Rank-65871 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 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 303112725

General information

Number of lines	16
Number of points	337
Number of singular points	2
Number of Eckardt points	0
Number of double points	38
Number of single points	186
Number of points off lines	111
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^{16}
Type of lines on points	5^2, 2^{38}, 1^{186}, 0^{111}

Singular Points

The surface has 2 singular points:

$0:\ P_{275} = \mathbf{P}(1,0,0,1) = \mathbf{P}(1,0,0,1)$
$1:\ P_{291} = \mathbf{P}(1,1,0,1) = \mathbf{P}(1,1,0,1)$

The 16 Lines

The lines and their Pluecker coordinates are:

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

$$\ell_1 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \end{array}\right]_{4368} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \end{array}\right]_{4368} = \mathbf{Pl}(1,0,0,1,0,0)_{34}$$

$$\ell_2 = \left[\begin{array}{cccc} 1 & \delta^{14} & 0 & 0 \\ 0 & 0 & 1 & \delta^{10} \end{array}\right]_{3542} = \left[\begin{array}{cccc} 1 & 12 & 0 & 0 \\ 0 & 0 & 1 & 10 \end{array}\right]_{3542} = \mathbf{Pl}(0,0,11,10,13,1)_{58696}$$

$$\ell_3 = \left[\begin{array}{cccc} 1 & \delta^{13} & 0 & 0 \\ 0 & 0 & 1 & \delta^{5} \end{array}\right]_{1905} = \left[\begin{array}{cccc} 1 & 6 & 0 & 0 \\ 0 & 0 & 1 & 11 \end{array}\right]_{1905} = \mathbf{Pl}(0,0,10,11,7,1)_{34185}$$

$$\ell_4 = \left[\begin{array}{cccc} 1 & \delta^{11} & 0 & 0 \\ 0 & 0 & 1 & \delta^{10} \end{array}\right]_{3815} = \left[\begin{array}{cccc} 1 & 13 & 0 & 0 \\ 0 & 0 & 1 & 10 \end{array}\right]_{3815} = \mathbf{Pl}(0,0,11,10,12,1)_{54616}$$

$$\ell_5 = \left[\begin{array}{cccc} 1 & \delta^{5} & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{3260} = \left[\begin{array}{cccc} 1 & 11 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{3260} = \mathbf{Pl}(0,0,1,1,10,1)_{46146}$$

$$\ell_6 = \left[\begin{array}{cccc} 1 & \delta^{10} & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{2987} = \left[\begin{array}{cccc} 1 & 10 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{2987} = \mathbf{Pl}(0,0,1,1,11,1)_{50226}$$

$$\ell_7 = \left[\begin{array}{cccc} 1 & \delta^{7} & 0 & 0 \\ 0 & 0 & 1 & \delta^{5} \end{array}\right]_{2178} = \left[\begin{array}{cccc} 1 & 7 & 0 & 0 \\ 0 & 0 & 1 & 11 \end{array}\right]_{2178} = \mathbf{Pl}(0,0,10,11,6,1)_{30105}$$

$$\ell_8 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \delta^{14} & \delta^{7} \end{array}\right]_{4492} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 12 & 7 \end{array}\right]_{4492} = \mathbf{Pl}(14,7,7,14,1,0)_{4278}$$

$$\ell_9 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \delta^{13} & \delta^{14} \end{array}\right]_{4566} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 6 & 12 \end{array}\right]_{4566} = \mathbf{Pl}(2,12,12,2,1,0)_{1641}$$

$$\ell_{10} = \left[\begin{array}{cccc} 1 & 0 & \delta^{13} & \delta^{11} \\ 0 & 1 & \delta^{13} & \delta^{14} \end{array}\right]_{58620} = \left[\begin{array}{cccc} 1 & 0 & 6 & 13 \\ 0 & 1 & 6 & 12 \end{array}\right]_{58620} = \mathbf{Pl}(1,1,4,6,2,1)_{14616}$$

$$\ell_{11} = \left[\begin{array}{cccc} 1 & 0 & \delta^{7} & \delta^{14} \\ 0 & 1 & \delta^{7} & \delta^{11} \end{array}\right]_{54542} = \left[\begin{array}{cccc} 1 & 0 & 7 & 12 \\ 0 & 1 & 7 & 13 \end{array}\right]_{54542} = \mathbf{Pl}(1,1,14,7,9,1)_{45351}$$

$$\ell_{12} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \delta^{11} & \delta^{13} \end{array}\right]_{4477} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 13 & 6 \end{array}\right]_{4477} = \mathbf{Pl}(4,6,6,4,1,0)_{2003}$$

$$\ell_{13} = \left[\begin{array}{cccc} 1 & 0 & \delta^{14} & \delta^{13} \\ 0 & 1 & \delta^{14} & \delta^{7} \end{array}\right]_{29608} = \left[\begin{array}{cccc} 1 & 0 & 12 & 6 \\ 0 & 1 & 12 & 7 \end{array}\right]_{29608} = \mathbf{Pl}(1,1,2,12,14,1)_{63336}$$

$$\ell_{14} = \left[\begin{array}{cccc} 1 & 0 & \delta^{11} & \delta^{7} \\ 0 & 1 & \delta^{11} & \delta^{13} \end{array}\right]_{34234} = \left[\begin{array}{cccc} 1 & 0 & 13 & 7 \\ 0 & 1 & 13 & 6 \end{array}\right]_{34234} = \mathbf{Pl}(1,1,9,13,4,1)_{23856}$$

$$\ell_{15} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \delta^{7} & \delta^{11} \end{array}\right]_{4583} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 7 & 13 \end{array}\right]_{4583} = \mathbf{Pl}(9,13,13,9,1,0)_{3238}$$

Rank of lines: (0, 4368, 3542, 1905, 3815, 3260, 2987, 2178, 4492, 4566, 58620, 54542, 4477, 29608, 34234, 4583)
Rank of points on Klein quadric: (0, 34, 58696, 34185, 54616, 46146, 50226, 30105, 4278, 1641, 14616, 45351, 2003, 63336, 23856, 3238)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 38 Double points:
The double points on the surface are:

