Rank-65759 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

$$X_2^3 + X_3^3 + X_0^2X_1 + X_0^2X_3 + X_0X_1^2 + X_0X_1X_2 = 0$$

(0, 0, 1, 1, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(16) is 571613717

General information

Number of lines	21
Number of points	353
Number of singular points	1
Number of Eckardt points	1
Number of double points	72
Number of single points	204
Number of points off lines	75
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^{21}
Type of lines on points	6, 3, 2^{72}, 1^{204}, 0^{75}

Singular Points

The surface has 1 singular points:

$0: \ P_4 = \mathbf{P}(1,1,1,1) = \mathbf{P}(1,1,1,1)$

The 21 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{17} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{17} = \mathbf{Pl}(1,0,1,0,1,0)_{321}$$

$$\ell_1 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{69889} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{69889} = \mathbf{Pl}(0,0,0,1,0,1)_{5121}$$

$$\ell_2 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \delta^5 \end{bmatrix}_{69899} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 11 \end{bmatrix}_{69899} = \mathbf{Pl}(0,0,0,11,0,1)_{5431}$$

$$\ell_3 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \delta^{10} \end{bmatrix}_{69898} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 10 \end{bmatrix}_{69898} = \mathbf{Pl}(0,0,0,10,0,1)_{5400}$$

$$\ell_4 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{530} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{530} = \mathbf{Pl}(0,0,1,1,1,1)_{9426}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & \delta^9 & \delta^{13} \\ 0 & 1 & \delta^6 & \delta \end{bmatrix}_{27620} = \begin{bmatrix} 1 & 0 & 5 & 6 \\ 0 & 1 & 15 & 2 \end{bmatrix}_{27620} = \mathbf{Pl}(3,8,13,9,7,1)_{36938}$$

$$\ell_6 = \begin{bmatrix} 1 & 0 & \delta^9 & \delta^{13} \\ 0 & 1 & \delta^2 & \delta^7 \end{bmatrix}_{27689} = \begin{bmatrix} 1 & 0 & 5 & 6 \\ 0 & 1 & 4 & 7 \end{bmatrix}_{27689} = \mathbf{Pl}(3,8,13,9,6,1)_{32963}$$

$$\ell_7 = \begin{bmatrix} 1 & 0 & \delta^7 & \delta^{14} \\ 0 & 1 & \delta^8 & \delta^8 \end{bmatrix}_{54565} = \begin{bmatrix} 1 & 0 & 7 & 12 \\ 0 & 1 & 14 & 14 \end{bmatrix}_{54565} = \mathbf{Pl}(5,15,14,7,2,1)_{16780}$$

$$\ell_8 = \begin{bmatrix} 1 & 0 & \delta^3 & \delta^{11} \\ 0 & 1 & \delta^4 & \delta^{14} \end{bmatrix}_{59169} = \begin{bmatrix} 1 & 0 & 8 & 13 \\ 0 & 1 & 9 & 12 \end{bmatrix}_{59169} = \mathbf{Pl}(5,15,7,14,13,1)_{60175}$$

$$\ell_9 = \begin{bmatrix} 1 & 0 & \delta^{14} & \delta^{13} \\ 0 & 1 & \delta & \delta \end{bmatrix}_{29518} = \begin{bmatrix} 1 & 0 & 12 & 6 \\ 0 & 1 & 2 & 2 \end{bmatrix}_{29518} = \mathbf{Pl}(8,3,2,12,4,1)_{22498}$$

$$\ell_{10} = \begin{bmatrix} 1 & 0 & \delta^3 & \delta^{11} \\ 0 & 1 & \delta^{12} & \delta^2 \end{bmatrix}_{59035} = \begin{bmatrix} 1 & 0 & 8 & 13 \\ 0 & 1 & 3 & 4 \end{bmatrix}_{59035} = \mathbf{Pl}(5,15,7,14,12,1)_{56125}$$

$$\ell_{11} = \begin{bmatrix} 1 & 0 & \delta^6 & \delta^7 \\ 0 & 1 & \delta^9 & \delta^4 \end{bmatrix}_{34820} = \begin{bmatrix} 1 & 0 & 15 & 7 \\ 0 & 1 & 5 & 9 \end{bmatrix}_{34820} = \mathbf{Pl}(8,3,12,2,6,1)_{32803}$$

