, 1)$
262 : $P_{3912} = (7, 3, 14, 1)$
263 : $P_{3926} = (5, 4, 14, 1)$
264 : $P_{3927} = (6, 4, 14, 1)$
265 : $P_{3961} = (8, 6, 14, 1)$
266 : $P_{3962} = (9, 6, 14, 1)$
267 : $P_{3978} = (9, 7, 14, 1)$
268 : $P_{4007} = (6, 9, 14, 1)$
269 : $P_{4009} = (8, 9, 14, 1)$
270 : $P_{4020} = (3, 10, 14, 1)$
271 : $P_{4031} = (14, 10, 14, 1)$
272 : $P_{4113} = (0, 0, 15, 1)$
273 : $P_{4118} = (5, 0, 15, 1)$
274 : $P_{4147} = (2, 2, 15, 1)$
275 : $P_{4150} = (5, 2, 15, 1)$
276 : $P_{4161} = (0, 3, 15, 1)$
277 : $P_{4167} = (6, 3, 15, 1)$
278 : $P_{4207} = (14, 5, 15, 1)$
279 : $P_{4210} = (1, 6, 15, 1)$
280 : $P_{4211} = (2, 6, 15, 1)$
281 : $P_{4248} = (7, 8, 15, 1)$
282 : $P_{4251} = (10, 8, 15, 1)$
283 : $P_{4263} = (6, 9, 15, 1)$
284 : $P_{4267} = (10, 9, 15, 1)$
285 : $P_{4274} = (1, 10, 15, 1)$
286 : $P_{4287} = (14, 10, 15, 1)$
287 : $P_{4328} = (7, 13, 15, 1)$
288 : $P_{4336} = (15, 13, 15, 1)$