$P_1 = (0,1,0,0) = \ell_0 \cap \ell_1$
$P_6 = (2,1,0,0) = \ell_0 \cap \ell_2$
$P_8 = (4,1,0,0) = \ell_0 \cap \ell_3$
$P_{13} = (9,1,0,0) = \ell_0 \cap \ell_4$
$P_{14} = (10,1,0,0) = \ell_0 \cap \ell_5$
$P_{15} = (11,1,0,0) = \ell_0 \cap \ell_6$
$P_{18} = (14,1,0,0) = \ell_0 \cap \ell_7$
$P_{3089} = (0,0,11,1) = \ell_2 \cap \ell_4$
$P_{3336} = (7,15,11,1) = \ell_2 \cap \ell_8$
$P_{3215} = (14,7,11,1) = \ell_2 \cap \ell_9$
$P_{3125} = (4,2,11,1) = \ell_2 \cap \ell_{11}$
$P_{3143} = (6,3,11,1) = \ell_2 \cap \ell_{14}$
$P_{2833} = (0,0,10,1) = \ell_3 \cap \ell_7$
$P_{2893} = (12,3,10,1) = \ell_3 \cap \ell_9$
$P_{2926} = (13,5,10,1) = \ell_3 \cap \ell_{11}$
$P_{3027} = (2,12,10,1) = \ell_3 \cap \ell_{12}$
$P_{2906} = (9,4,10,1) = \ell_3 \cap \ell_{13}$
$P_{3247} = (14,9,11,1) = \ell_4 \cap \ell_{10}$
$P_{3175} = (6,5,11,1) = \ell_4 \cap \ell_{12}$
$P_{3224} = (7,8,11,1) = \ell_4 \cap \ell_{13}$
$P_{3189} = (4,6,11,1) = \ell_4 \cap \ell_{15}$
$P_{530} = (0,0,1,1) = \ell_5 \cap \ell_6$
$P_{596} = (3,4,1,1) = \ell_5 \cap \ell_9$
$P_{752} = (15,13,1,1) = \ell_5 \cap \ell_{13}$
$P_{726} = (5,12,1,1) = \ell_5 \cap \ell_{14}$
$P_{761} = (8,14,1,1) = \ell_5 \cap \ell_{15}$
$P_{576} = (15,2,1,1) = \ell_6 \cap \ell_8$
$P_{644} = (3,7,1,1) = \ell_6 \cap \ell_{10}$
$P_{633} = (8,6,1,1) = \ell_6 \cap \ell_{11}$
$P_{678} = (5,9,1,1) = \ell_6 \cap \ell_{12}$
$P_{3050} = (9,13,10,1) = \ell_7 \cap \ell_8$
$P_{3085} = (12,15,10,1) = \ell_7 \cap \ell_{10}$
$P_{3059} = (2,14,10,1) = \ell_7 \cap \ell_{14}$
$P_{2974} = (13,8,10,1) = \ell_7 \cap \ell_{15}$
$P_{2289} = (0,14,7,1) = \ell_8 \cap \ell_{13}$
$P_{3377} = (0,2,12,1) = \ell_9 \cap \ell_{10}$
$P_{3745} = (0,9,13,1) = \ell_{11} \cap \ell_{15}$
$P_{1873} = (0,4,6,1) = \ell_{12} \cap \ell_{14}$

Single Points

The surface has 186 single points:
The single points on the surface are:

0 : $P_0 = (1,0,0,0)$ lies on line ℓ_0
1 : $P_5 = (1,1,0,0)$ lies on line ℓ_0
2 : $P_7 = (3,1,0,0)$ lies on line ℓ_0
3 : $P_9 = (5,1,0,0)$ lies on line ℓ_0
4 : $P_{10} = (6,1,0,0)$ lies on line ℓ_0
5 : $P_{11} = (7,1,0,0)$ lies on line ℓ_0
6 : $P_{12} = (8,1,0,0)$ lies on line ℓ_0
7 : $P_{16} = (12,1,0,0)$ lies on line ℓ_0
8 : $P_{17} = (13,1,0,0)$ lies on line ℓ_0
9 : $P_{19} = (15,1,0,0)$ lies on line ℓ_0
10 : $P_{65} = (14,2,1,0)$ lies on line ℓ_8
11 : $P_{85} = (2,4,1,0)$ lies on line ℓ_9
12 : $P_{117} = (2,6,1,0)$ lies on line ℓ_{10}
13 : $P_{140} = (9,7,1,0)$ lies on line ℓ_{11}
14 : $P_{167} = (4,9,1,0)$ lies on line ℓ_{12}
15 : $P_{225} = (14,12,1,0)$ lies on line ℓ_{13}
16 : $P_{231} = (4,13,1,0)$ lies on line ℓ_{14}
17 : $P_{252} = (9,14,1,0)$ lies on line ℓ_{15}
18 : $P_{307} = (1,2,0,1)$ lies on line ℓ_1
19 : $P_{323} = (1,3,0,1)$ lies on line ℓ_1
20 : $P_{339} = (1,4,0,1)$ lies on line ℓ_1
21 : $P_{355} = (1,5,0,1)$ lies on line ℓ_1
22 : $P_{371} = (1,6,0,1)$ lies on line ℓ_1
23 : $P_{387} = (1,7,0,1)$ lies on line ℓ_1
24 : $P_{403} = (1,8,0,1)$ lies on line ℓ_1
25 : $P_{419} = (1,9,0,1)$ lies on line ℓ_1
26 : $P_{435} = (1,10,0,1)$ lies on line ℓ_1
27 : $P_{451} = (1,11,0,1)$ lies on line ℓ_1
28 : $P_{467} = (1,12,0,1)$ lies on line ℓ_1
29 : $P_{483} = (1,13,0,1)$ lies on line ℓ_1
30 : $P_{499} = (1,14,0,1)$ lies on line ℓ_1
31 : $P_{515} = (1,15,0,1)$ lies on line ℓ_1
32 : $P_{555} = (10,1,1,1)$ lies on line ℓ_5
33 : $P_{556} = (11,1,1,1)$ lies on line ℓ_6
34 : $P_{574} = (13,2,1,1)$ lies on line ℓ_5
35 : $P_{581} = (4,3,1,1)$ lies on line ℓ_6
36 : $P_{584} = (7,3,1,1)$ lies on line ℓ_5
37 : $P_{600} = (7,4,1,1)$ lies on line ℓ_6
38 : $P_{618} = (9,5,1,1)$ lies on line ℓ_5
39 : $P_{621} = (12,5,1,1)$ lies on line ℓ_6
40 : $P_{639} = (14,6,1,1)$ lies on line ℓ_5
41 : $P_{645} = (4,7,1,1)$ lies on line ℓ_5
42 : $P_{663} = (6,8,1,1)$ lies on line ℓ_5
43 : $P_{671} = (14,8,1,1)$ lies on line ℓ_6
44 : $P_{685} = (12,9,1,1)$ lies on line ℓ_5
45 : $P_{690} = (1,10,1,1)$ lies on line ℓ_6
46 : $P_{700} = (11,10,1,1)$ lies on line ℓ_5
47 : $P_{706} = (1,11,1,1)$ lies on line ℓ_5
48 : $P_{715} = (10,11,1,1)$ lies on line ℓ_6
49 : $P_{730} = (9,12,1,1)$ lies on line ℓ_6
50 : $P_{739} = (2,13,1,1)$ lies on line ℓ_6
51 : $P_{759} = (6,14,1,1)$ lies on line ℓ_6
52 : $P_{771} = (2,15,1,1)$ lies on line ℓ_5
53 : $P_{782} = (13,15,1,1)$ lies on line ℓ_6