$$\ell_{12} = \begin{bmatrix} 1 & 0 & \delta^6 & \delta^7 \\ 0 & 1 & \delta^8 & \delta^{13} \end{bmatrix}_{34781} = \begin{bmatrix} 1 & 0 & 15 & 7 \\ 0 & 1 & 14 & 6 \end{bmatrix}_{34781} = \mathbf{Pl}(8,3,12,2,7,1)_{36853}$$

$$\ell_{13} = \begin{bmatrix} 1 & 0 & \delta^{13} & \delta^{11} \\ 0 & 1 & \delta^2 & \delta^2 \end{bmatrix}_{58490} = \begin{bmatrix} 1 & 0 & 6 & 13 \\ 0 & 1 & 4 & 4 \end{bmatrix}_{58490} = \mathbf{Pl}(15,5,4,6,9,1)_{43235}$$

$$\ell_{14} = \begin{bmatrix} 1 & 0 & \delta^8 & \delta^{11} \\ 0 & 1 & \delta^7 & \delta^2 \end{bmatrix}_{60677} = \begin{bmatrix} 1 & 0 & 14 & 13 \\ 0 & 1 & 7 & 4 \end{bmatrix}_{60677} = \mathbf{Pl}(7,14,3,8,5,1)_{26817}$$

$$\ell_{15} = \begin{bmatrix} 1 & 0 & \delta^2 & \delta^{14} \\ 0 & 1 & \delta^{13} & \delta^8 \end{bmatrix}_{53738} = \begin{bmatrix} 1 & 0 & 4 & 12 \\ 0 & 1 & 6 & 14 \end{bmatrix}_{53738} = \mathbf{Pl}(6,4,8,3,15,1)_{68516}$$

$$\ell_{16} = \begin{bmatrix} 1 & 0 & \delta & \delta^7 \\ 0 & 1 & \delta^{14} & \delta^4 \end{bmatrix}_{31278} = \begin{bmatrix} 1 & 0 & 2 & 7 \\ 0 & 1 & 12 & 9 \end{bmatrix}_{31278} = \mathbf{Pl}(12,2,5,15,8,1)_{39302}$$

$$\ell_{17} = \begin{bmatrix} 1 & 0 & \delta^4 & \delta^{13} \\ 0 & 1 & \delta^{11} & \delta \end{bmatrix}_{28710} = \begin{bmatrix} 1 & 0 & 9 & 6 \\ 0 & 1 & 13 & 2 \end{bmatrix}_{28710} = \mathbf{Pl}(13,9,15,5,3,1)_{21108}$$

$$\ell_{18} = \begin{bmatrix} 1 & 0 & \delta^{12} & \delta^{14} \\ 0 & 1 & \delta^3 & \delta^8 \end{bmatrix}_{53467} = \begin{bmatrix} 1 & 0 & 3 & 12 \\ 0 & 1 & 8 & 14 \end{bmatrix}_{53467} = \mathbf{Pl}(15,5,6,4,13,1)_{59930}$$

$$\ell_{19} = \begin{bmatrix} 1 & 0 & \delta^{12} & \delta^{14} \\ 0 & 1 & \delta & \delta^{11} \end{bmatrix}_{53445} = \begin{bmatrix} 1 & 0 & 3 & 12 \\ 0 & 1 & 2 & 13 \end{bmatrix}_{53445} = \mathbf{Pl}(15,5,6,4,12,1)_{55910}$$

$$\ell_{20} = \begin{bmatrix} 1 & 0 & \delta^{11} & \delta^7 \\ 0 & 1 & \delta^4 & \delta^4 \end{bmatrix}_{34278} = \begin{bmatrix} 1 & 0 & 13 & 7 \\ 0 & 1 & 9 & 9 \end{bmatrix}_{34278} = \mathbf{Pl}(3,8,9,13,14,1)_{64778}$$

Rank of lines: (17, 69889, 69899, 69898, 530, 27620, 27689, 54565, 59169, 29518, 59035, 34820, 34781, 58490, 60677, 53738, 31278, 28710, 53467, 53445, 34278)

Rank of points on Klein quadric: (321, 5121, 5431, 5400, 9426, 36938, 32963, 16780, 60175, 22498, 56125, 32803, 36853, 43235, 26817, 68516, 39302, 21108, 59930, 55910, 64778)

Eckardt Points

The surface has 1 Eckardt points:
$0 : P_1 = \mathbf{P}(0,1,0,0) = \mathbf{P}(0,1,0,0)$.