54 : $P_{789} = (4, 0, 2, 1)$ lies on line ℓ_{13}
55 : $P_{826} = (9, 2, 2, 1)$ lies on line ℓ_{14}
56 : $P_{853} = (4, 4, 2, 1)$ lies on line ℓ_{8}
57 : $P_{875} = (10, 5, 2, 1)$ lies on line ℓ_{15}
58 : $P_{918} = (5, 8, 2, 1)$ lies on line ℓ_{9}
59 : $P_{970} = (9, 11, 2, 1)$ lies on line ℓ_{12}
60 : $P_{998} = (5, 13, 2, 1)$ lies on line ℓ_{10}
61 : $P_{1035} = (10, 15, 2, 1)$ lies on line ℓ_{11}
62 : $P_{1086} = (13, 2, 3, 1)$ lies on line ℓ_{12}
63 : $P_{1147} = (10, 6, 3, 1)$ lies on line ℓ_{8}
64 : $P_{1172} = (3, 8, 3, 1)$ lies on line ℓ_{11}
65 : $P_{1220} = (3, 11, 3, 1)$ lies on line ℓ_{15}
66 : $P_{1224} = (7, 11, 3, 1)$ lies on line ℓ_{10}
67 : $P_{1240} = (7, 12, 3, 1)$ lies on line ℓ_{9}
68 : $P_{1243} = (10, 12, 3, 1)$ lies on line ℓ_{13}
69 : $P_{1294} = (13, 15, 3, 1)$ lies on line ℓ_{14}
70 : $P_{1306} = (9, 0, 4, 1)$ lies on line ℓ_{10}
71 : $P_{1356} = (11, 3, 4, 1)$ lies on line ℓ_{13}
72 : $P_{1375} = (14, 4, 4, 1)$ lies on line ℓ_{11}
73 : $P_{1417} = (8, 7, 4, 1)$ lies on line ℓ_{14}
74 : $P_{1436} = (11, 8, 4, 1)$ lies on line ℓ_{8}
75 : $P_{1450} = (9, 9, 4, 1)$ lies on line ℓ_{9}
76 : $P_{1471} = (14, 10, 4, 1)$ lies on line ℓ_{15}
77 : $P_{1545} = (8, 15, 4, 1)$ lies on line ℓ_{12}
78 : $P_{1608} = (7, 3, 5, 1)$ lies on line ℓ_{11}
79 : $P_{1624} = (7, 4, 5, 1)$ lies on line ℓ_{15}
80 : $P_{1660} = (11, 6, 5, 1)$ lies on line ℓ_{10}
81 : $P_{1661} = (12, 6, 5, 1)$ lies on line ℓ_{12}
82 : $P_{1718} = (5, 10, 5, 1)$ lies on line ℓ_{8}
83 : $P_{1725} = (12, 10, 5, 1)$ lies on line ℓ_{14}
84 : $P_{1772} = (11, 13, 5, 1)$ lies on line ℓ_{9}
85 : $P_{1798} = (5, 15, 5, 1)$ lies on line ℓ_{13}
86 : $P_{1838} = (13, 1, 6, 1)$ lies on line ℓ_{9}
87 : $P_{1855} = (14, 2, 6, 1)$ lies on line ℓ_{13}
88 : $P_{1974} = (5, 10, 6, 1)$ lies on line ℓ_{11}
89 : $P_{2014} = (13, 12, 6, 1)$ lies on line ℓ_{10}
90 : $P_{2015} = (14, 12, 6, 1)$ lies on line ℓ_{8}
91 : $P_{2054} = (5, 15, 6, 1)$ lies on line ℓ_{15}
92 : $P_{2093} = (12, 1, 7, 1)$ lies on line ℓ_{15}
93 : $P_{2160} = (15, 5, 7, 1)$ lies on line ℓ_{9}
94 : $P_{2213} = (4, 9, 7, 1)$ lies on line ℓ_{14}
95 : $P_{2240} = (15, 10, 7, 1)$ lies on line ℓ_{10}
96 : $P_{2277} = (4, 13, 7, 1)$ lies on line ℓ_{12}
97 : $P_{2285} = (12, 13, 7, 1)$ lies on line ℓ_{11}
98 : $P_{2377} = (8, 3, 8, 1)$ lies on line ℓ_{10}
99 : $P_{2413} = (12, 5, 8, 1)$ lies on line ℓ_{13}
100 : $P_{2443} = (10, 7, 8, 1)$ lies on line ℓ_{12}
101 : $P_{2477} = (12, 9, 8, 1)$ lies on line ℓ_{8}
102 : $P_{2503} = (6, 11, 8, 1)$ lies on line ℓ_{11}
103 : $P_{2505} = (8, 11, 8, 1)$ lies on line ℓ_{9}
104 : $P_{2535} = (6, 13, 8, 1)$ lies on line ℓ_{15}
105 : $P_{2539} = (10, 13, 8, 1)$ lies on line ℓ_{14}
106 : $P_{2591} = (14, 0, 9, 1)$ lies on line ℓ_{14}
107 : $P_{2640} = (15, 3, 9, 1)$ lies on line ℓ_{15}
108 : $P_{2667} = (10, 5, 9, 1)$ lies on line ℓ_{10}
109 : $P_{2723} = (2, 9, 9, 1)$ lies on line ℓ_{13}
110 : $P_{2755} = (2, 11, 9, 1)$ lies on line ℓ_{8}
111 : $P_{2784} = (15, 12, 9, 1)$ lies on line ℓ_{11}
112 : $P_{2815} = (14, 14, 9, 1)$ lies on line ℓ_{12}
113 : $P_{2827} = (10, 15, 9, 1)$ lies on line ℓ_{9}
114 : $P_{2853} = (4, 1, 10, 1)$ lies on line ℓ_{3}
115 : $P_{2863} = (14, 1, 10, 1)$ lies on line ℓ_{7}
116 : $P_{2870} = (5, 2, 10, 1)$ lies on line ℓ_{7}
117 : $P_{2873} = (8, 2, 10, 1)$ lies on line ℓ_{3}
118 : $P_{2892} = (11, 3, 10, 1)$ lies on line ℓ_{7}
119 : $P_{2907} = (10, 4, 10, 1)$ lies on line ℓ_{7}
120 : $P_{2917} = (4, 5, 10, 1)$ lies on line ℓ_{7}
121 : $P_{2930} = (1, 6, 10, 1)$ lies on line ℓ_{3}
122 : $P_{2944} = (15, 6, 10, 1)$ lies on line ℓ_{7}
123 : $P_{2946} = (1, 7, 10, 1)$ lies on line ℓ_{7}
124 : $P_{2950} = (5, 7, 10, 1)$ lies on line ℓ_{3}
125 : $P_{2972} = (11, 8, 10, 1)$ lies on line ℓ_{3}
126 : $P_{2980} = (3, 9, 10, 1)$ lies on line ℓ_{7}
127 : $P_{2992} = (15, 9, 10, 1)$ lies on line ℓ_{3}
128 : $P_{2996} = (3, 10, 10, 1)$ lies on line ℓ_{3}
129 : $P_{3001} = (8, 10, 10, 1)$ lies on line ℓ_{7}
130 : $P_{3015} = (6, 11, 10, 1)$ lies on line ℓ_{7}
131 : $P_{3016} = (7, 11, 10, 1)$ lies on line ℓ_{3}
132 : $P_{3032} = (7, 12, 10, 1)$ lies on line ℓ_{7}
133 : $P_{3047} = (6, 13, 10, 1)$ lies on line ℓ_{3}
134 : $P_{3067} = (10, 14, 10, 1)$ lies on line ℓ_{3}
135 : $P_{3087} = (14, 15, 10, 1)$ lies on line ℓ_{3}
136 : $P_{3107} = (2, 1, 11, 1)$ lies on line ℓ_{2}
137 : $P_{3114} = (9, 1, 11, 1)$ lies on line ℓ_{4}
138 : $P_{3132} = (11, 2, 11, 1)$ lies on line ℓ_{4}
139 : $P_{3139} = (2, 3, 11, 1)$ lies on line ℓ_{4}
140 : $P_{3161} = (8, 4, 11, 1)$ lies on line ℓ_{2}
141 : $P_{3168} = (15, 4, 11, 1)$ lies on line ℓ_{4}
142 : $P_{3179} = (10, 5, 11, 1)$ lies on line ℓ_{2}
143 : $P_{3197} = (12, 6, 11, 1)$ lies on line ℓ_{2}
144 : $P_{3214} = (13, 7, 11, 1)$ lies on line ℓ_{4}
145 : $P_{3226} = (9, 8, 11, 1)$ lies on line ℓ_{2}
146 : $P_{3244} = (11, 9, 11, 1)$ lies on line ℓ_{2}
147 : $P_{3261} = (12, 10, 11, 1)$ lies on line ℓ_{4}
148 : $P_{3262} = (13, 10, 11, 1)$ lies on line ℓ_{2}
149 : $P_{3270} = (5, 11, 11, 1)$ lies on line ℓ_{4}
150 : $P_{3280} = (15, 11, 11, 1)$ lies on line ℓ_{2}
151 : $P_{3282} = (1, 12, 11, 1)$ lies on line ℓ_{2}
152 : $P_{3289} = (8, 12, 11, 1)$ lies on line ℓ_{4}
153 : $P_{3298} = (1, 13, 11, 1)$ lies on line ℓ_{4}
154 : $P_{3300} = (3, 13, 11, 1)$ lies on line ℓ_{2}
155 : $P_{3316} = (3, 14, 11, 1)$ lies on line ℓ_{4}
156 : $P_{3318} = (5, 14, 11, 1)$ lies on line ℓ_{2}
157 : $P_{3339} = (10, 15, 11, 1)$ lies on line ℓ_{4}
158 : $P_{3367} = (6, 1, 12, 1)$ lies on line ℓ_{8}
159 : $P_{3463} = (6, 7, 12, 1)$ lies on line ℓ_{13}
160 : $P_{3466} = (9, 7, 12, 1)$ lies on line ℓ_{15}
161 : $P_{3476} = (3, 8, 12, 1)$ lies on line ℓ_{12}