Double Points

The surface has 72 Double points:
The double points on the surface are:

$P_{546} = (0,1,1,1) = \ell_0 \cap \ell_1$
$P_{557} = (12,1,1,1) = \ell_0 \cap \ell_5$
$P_{551} = (6,1,1,1) = \ell_0 \cap \ell_{10}$
$P_{558} = (13,1,1,1) = \ell_0 \cap \ell_{11}$
$P_{552} = (7,1,1,1) = \ell_0 \cap \ell_{18}$
$P_{530} = (0,0,1,1) = \ell_1 \cap \ell_4$
$P_{641} = (0,7,1,1) = \ell_1 \cap \ell_7$
$P_{721} = (0,12,1,1) = \ell_1 \cap \ell_9$
$P_{625} = (0,6,1,1) = \ell_1 \cap \ell_{13}$
$P_{737} = (0,13,1,1) = \ell_1 \cap \ell_{20}$
$P_{3057} = (0,14,10,1) = \ell_2 \cap \ell_6$
$P_{2929} = (0,6,10,1) = \ell_2 \cap \ell_{10}$
$P_{2897} = (0,4,10,1) = \ell_2 \cap \ell_{12}$
$P_{3041} = (0,13,10,1) = \ell_2 \cap \ell_{16}$
$P_{3025} = (0,12,10,1) = \ell_2 \cap \ell_{17}$
$P_{2945} = (0,7,10,1) = \ell_2 \cap \ell_{18}$
$P_{3281} = (0,12,11,1) = \ell_3 \cap \ell_5$
$P_{3121} = (0,2,11,1) = \ell_3 \cap \ell_8$
$P_{3297} = (0,13,11,1) = \ell_3 \cap \ell_{11}$
$P_{3185} = (0,6,11,1) = \ell_3 \cap \ell_{14}$
$P_{3201} = (0,7,11,1) = \ell_3 \cap \ell_{15}$
$P_{3233} = (0,9,11,1) = \ell_3 \cap \ell_{19}$
$P_{750} = (13,13,1,1) = \ell_4 \cap \ell_{14}$
$P_{733} = (12,12,1,1) = \ell_4 \cap \ell_{15}$
$P_{648} = (7,7,1,1) = \ell_4 \cap \ell_{16}$
$P_{631} = (6,6,1,1) = \ell_4 \cap \ell_{17}$
$P_{3605} = (4,0,13,1) = \ell_5 \cap \ell_6$
$P_{2281} = (8,13,7,1) = \ell_5 \cap \ell_9$
$P_{1700} = (3,9,5,1) = \ell_5 \cap \ell_{13}$
$P_{4192} = (15,4,15,1) = \ell_5 \cap \ell_{15}$
$P_{1483} = (10,11,4,1) = \ell_5 \cap \ell_{16}$
$P_{2716} = (11,8,9,1) = \ell_5 \cap \ell_{17}$
$P_{61} = (10,2,1,0) = \ell_6 \cap \ell_7$
$P_{3391} = (14,2,12,1) = \ell_6 \cap \ell_{14}$
$P_{333} = (11,3,0,1) = \ell_6 \cap \ell_{20}$
$P_{364} = (10,5,0,1) = \ell_7 \cap \ell_8$
$P_{4153} = (8,2,15,1) = \ell_7 \cap \ell_{11}$
$P_{3260} = (11,10,11,1) = \ell_7 \cap \ell_{13}$
$P_{1796} = (3,15,5,1) = \ell_7 \cap \ell_{15}$
$P_{3424} = (15,4,12,1) = \ell_7 \cap \ell_{17}$
$P_{3702} = (5,6,13,1) = \ell_7 \cap \ell_{18}$
$P_{94} = (11,4,1,0) = \ell_8 \cap \ell_9$
$P_{2074} = (9,0,7,1) = \ell_8 \cap \ell_{10}$
$P_{1875} = (2,4,6,1) = \ell_8 \cap \ell_{16}$
$P_{413} = (11,8,0,1) = \ell_9 \cap \ell_{12}$
$P_{1956} = (3,9,6,1) = \ell_9 \cap \ell_{14}$
$P_{2374} = (5,3,8,1) = \ell_9 \cap \ell_{17}$
$P_{1120} = (15,4,3,1) = \ell_9 \cap \ell_{18}$
$P_{3019} = (10,11,10,1) = \ell_9 \cap \ell_{20}$
$P_{3472} = (15,7,12,1) = \ell_{10} \cap \ell_{13}$
$P_{4107} = (10,15,14,1) = \ell_{10} \cap \ell_{14}$
$P_{2748} = (11,10,9,1) = \ell_{10} \cap \ell_{15}$
$P_{1188} = (3,9,3,1) = \ell_{10} \cap \ell_{17}$
$P_{2550} = (5,14,8,1) = \ell_{10} \cap \ell_{20}$
$P_{3359} = (14,0,12,1) = \ell_{11} \cap \ell_{12}$
$P_{1782} = (5,14,5,1) = \ell_{11} \cap \ell_{14}$
$P_{844} = (11,3,2,1) = \ell_{11} \cap \ell_{16}$
$P_{4043} = (10,11,14,1) = \ell_{11} \cap \ell_{17}$
$P_{2004} = (3,12,6,1) = \ell_{11} \cap \ell_{20}$
$P_{173} = (10,9,1,0) = \ell_{12} \cap \ell_{13}$
$P_{3749} = (4,9,13,1) = \ell_{12} \cap \ell_{15}$
$P_{4201} = (8,5,15,1) = \ell_{13} \cap \ell_{14}$
$P_{3830} = (5,14,13,1) = \ell_{13} \cap \ell_{16}$
$P_{524} = (10,15,0,1) = \ell_{13} \cap \ell_{19}$
$P_{956} = (11,10,2,1) = \ell_{14} \cap \ell_{18}$
$P_{1387} = (10,5,4,1) = \ell_{15} \cap \ell_{18}$
$P_{2105} = (8,2,7,1) = \ell_{15} \cap \ell_{20}$
$P_{2361} = (8,2,8,1) = \ell_{16} \cap \ell_{18}$
$P_{1184} = (15,8,3,1) = \ell_{16} \cap \ell_{20}$
$P_{2298} = (9,14,7,1) = \ell_{17} \cap \ell_{19}$
$P_{1811} = (2,0,6,1) = \ell_{18} \cap \ell_{19}$
$P_{254} = (11,14,1,0) = \ell_{19} \cap \ell_{20}$