162 : $P_{3524} = (3, 11, 12, 1)$ lies on line ℓ_{14}
163 : $P_{3578} = (9, 14, 12, 1)$ lies on line ℓ_{11}
164 : $P_{3624} = (7, 1, 13, 1)$ lies on line ℓ_{12}
165 : $P_{3657} = (8, 3, 13, 1)$ lies on line ℓ_{8}
166 : $P_{3667} = (2, 4, 13, 1)$ lies on line ℓ_{10}
167 : $P_{3699} = (2, 6, 13, 1)$ lies on line ℓ_{9}
168 : $P_{3704} = (7, 6, 13, 1)$ lies on line ℓ_{14}
169 : $P_{3785} = (8, 11, 13, 1)$ lies on line ℓ_{13}
170 : $P_{3859} = (2, 0, 14, 1)$ lies on line ℓ_{11}
171 : $P_{3891} = (2, 2, 14, 1)$ lies on line ℓ_{15}
172 : $P_{3916} = (11, 3, 14, 1)$ lies on line ℓ_{12}
173 : $P_{3940} = (3, 5, 14, 1)$ lies on line ℓ_{8}
174 : $P_{3956} = (3, 6, 14, 1)$ lies on line ℓ_{13}
175 : $P_{3996} = (11, 8, 14, 1)$ lies on line ℓ_{14}
176 : $P_{4021} = (4, 10, 14, 1)$ lies on line ℓ_{9}
177 : $P_{4085} = (4, 14, 14, 1)$ lies on line ℓ_{10}
178 : $P_{4208} = (15, 5, 15, 1)$ lies on line ℓ_{14}
179 : $P_{4236} = (11, 7, 15, 1)$ lies on line ℓ_{11}
180 : $P_{4238} = (13, 7, 15, 1)$ lies on line ℓ_{8}
181 : $P_{4247} = (6, 8, 15, 1)$ lies on line ℓ_{10}
182 : $P_{4286} = (13, 10, 15, 1)$ lies on line ℓ_{13}
183 : $P_{4288} = (15, 10, 15, 1)$ lies on line ℓ_{12}
184 : $P_{4316} = (11, 12, 15, 1)$ lies on line ℓ_{15}
185 : $P_{4343} = (6, 14, 15, 1)$ lies on line ℓ_{9}

The single points on the surface are:

Points on surface but on no line

The surface has 111 points not on any line:
The points on the surface but not on lines are:

0 : $P_{35} = (0, 1, 1, 0)$
1 : $P_{78} = (11, 3, 1, 0)$
2 : $P_{109} = (10, 5, 1, 0)$
3 : $P_{158} = (11, 8, 1, 0)$
4 : $P_{180} = (1, 10, 1, 0)$
5 : $P_{196} = (1, 11, 1, 0)$
6 : $P_{269} = (10, 15, 1, 0)$
7 : $P_{830} = (13, 2, 2, 1)$
8 : $P_{861} = (12, 4, 2, 1)$
9 : $P_{865} = (0, 5, 2, 1)$
10 : $P_{925} = (12, 8, 2, 1)$
11 : $P_{967} = (6, 11, 2, 1)$
12 : $P_{999} = (6, 13, 2, 1)$
13 : $P_{1038} = (13, 15, 2, 1)$
14 : $P_{1050} = (9, 0, 3, 1)$
15 : $P_{1084} = (11, 2, 3, 1)$
16 : $P_{1137} = (0, 6, 3, 1)$
17 : $P_{1171} = (2, 8, 3, 1)$
18 : $P_{1194} = (9, 9, 3, 1)$
19 : $P_{1196} = (11, 9, 3, 1)$
20 : $P_{1203} = (2, 10, 3, 1)$
21 : $P_{1206} = (5, 10, 3, 1)$
22 : $P_{1286} = (5, 15, 3, 1)$
23 : $P_{1352} = (7, 3, 4, 1)$
24 : $P_{1368} = (7, 4, 4, 1)$
25 : $P_{1422} = (13, 7, 4, 1)$
26 : $P_{1425} = (0, 8, 4, 1)$
27 : $P_{1447} = (6, 9, 4, 1)$
28 : $P_{1470} = (13, 10, 4, 1)$
29 : $P_{1543} = (6, 15, 4, 1)$
30 : $P_{1567} = (14, 0, 5, 1)$
31 : $P_{1609} = (8, 3, 5, 1)$
32 : $P_{1627} = (10, 4, 5, 1)$
33 : $P_{1733} = (4, 11, 5, 1)$
34 : $P_{1737} = (8, 11, 5, 1)$
35 : $P_{1761} = (0, 13, 5, 1)$
36 : $P_{1787} = (10, 14, 5, 1)$
37 : $P_{1791} = (14, 14, 5, 1)$
38 : $P_{1797} = (4, 15, 5, 1)$
39 : $P_{1811} = (2, 0, 6, 1)$
40 : $P_{1836} = (11, 1, 6, 1)$
41 : $P_{1843} = (2, 2, 6, 1)$
42 : $P_{1863} = (6, 3, 6, 1)$
43 : $P_{1869} = (12, 3, 6, 1)$
44 : $P_{1874} = (1, 4, 6, 1)$
45 : $P_{1890} = (1, 5, 6, 1)$
46 : $P_{1895} = (6, 5, 6, 1)$
47 : $P_{1980} = (11, 10, 6, 1)$
48 : $P_{2061} = (12, 15, 6, 1)$
49 : $P_{2074} = (9, 0, 7, 1)$
50 : $P_{2092} = (11, 1, 7, 1)$
51 : $P_{2158} = (13, 5, 7, 1)$
52 : $P_{2200} = (7, 8, 7, 1)$
53 : $P_{2206} = (13, 8, 7, 1)$
54 : $P_{2218} = (9, 9, 7, 1)$
55 : $P_{2236} = (11, 10, 7, 1)$
56 : $P_{2290} = (1, 14, 7, 1)$
57 : $P_{2306} = (1, 15, 7, 1)$
58 : $P_{2312} = (7, 15, 7, 1)$
59 : $P_{2323} = (2, 0, 8, 1)$
60 : $P_{2355} = (2, 2, 8, 1)$
61 : $P_{2364} = (11, 2, 8, 1)$

62 : $P_{2378} = (9, 3, 8, 1)$
63 : $P_{2416} = (15, 5, 8, 1)$
64 : $P_{2433} = (0, 7, 8, 1)$
65 : $P_{2476} = (11, 9, 8, 1)$
66 : $P_{2490} = (9, 10, 8, 1)$
67 : $P_{2496} = (15, 10, 8, 1)$
68 : $P_{2638} = (13, 3, 9, 1)$
69 : $P_{2669} = (12, 5, 9, 1)$
70 : $P_{2733} = (12, 9, 9, 1)$
71 : $P_{2760} = (7, 11, 9, 1)$
72 : $P_{2776} = (7, 12, 9, 1)$
73 : $P_{2814} = (13, 14, 9, 1)$
74 : $P_{2817} = (0, 15, 9, 1)$
75 : $P_{3359} = (14, 0, 12, 1)$
76 : $P_{3371} = (10, 1, 12, 1)$
77 : $P_{3378} = (1, 2, 12, 1)$
78 : $P_{3394} = (1, 3, 12, 1)$
79 : $P_{3405} = (12, 3, 12, 1)$
80 : $P_{3480} = (7, 8, 12, 1)$
81 : $P_{3531} = (10, 11, 12, 1)$
82 : $P_{3583} = (14, 14, 12, 1)$
83 : $P_{3592} = (7, 15, 12, 1)$
84 : $P_{3597} = (12, 15, 12, 1)$
85 : $P_{3605} = (4, 0, 13, 1)$
86 : $P_{3627} = (10, 1, 13, 1)$
87 : $P_{3655} = (6, 3, 13, 1)$
88 : $P_{3669} = (4, 4, 13, 1)$
89 : $P_{3687} = (6, 5, 13, 1)$
90 : $P_{3694} = (13, 5, 13, 1)$
91 : $P_{3730} = (1, 8, 13, 1)$
92 : $P_{3742} = (13, 8, 13, 1)$
93 : $P_{3746} = (1, 9, 13, 1)$
94 : $P_{3787} = (10, 11, 13, 1)$
95 : $P_{3896} = (7, 2, 14, 1)$
96 : $P_{3905} = (0, 3, 14, 1)$
97 : $P_{3944} = (7, 5, 14, 1)$
98 : $P_{3965} = (12, 6, 14, 1)$
99 : $P_{3991} = (6, 8, 14, 1)$
100 : $P_{4029} = (12, 10, 14, 1)$
101 : $P_{4087} = (6, 14, 14, 1)$
102 : $P_{4117} = (4, 0, 15, 1)$
103 : $P_{4181} = (4, 4, 15, 1)$
104 : $P_{4187} = (10, 4, 15, 1)$
105 : $P_{4207} = (14, 5, 15, 1)$
106 : $P_{4244} = (3, 8, 15, 1)$
107 : $P_{4292} = (3, 11, 15, 1)$
108 : $P_{4303} = (14, 11, 15, 1)$
109 : $P_{4305} = (0, 12, 15, 1)$
110 : $P_{4347} = (10, 14, 15, 1)$

Line Intersection Graph

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
2	1	0	0	0	1	0	0	0	1	1	0	1	0	0	1	0
3	1	0	0	0	0	0	0	1	0	1	0	1	1	1	0	0
4	1	0	1	0	0	0	0	0	0	0	1	0	1	1	0	1
5	1	0	0	0	0	0	1	0	0	1	0	0	0	1	1	1
6	1	0	0	0	0	1	0	0	1	0	1	1	1	0	0	0
7	1	0	0	1	0	0	0	0	1	0	1	0	0	0	1	1
8	0	1	1	0	0	0	1	1	0	1	0	0	1	1	0	1
9	0	1	1	1	0	1	0	0	1	0	1	0	1	0	0	1
10	0	1	0	0	1	0	1	1	0	1	0	1	0	1	1	0
11	0	1	1	1	0	0	1	0	0	0	1	0	0	1	1	1
12	0	1	0	1	1	0	1	0	1	1	0	0	0	0	1	1
13	0	1	0	1	1	1	0	0	1	0	1	1	0	0	1	0
14	0	1	1	0	0	1	0	1	0	0	1	1	1	1	0	0
15	0	1	0	0	1	1	0	1	1	1	0	1	1	0	0	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
in point	P_1	P_6	P_8	P_{13}	P_{14}	P_{15}	P_{18}

Line 1 intersects

Line	ℓ_0	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}
in point	P_1	P_{275}	P_{275}	P_{291}	P_{291}	P_{275}	P_{291}	P_{291}	P_{275}

Line 2 intersects

Line	ℓ_0	ℓ_4	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{14}
in point	P_6	P_{3089}	P_{3336}	P_{3215}	P_{3125}	P_{3143}

Line 3 intersects

Line	ℓ_0	ℓ_7	ℓ_9	ℓ_{11}	ℓ_{12}	ℓ_{13}
in point	P_8	P_{2833}	P_{2893}	P_{2926}	P_{3027}	P_{2906}

Line 4 intersects

Line	ℓ_0	ℓ_2	ℓ_{10}	ℓ_{12}	ℓ_{13}	ℓ_{15}
in point	P_{13}	P_{3089}	P_{3247}	P_{3175}	P_{3224}	P_{3189}