Single Points

The surface has 204 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_{4}
2 : $P_{60} = (9,2,1,0)$ lies on line ℓ_{5}
3 : $P_{97} = (14,4,1,0)$ lies on line ℓ_{10}
4 : $P_{165} = (2,9,1,0)$ lies on line ℓ_{11}
5 : $P_{181} = (2,10,1,0)$ lies on line ℓ_{14}
6 : $P_{188} = (9,10,1,0)$ lies on line ℓ_{15}
7 : $P_{199} = (4,11,1,0)$ lies on line ℓ_{16}
8 : $P_{209} = (14,11,1,0)$ lies on line ℓ_{17}
9 : $P_{247} = (4,14,1,0)$ lies on line ℓ_{18}
10 : $P_{327} = (5,3,0,1)$ lies on line ℓ_{5}
11 : $P_{362} = (8,5,0,1)$ lies on line ℓ_{10}
12 : $P_{375} = (5,6,0,1)$ lies on line ℓ_{15}
13 : $P_{401} = (15,7,0,1)$ lies on line ℓ_{14}
14 : $P_{417} = (15,8,0,1)$ lies on line ℓ_{11}
15 : $P_{469} = (3,12,0,1)$ lies on line ℓ_{16}
16 : $P_{490} = (8,13,0,1)$ lies on line ℓ_{17}
17 : $P_{517} = (3,15,0,1)$ lies on line ℓ_{18}
18 : $P_{547} = (2,1,1,1)$ lies on line ℓ_{0}
19 : $P_{548} = (3,1,1,1)$ lies on line ℓ_{0}
20 : $P_{549} = (4,1,1,1)$ lies on line ℓ_{0}
21 : $P_{550} = (5,1,1,1)$ lies on line ℓ_{0}
22 : $P_{553} = (8,1,1,1)$ lies on line ℓ_{0}
23 : $P_{554} = (9,1,1,1)$ lies on line ℓ_{0}
24 : $P_{555} = (10,1,1,1)$ lies on line ℓ_{0}
25 : $P_{556} = (11,1,1,1)$ lies on line ℓ_{0}
26 : $P_{559} = (14,1,1,1)$ lies on line ℓ_{0}
27 : $P_{560} = (15,1,1,1)$ lies on line ℓ_{0}
28 : $P_{561} = (0,2,1,1)$ lies on line ℓ_{1}
29 : $P_{563} = (2,2,1,1)$ lies on line ℓ_{4}
30 : $P_{577} = (0,3,1,1)$ lies on line ℓ_{1}
31 : $P_{580} = (3,3,1,1)$ lies on line ℓ_{4}
32 : $P_{593} = (0,4,1,1)$ lies on line ℓ_{1}
33 : $P_{597} = (4,4,1,1)$ lies on line ℓ_{4}
34 : $P_{609} = (0,5,1,1)$ lies on line ℓ_{1}
35 : $P_{614} = (5,5,1,1)$ lies on line ℓ_{4}
36 : $P_{657} = (0,8,1,1)$ lies on line ℓ_{1}
37 : $P_{665} = (8,8,1,1)$ lies on line ℓ_{4}
38 : $P_{673} = (0,9,1,1)$ lies on line ℓ_{1}
39 : $P_{682} = (9,9,1,1)$ lies on line ℓ_{4}
40 : $P_{689} = (0,10,1,1)$ lies on line ℓ_{1}
41 : $P_{699} = (10,10,1,1)$ lies on line ℓ_{4}
42 : $P_{705} = (0,11,1,1)$ lies on line ℓ_{1}
43 : $P_{716} = (11,11,1,1)$ lies on line ℓ_{4}
44 : $P_{753} = (0,14,1,1)$ lies on line ℓ_{1}
45 : $P_{767} = (14,14,1,1)$ lies on line ℓ_{4}
46 : $P_{769} = (0,15,1,1)$ lies on line ℓ_{1}
47 : $P_{784} = (15,15,1,1)$ lies on line ℓ_{4}
48 : $P_{789} = (4,0,2,1)$ lies on line ℓ_{9}
49 : $P_{808} = (7,1,2,1)$ lies on line ℓ_{7}
50 : $P_{830} = (13,2,2,1)$ lies on line ℓ_{17}
51 : $P_{839} = (6,3,2,1)$ lies on line ℓ_{12}
52 : $P_{856} = (7,4,2,1)$ lies on line ℓ_{13}
53 : $P_{885} = (4,6,2,1)$ lies on line ℓ_{20}
54 : $P_{903} = (6,7,2,1)$ lies on line ℓ_{6}
55 : $P_{911} = (14,7,2,1)$ lies on line ℓ_{5}
56 : $P_{950} = (5,10,2,1)$ lies on line ℓ_{19}
57 : $P_{975} = (14,11,2,1)$ lies on line ℓ_{15}
58 : $P_{998} = (5,13,2,1)$ lies on line ℓ_{8}
59 : $P_{1006} = (13,13,2,1)$ lies on line ℓ_{10}
60 : $P_{1050} = (9,0,3,1)$ lies on line ℓ_{14}
61 : $P_{1064} = (7,1,3,1)$ lies on line ℓ_{15}
62 : $P_{1102} = (13,3,3,1)$ lies on line ℓ_{7}
63 : $P_{1119} = (14,4,3,1)$ lies on line ℓ_{19}
64 : $P_{1128} = (7,5,3,1)$ lies on line ℓ_{5}
65 : $P_{1133} = (12,5,3,1)$ lies on line ℓ_{6}
66 : $P_{1199} = (14,9,3,1)$ lies on line ℓ_{8}
67 : $P_{1210} = (9,10,3,1)$ lies on line ℓ_{11}
68 : $P_{1213} = (12,10,3,1)$ lies on line ℓ_{12}
69 : $P_{1262} = (13,13,3,1)$ lies on line ℓ_{13}
70 : $P_{1306} = (9,0,4,1)$ lies on line ℓ_{13}
71 : $P_{1325} = (12,1,4,1)$ lies on line ℓ_{9}
72 : $P_{1368} = (7,4,4,1)$ lies on line ℓ_{14}
73 : $P_{1390} = (13,5,4,1)$ lies on line ℓ_{19}
74 : $P_{1416} = (7,7,4,1)$ lies on line ℓ_{11}
75 : $P_{1417} = (8,7,4,1)$ lies on line ℓ_{12}
76 : $P_{1453} = (12,9,4,1)$ lies on line ℓ_{20}
77 : $P_{1459} = (2,10,4,1)$ lies on line ℓ_{17}
78 : $P_{1481} = (8,11,4,1)$ lies on line ℓ_{6}
79 : $P_{1491} = (2,12,4,1)$ lies on line ℓ_{10}
80 : $P_{1502} = (13,12,4,1)$ lies on line ℓ_{8}
81 : $P_{1514} = (9,13,4,1)$ lies on line ℓ_{7}
82 : $P_{1567} = (14,0,5,1)$ lies on line ℓ_{16}
83 : $P_{1581} = (12,1,5,1)$ lies on line ℓ_{17}
84 : $P_{1640} = (7,5,5,1)$ lies on line ℓ_{9}
85 : $P_{1672} = (7,7,5,1)$ lies on line ℓ_{20}
86 : $P_{1687} = (6,8,5,1)$ lies on line ℓ_{8}
87 : $P_{1693} = (12,8,5,1)$ lies on line ℓ_{10}
88 : $P_{1699} = (2,9,5,1)$ lies on line ℓ_{6}
89 : $P_{1735} = (6,11,5,1)$ lies on line ℓ_{19}
90 : $P_{1743} = (14,11,5,1)$ lies on line ℓ_{18}
91 : $P_{1779} = (2,14,5,1)$ lies on line ℓ_{12}
92 : $P_{1880} = (7,4,6,1)$ lies on line ℓ_{10}
93 : $P_{1896} = (7,5,6,1)$ lies on line ℓ_{17}
94 : $P_{1938} = (1,8,6,1)$ lies on line ℓ_{15}
95 : $P_{1957} = (4,9,6,1)$ lies on line ℓ_{7}
96 : $P_{1989} = (4,11,6,1)$ lies on line ℓ_{13}
97 : $P_{2006} = (5,12,6,1)$ lies on line ℓ_{12}
98 : $P_{2050} = (1,15,6,1)$ lies on line ℓ_{5}
99 : $P_{2054} = (5,15,6,1)$ lies on line ℓ_{6}
100 : $P_{2111} = (14,2,7,1)$ lies on line ℓ_{13}
101 : $P_{2114} = (1,3,7,1)$ lies on line ℓ_{14}
102 : $P_{2146} = (1,5,7,1)$ lies on line ℓ_{11}
103 : $P_{2160} = (15,5,7,1)$ lies on line ℓ_{12}
104 : $P_{2255} = (14,11,7,1)$ lies on line ℓ_{7}
105 : $P_{2288} = (15,13,7,1)$ lies on line ℓ_{6}
106 : $P_{2295} = (6,14,7,1)$ lies on line ℓ_{18}
107 : $P_{2311} = (6,15,7,1)$ lies on line ℓ_{16}