Line 5 intersects

Line	ℓ_0	ℓ_6	ℓ_9	ℓ_{13}	ℓ_{14}	ℓ_{15}
in point	P_{14}	P_{530}	P_{596}	P_{752}	P_{726}	P_{761}

Line 6 intersects

Line	ℓ_0	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}
in point	P_{15}	P_{530}	P_{576}	P_{644}	P_{633}	P_{678}

Line 7 intersects

Line	ℓ_0	ℓ_3	ℓ_8	ℓ_{10}	ℓ_{14}	ℓ_{15}
in point	P_{18}	P_{2833}	P_{3050}	P_{3085}	P_{3059}	P_{2974}

Line 8 intersects

Line	ℓ_1	ℓ_2	ℓ_6	ℓ_7	ℓ_9	ℓ_{12}	ℓ_{13}	ℓ_{15}
in point	P_{275}	P_{3336}	P_{576}	P_{3050}	P_{275}	P_{275}	P_{2289}	P_{275}

Line 9 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{12}	ℓ_{15}
in point	P_{275}	P_{3215}	P_{2893}	P_{596}	P_{275}	P_{3377}	P_{275}	P_{275}

Line 10 intersects

Line	ℓ_1	ℓ_4	ℓ_6	ℓ_7	ℓ_9	ℓ_{11}	ℓ_{13}	ℓ_{14}
in point	P_{291}	P_{3247}	P_{644}	P_{3085}	P_{3377}	P_{291}	P_{291}	P_{291}

Line 11 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_6	ℓ_{10}	ℓ_{13}	ℓ_{14}	ℓ_{15}
in point	P_{291}	P_{3125}	P_{2926}	P_{633}	P_{291}	P_{291}	P_{291}	P_{3745}

Line 12 intersects

Line	ℓ_1	ℓ_3	ℓ_4	ℓ_6	ℓ_8	ℓ_9	ℓ_{14}	ℓ_{15}
in point	P_{275}	P_{3027}	P_{3175}	P_{678}	P_{275}	P_{275}	P_{1873}	P_{275}

Line 13 intersects

Line	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{14}
in point	P_{291}	P_{2906}	P_{3224}	P_{752}	P_{2289}	P_{291}	P_{291}	P_{291}

Line 14 intersects

Line	ℓ_1	ℓ_2	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}
in point	P_{291}	P_{3143}	P_{726}	P_{3059}	P_{291}	P_{291}	P_{1873}	P_{291}

Line 15 intersects

Line	ℓ_1	ℓ_4	ℓ_5	ℓ_7	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{12}
in point	P_{275}	P_{3189}	P_{761}	P_{2974}	P_{275}	P_{275}	P_{3745}	P_{275}

The surface has 337 points:
The points on the surface are:

$0: P_0 = (1,0,0,0)$
$1: P_1 = (0,1,0,0)$
$2: P_5 = (1,1,0,0)$
$3: P_6 = (2,1,0,0)$
$4: P_7 = (3,1,0,0)$
$5: P_8 = (4,1,0,0)$
$6: P_9 = (5,1,0,0)$
$7: P_{10} = (6,1,0,0)$
$8: P_{11} = (7,1,0,0)$
$9: P_{12} = (8,1,0,0)$
$10: P_{13} = (9,1,0,0)$
$11: P_{14} = (10,1,0,0)$
$12: P_{15} = (11,1,0,0)$
$13: P_{16} = (12,1,0,0)$
$14: P_{17} = (13,1,0,0)$
$15: P_{18} = (14,1,0,0)$
$16: P_{19} = (15,1,0,0)$
$17: P_{35} = (0,1,1,0)$
$18: P_{65} = (14,2,1,0)$
$19: P_{78} = (11,3,1,0)$
$20: P_{85} = (2,4,1,0)$
$21: P_{109} = (10,5,1,0)$
$22: P_{117} = (2,6,1,0)$
$23: P_{140} = (9,7,1,0)$
$24: P_{158} = (11,8,1,0)$
$25: P_{167} = (4,9,1,0)$
$26: P_{180} = (1,10,1,0)$
$27: P_{196} = (1,11,1,0)$
$28: P_{225} = (14,12,1,0)$
$29: P_{231} = (4,13,1,0)$
$30: P_{252} = (9,14,1,0)$
$31: P_{269} = (10,15,1,0)$
$32: P_{275} = (1,0,0,1)$
$33: P_{291} = (1,1,0,1)$
$34: P_{307} = (1,2,0,1)$
$35: P_{323} = (1,3,0,1)$
$36: P_{339} = (1,4,0,1)$
$37: P_{355} = (1,5,0,1)$
$38: P_{371} = (1,6,0,1)$
$39: P_{387} = (1,7,0,1)$
$40: P_{403} = (1,8,0,1)$
$41: P_{419} = (1,9,0,1)$
$42: P_{435} = (1,10,0,1)$
$43: P_{451} = (1,11,0,1)$
$44: P_{467} = (1,12,0,1)$
$45: P_{483} = (1,13,0,1)$
$46: P_{499} = (1,14,0,1)$
$47: P_{515} = (1,15,0,1)$
$48: P_{530} = (0,0,1,1)$
$49: P_{555} = (10,1,1,1)$
$50: P_{556} = (11,1,1,1)$
$51: P_{574} = (13,2,1,1)$
$52: P_{576} = (15,2,1,1)$