108 : $P_{2323} = (2, 0, 8, 1)$ lies on line ℓ_{15}
109 : $P_{2343} = (6, 1, 8, 1)$ lies on line ℓ_{14}
110 : $P_{2357} = (4, 2, 8, 1)$ lies on line ℓ_{19}
111 : $P_{2461} = (12, 8, 8, 1)$ lies on line ℓ_{13}
112 : $P_{2483} = (2, 10, 8, 1)$ lies on line ℓ_{5}
113 : $P_{2494} = (13, 10, 8, 1)$ lies on line ℓ_{6}
114 : $P_{2525} = (12, 12, 8, 1)$ lies on line ℓ_{7}
115 : $P_{2549} = (4, 14, 8, 1)$ lies on line ℓ_{8}
116 : $P_{2567} = (6, 15, 8, 1)$ lies on line ℓ_{11}
117 : $P_{2574} = (13, 15, 8, 1)$ lies on line ℓ_{12}
118 : $P_{2591} = (14, 0, 9, 1)$ lies on line ℓ_{20}
119 : $P_{2599} = (6, 1, 9, 1)$ lies on line ℓ_{13}
120 : $P_{2677} = (4, 6, 9, 1)$ lies on line ℓ_{11}
121 : $P_{2680} = (7, 6, 9, 1)$ lies on line ℓ_{12}
122 : $P_{2703} = (14, 7, 9, 1)$ lies on line ℓ_{9}
123 : $P_{2712} = (7, 8, 9, 1)$ lies on line ℓ_{6}
124 : $P_{2733} = (12, 9, 9, 1)$ lies on line ℓ_{16}
125 : $P_{2752} = (15, 10, 9, 1)$ lies on line ℓ_{8}
126 : $P_{2757} = (4, 11, 9, 1)$ lies on line ℓ_{14}
127 : $P_{2781} = (12, 12, 9, 1)$ lies on line ℓ_{18}
128 : $P_{2784} = (15, 12, 9, 1)$ lies on line ℓ_{19}
129 : $P_{2807} = (6, 14, 9, 1)$ lies on line ℓ_{7}
130 : $P_{2833} = (0, 0, 10, 1)$ lies on line ℓ_{2}
131 : $P_{2849} = (0, 1, 10, 1)$ lies on line ℓ_{2}
132 : $P_{2865} = (0, 2, 10, 1)$ lies on line ℓ_{2}
133 : $P_{2881} = (0, 3, 10, 1)$ lies on line ℓ_{2}
134 : $P_{2882} = (1, 3, 10, 1)$ lies on line ℓ_{13}
135 : $P_{2899} = (2, 4, 10, 1)$ lies on line ℓ_{11}
136 : $P_{2913} = (0, 5, 10, 1)$ lies on line ℓ_{2}
137 : $P_{2940} = (11, 6, 10, 1)$ lies on line ℓ_{8}
138 : $P_{2956} = (11, 7, 10, 1)$ lies on line ℓ_{19}
139 : $P_{2961} = (0, 8, 10, 1)$ lies on line ℓ_{2}
140 : $P_{2962} = (1, 8, 10, 1)$ lies on line ℓ_{7}
141 : $P_{2977} = (0, 9, 10, 1)$ lies on line ℓ_{2}
142 : $P_{2993} = (0, 10, 10, 1)$ lies on line ℓ_{2}
143 : $P_{3009} = (0, 11, 10, 1)$ lies on line ℓ_{2}
144 : $P_{3027} = (2, 12, 10, 1)$ lies on line ℓ_{14}
145 : $P_{3050} = (9, 13, 10, 1)$ lies on line ℓ_{15}
146 : $P_{3066} = (9, 14, 10, 1)$ lies on line ℓ_{5}
147 : $P_{3073} = (0, 15, 10, 1)$ lies on line ℓ_{2}
148 : $P_{3089} = (0, 0, 11, 1)$ lies on line ℓ_{3}
149 : $P_{3105} = (0, 1, 11, 1)$ lies on line ℓ_{3}
150 : $P_{3135} = (14, 2, 11, 1)$ lies on line ℓ_{10}
151 : $P_{3137} = (0, 3, 11, 1)$ lies on line ℓ_{3}
152 : $P_{3153} = (0, 4, 11, 1)$ lies on line ℓ_{3}
153 : $P_{3169} = (0, 5, 11, 1)$ lies on line ℓ_{3}
154 : $P_{3170} = (1, 5, 11, 1)$ lies on line ℓ_{20}
155 : $P_{3189} = (4, 6, 11, 1)$ lies on line ℓ_{16}