$53: P_{581} = (4,3,1,1)$
$54: P_{584} = (7,3,1,1)$
$55: P_{596} = (3,4,1,1)$
$56: P_{600} = (7,4,1,1)$
$57: P_{618} = (9,5,1,1)$
$58: P_{621} = (12,5,1,1)$
$59: P_{633} = (8,6,1,1)$
$60: P_{639} = (14,6,1,1)$
$61: P_{644} = (3,7,1,1)$
$62: P_{645} = (4,7,1,1)$
$63: P_{663} = (6,8,1,1)$
$64: P_{671} = (14,8,1,1)$
$65: P_{678} = (5,9,1,1)$
$66: P_{685} = (12,9,1,1)$
$67: P_{690} = (1,10,1,1)$
$68: P_{700} = (11,10,1,1)$
$69: P_{706} = (1,11,1,1)$
$70: P_{715} = (10,11,1,1)$
$71: P_{726} = (5,12,1,1)$
$72: P_{730} = (9,12,1,1)$
$73: P_{739} = (2,13,1,1)$
$74: P_{752} = (15,13,1,1)$
$75: P_{759} = (6,14,1,1)$
$76: P_{761} = (8,14,1,1)$
$77: P_{771} = (2,15,1,1)$
$78: P_{782} = (13,15,1,1)$
$79: P_{789} = (4,0,2,1)$
$80: P_{826} = (9,2,2,1)$
$81: P_{830} = (13,2,2,1)$
$82: P_{853} = (4,4,2,1)$
$83: P_{861} = (12,4,2,1)$
$84: P_{865} = (0,5,2,1)$
$85: P_{875} = (10,5,2,1)$
$86: P_{918} = (5,8,2,1)$
$87: P_{925} = (12,8,2,1)$
$88: P_{967} = (6,11,2,1)$
$89: P_{970} = (9,11,2,1)$
$90: P_{998} = (5,13,2,1)$
$91: P_{999} = (6,13,2,1)$
$92: P_{1035} = (10,15,2,1)$
$93: P_{1038} = (13,15,2,1)$
$94: P_{1050} = (9,0,3,1)$
$95: P_{1084} = (11,2,3,1)$
$96: P_{1086} = (13,2,3,1)$
$97: P_{1137} = (0,6,3,1)$
$98: P_{1147} = (10,6,3,1)$
$99: P_{1171} = (2,8,3,1)$
$100: P_{1172} = (3,8,3,1)$
$101: P_{1194} = (9,9,3,1)$
$102: P_{1196} = (11,9,3,1)$
$103: P_{1203} = (2,10,3,1)$
$104: P_{1206} = (5,10,3,1)$
$105: P_{1220} = (3,11,3,1)$
$106: P_{1224} = (7,11,3,1)$
$107: P_{1240} = (7,12,3,1)$
$108: P_{1243} = (10,12,3,1)$
$109: P_{1286} = (5,15,3,1)$
$110: P_{1294} = (13,15,3,1)$
$111: P_{1306} = (9,0,4,1)$
$112: P_{1352} = (7,3,4,1)$
$113: P_{1356} = (11,3,4,1)$
$114: P_{1368} = (7,4,4,1)$
$115: P_{1375} = (14,4,4,1)$
$116: P_{1417} = (8,7,4,1)$
$117: P_{1422} = (13,7,4,1)$
$118: P_{1425} = (0,8,4,1)$
$119: P_{1436} = (11,8,4,1)$
$120: P_{1447} = (6,9,4,1)$
$121: P_{1450} = (9,9,4,1)$
$122: P_{1470} = (13,10,4,1)$
$123: P_{1471} = (14,10,4,1)$
$124: P_{1543} = (6,15,4,1)$
$125: P_{1545} = (8,15,4,1)$
$126: P_{1567} = (14,0,5,1)$
$127: P_{1608} = (7,3,5,1)$
$128: P_{1609} = (8,3,5,1)$
$129: P_{1624} = (7,4,5,1)$
$130: P_{1627} = (10,4,5,1)$
$131: P_{1660} = (11,6,5,1)$
$132: P_{1661} = (12,6,5,1)$
$133: P_{1718} = (5,10,5,1)$
$134: P_{1725} = (12,10,5,1)$
$135: P_{1733} = (4,11,5,1)$
$136: P_{1737} = (8,11,5,1)$
$137: P_{1761} = (0,13,5,1)$
$138: P_{1772} = (11,13,5,1)$
$139: P_{1787} = (10,14,5,1)$
$140: P_{1791} = (14,14,5,1)$
$141: P_{1797} = (4,15,5,1)$
$142: P_{1798} = (5,15,5,1)$
$143: P_{1811} = (2,0,6,1)$
$144: P_{1836} = (11,1,6,1)$
$145: P_{1838} = (13,1,6,1)$
$146: P_{1843} = (2,2,6,1)$
$147: P_{1855} = (14,2,6,1)$
$148: P_{1863} = (6,3,6,1)$
$149: P_{1869} = (12,3,6,1)$
$150: P_{1873} = (0,4,6,1)$
$151: P_{1874} = (1,4,6,1)$
$152: P_{1890} = (1,5,6,1)$
$153: P_{1895} = (6,5,6,1)$
$154: P_{1974} = (5,10,6,1)$
$155: P_{1980} = (11,10,6,1)$
$156: P_{2014} = (13,12,6,1)$
$157: P_{2015} = (14,12,6,1)$
$158: P_{2054} = (5,15,6,1)$
$159: P_{2061} = (12,15,6,1)$
$160: P_{2074} = (9,0,7,1)$
$161: P_{2092} = (11,1,7,1)$

$162: P_{2093} = (12, 1, 7, 1)$
$163: P_{2158} = (13, 5, 7, 1)$
$164: P_{2160} = (15, 5, 7, 1)$
$165: P_{2200} = (7, 8, 7, 1)$
$166: P_{2206} = (13, 8, 7, 1)$
$167: P_{2213} = (4, 9, 7, 1)$
$168: P_{2218} = (9, 9, 7, 1)$
$169: P_{2236} = (11, 10, 7, 1)$
$170: P_{2240} = (15, 10, 7, 1)$
$171: P_{2277} = (4, 13, 7, 1)$
$172: P_{2285} = (12, 13, 7, 1)$
$173: P_{2289} = (0, 14, 7, 1)$
$174: P_{2290} = (1, 14, 7, 1)$
$175: P_{2306} = (1, 15, 7, 1)$
$176: P_{2312} = (7, 15, 7, 1)$
$177: P_{2323} = (2, 0, 8, 1)$
$178: P_{2355} = (2, 2, 8, 1)$
$179: P_{2364} = (11, 2, 8, 1)$
$180: P_{2377} = (8, 3, 8, 1)$
$181: P_{2378} = (9, 3, 8, 1)$
$182: P_{2413} = (12, 5, 8, 1)$
$183: P_{2416} = (15, 5, 8, 1)$
$184: P_{2433} = (0, 7, 8, 1)$
$185: P_{2443} = (10, 7, 8, 1)$
$186: P_{2476} = (11, 9, 8, 1)$
$187: P_{2477} = (12, 9, 8, 1)$
$188: P_{2490} = (9, 10, 8, 1)$
$189: P_{2496} = (15, 10, 8, 1)$
$190: P_{2503} = (6, 11, 8, 1)$
$191: P_{2505} = (8, 11, 8, 1)$
$192: P_{2535} = (6, 13, 8, 1)$
$193: P_{2539} = (10, 13, 8, 1)$
$194: P_{2591} = (14, 0, 9, 1)$
$195: P_{2638} = (13, 3, 9, 1)$
$196: P_{2640} = (15, 3, 9, 1)$
$197: P_{2667} = (10, 5, 9, 1)$
$198: P_{2669} = (12, 5, 9, 1)$
$199: P_{2723} = (2, 9, 9, 1)$
$200: P_{2733} = (12, 9, 9, 1)$
$201: P_{2755} = (2, 11, 9, 1)$
$202: P_{2760} = (7, 11, 9, 1)$
$203: P_{2776} = (7, 12, 9, 1)$
$204: P_{2784} = (15, 12, 9, 1)$
$205: P_{2814} = (13, 14, 9, 1)$
$206: P_{2815} = (14, 14, 9, 1)$
$207: P_{2817} = (0, 15, 9, 1)$
$208: P_{2827} = (10, 15, 9, 1)$
$209: P_{2833} = (0, 0, 10, 1)$
$210: P_{2853} = (4, 1, 10, 1)$
$211: P_{2863} = (14, 1, 10, 1)$
$212: P_{2870} = (5, 2, 10, 1)$
$213: P_{2873} = (8, 2, 10, 1)$
$214: P_{2892} = (11, 3, 10, 1)$
$215: P_{2893} = (12, 3, 10, 1)$
$216: P_{2906} = (9, 4, 10, 1)$
$217: P_{2907} = (10, 4, 10, 1)$
$218: P_{2917} = (4, 5, 10, 1)$
$219: P_{2926} = (13, 5, 10, 1)$
$220: P_{2930} = (1, 6, 10, 1)$
$221: P_{2944} = (15, 6, 10, 1)$
$222: P_{2946} = (1, 7, 10, 1)$
$223: P_{2950} = (5, 7, 10, 1)$
$224: P_{2972} = (11, 8, 10, 1)$
$225: P_{2974} = (13, 8, 10, 1)$
$226: P_{2980} = (3, 9, 10, 1)$
$227: P_{2992} = (15, 9, 10, 1)$
$228: P_{2996} = (3, 10, 10, 1)$
$229: P_{3001} = (8, 10, 10, 1)$
$230: P_{3015} = (6, 11, 10, 1)$
$231: P_{3016} = (7, 11, 10, 1)$
$232: P_{3027} = (2, 12, 10, 1)$
$233: P_{3032} = (7, 12, 10, 1)$
$234: P_{3047} = (6, 13, 10, 1)$
$235: P_{3050} = (9, 13, 10, 1)$
$236: P_{3059} = (2, 14, 10, 1)$
$237: P_{3067} = (10, 14, 10, 1)$
$238: P_{3085} = (12, 15, 10, 1)$
$239: P_{3087} = (14, 15, 10, 1)$
$240: P_{3089} = (0, 0, 11, 1)$
$241: P_{3107} = (2, 1, 11, 1)$
$242: P_{3114} = (9, 1, 11, 1)$
$243: P_{3125} = (4, 2, 11, 1)$
$244: P_{3132} = (11, 2, 11, 1)$
$245: P_{3139} = (2, 3, 11, 1)$
$246: P_{3143} = (6, 3, 11, 1)$
$247: P_{3161} = (8, 4, 11, 1)$
$248: P_{3168} = (15, 4, 11, 1)$
$249: P_{3175} = (6, 5, 11, 1)$
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$251: P_{3189} = (4, 6, 11, 1)$
$252: P_{3197} = (12, 6, 11, 1)$
$253: P_{3214} = (13, 7, 11, 1)$
$254: P_{3215} = (14, 7, 11, 1)$
$255: P_{3224} = (7, 8, 11, 1)$
$256: P_{3226} = (9, 8, 11, 1)$
$257: P_{3244} = (11, 9, 11, 1)$
$258: P_{3247} = (14, 9, 11, 1)$
$259: P_{3261} = (12, 10, 11, 1)$
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$261: P_{3270} = (5, 11, 11, 1)$
$262: P_{3280} = (15, 11, 11, 1)$
$263: P_{3282} = (1, 12, 11, 1)$
$264: P_{3289} = (8, 12, 11, 1)$
$265: P_{3298} = (1, 13, 11, 1)$
$266: P_{3300} = (3, 13, 11, 1)$
$267: P_{3316} = (3, 14, 11, 1)$
$268: P_{3318} = (5, 14, 11, 1)$
$269: P_{3336} = (7, 15, 11, 1)$
$270: P_{3339} = (10, 15, 11, 1)$
$271: P_{3359} = (14, 0, 12, 1)$
$272: P_{3367} = (6, 1, 12, 1)$
$273: P_{3371} = (10, 1, 12, 1)$
$274: P_{3377} = (0, 2, 12, 1)$
$275: P_{3378} = (1, 2, 12, 1)$
$276: P_{3394} = (1, 3, 12, 1)$
$277: P_{3405} = (12, 3, 12, 1)$
$278: P_{3463} = (6, 7, 12, 1)$
$279: P_{3466} = (9, 7, 12, 1)$
$280: P_{3476} = (3, 8, 12, 1)$
$281: P_{3480} = (7, 8, 12, 1)$
$282: P_{3524} = (3, 11, 12, 1)$
$283: P_{3531} = (10, 11, 12, 1)$
$284: P_{3578} = (9, 14, 12, 1)$
$285: P_{3583} = (14, 14, 12, 1)$
$286: P_{3592} = (7, 15, 12, 1)$
$287: P_{3597} = (12, 15, 12, 1)$
$288: P_{3605} = (4, 0, 13, 1)$
$289: P_{3624} = (7, 1, 13, 1)$
$290: P_{3627} = (10, 1, 13, 1)$
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$293: P_{3667} = (2, 4, 13, 1)$
$294: P_{3669} = (4, 4, 13, 1)$
$295: P_{3687} = (6, 5, 13, 1)$
$296: P_{3694} = (13, 5, 13, 1)$
$297: P_{3699} = (2, 6, 13, 1)$
$298: P_{3704} = (7, 6, 13, 1)$
$299: P_{3730} = (1, 8, 13, 1)$
$300: P_{3742} = (13, 8, 13, 1)$
$301: P_{3745} = (0, 9, 13, 1)$
$302: P_{3746} = (1, 9, 13, 1)$
$303: P_{3785} = (8, 11, 13, 1)$
$304: P_{3787} = (10, 11, 13, 1)$
$305: P_{3859} = (2, 0, 14, 1)$
$306: P_{3891} = (2, 2, 14, 1)$
$307: P_{3896} = (7, 2, 14, 1)$
$308: P_{3905} = (0, 3, 14, 1)$
$309: P_{3916} = (11, 3, 14, 1)$
$310: P_{3940} = (3, 5, 14, 1)$
$311: P_{3944} = (7, 5, 14, 1)$
$312: P_{3956} = (3, 6, 14, 1)$
$313: P_{3965} = (12, 6, 14, 1)$
$314: P_{3991} = (6, 8, 14, 1)$
$315: P_{3996} = (11, 8, 14, 1)$
$316: P_{4021} = (4, 10, 14, 1)$
$317: P_{4029} = (12, 10, 14, 1)$
$318: P_{4085} = (4, 14, 14, 1)$
$319: P_{4087} = (6, 14, 14, 1)$
$320: P_{4117} = (4, 0, 15, 1)$
$321: P_{4181} = (4, 4, 15, 1)$
$322: P_{4187} = (10, 4, 15, 1)$
$323: P_{4207} = (14, 5, 15, 1)$

$324: P_{4208} = (15, 5, 15, 1)$
$325: P_{4236} = (11, 7, 15, 1)$
$326: P_{4238} = (13, 7, 15, 1)$
$327: P_{4244} = (3, 8, 15, 1)$
$328: P_{4247} = (6, 8, 15, 1)$
$329: P_{4286} = (13, 10, 15, 1)$
$330: P_{4288} = (15, 10, 15, 1)$
$331: P_{4292} = (3, 11, 15, 1)$
$332: P_{4303} = (14, 11, 15, 1)$
$333: P_{4305} = (0, 12, 15, 1)$
$334: P_{4316} = (11, 12, 15, 1)$
$335: P_{4343} = (6, 14, 15, 1)$
$336: P_{4347} = (10, 14, 15, 1)$