156 : $P_{3215} = (14, 7, 11, 1)$ lies on line ℓ_{17}
157 : $P_{3217} = (0, 8, 11, 1)$ lies on line ℓ_{3}
158 : $P_{3237} = (4, 9, 11, 1)$ lies on line ℓ_{18}
159 : $P_{3249} = (0, 10, 11, 1)$ lies on line ℓ_{3}
160 : $P_{3265} = (0, 11, 11, 1)$ lies on line ℓ_{3}
161 : $P_{3291} = (10, 12, 11, 1)$ lies on line ℓ_{6}
162 : $P_{3307} = (10, 13, 11, 1)$ lies on line ℓ_{12}
163 : $P_{3313} = (0, 14, 11, 1)$ lies on line ℓ_{3}
164 : $P_{3329} = (0, 15, 11, 1)$ lies on line ℓ_{3}
165 : $P_{3330} = (1, 15, 11, 1)$ lies on line ℓ_{9}
166 : $P_{3390} = (13, 2, 12, 1)$ lies on line ℓ_{5}
167 : $P_{3406} = (13, 3, 12, 1)$ lies on line ℓ_{15}
168 : $P_{3411} = (2, 4, 12, 1)$ lies on line ℓ_{20}
169 : $P_{3426} = (1, 5, 12, 1)$ lies on line ℓ_{16}
170 : $P_{3460} = (3, 7, 12, 1)$ lies on line ℓ_{8}
171 : $P_{3474} = (1, 8, 12, 1)$ lies on line ℓ_{18}
172 : $P_{3476} = (3, 8, 12, 1)$ lies on line ℓ_{19}
173 : $P_{3507} = (2, 10, 12, 1)$ lies on line ℓ_{9}
174 : $P_{3650} = (1, 3, 13, 1)$ lies on line ℓ_{10}
175 : $P_{3657} = (8, 3, 13, 1)$ lies on line ℓ_{8}
176 : $P_{3705} = (8, 6, 13, 1)$ lies on line ℓ_{19}
177 : $P_{3741} = (12, 8, 13, 1)$ lies on line ℓ_{14}
178 : $P_{3757} = (12, 9, 13, 1)$ lies on line ℓ_{11}
179 : $P_{3770} = (9, 10, 13, 1)$ lies on line ℓ_{20}
180 : $P_{3834} = (9, 14, 13, 1)$ lies on line ℓ_{9}
181 : $P_{3842} = (1, 15, 13, 1)$ lies on line ℓ_{17}
182 : $P_{3859} = (2, 0, 14, 1)$ lies on line ℓ_{7}
183 : $P_{3886} = (13, 1, 14, 1)$ lies on line ℓ_{20}
184 : $P_{3902} = (13, 2, 14, 1)$ lies on line ℓ_{9}
185 : $P_{3956} = (3, 6, 14, 1)$ lies on line ℓ_{6}
186 : $P_{3959} = (6, 6, 14, 1)$ lies on line ℓ_{5}
187 : $P_{4026} = (9, 10, 14, 1)$ lies on line ℓ_{16}
188 : $P_{4036} = (3, 11, 14, 1)$ lies on line ℓ_{12}
189 : $P_{4051} = (2, 12, 14, 1)$ lies on line ℓ_{13}
190 : $P_{4074} = (9, 13, 14, 1)$ lies on line ℓ_{18}
191 : $P_{4077} = (12, 13, 14, 1)$ lies on line ℓ_{19}
192 : $P_{4087} = (6, 14, 14, 1)$ lies on line ℓ_{15}
193 : $P_{4109} = (12, 15, 14, 1)$ lies on line ℓ_{8}
194 : $P_{4117} = (4, 0, 15, 1)$ lies on line ℓ_{17}
195 : $P_{4142} = (13, 1, 15, 1)$ lies on line ℓ_{16}
196 : $P_{4154} = (9, 2, 15, 1)$ lies on line ℓ_{12}
197 : $P_{4168} = (7, 3, 15, 1)$ lies on line ℓ_{19}
198 : $P_{4174} = (13, 3, 15, 1)$ lies on line ℓ_{18}
199 : $P_{4186} = (9, 4, 15, 1)$ lies on line ℓ_{6}
200 : $P_{4215} = (6, 6, 15, 1)$ lies on line ℓ_{9}
201 : $P_{4293} = (4, 11, 15, 1)$ lies on line ℓ_{10}
202 : $P_{4296} = (7, 11, 15, 1)$ lies on line ℓ_{8}
203 : $P_{4359} = (6, 15, 15, 1)$ lies on line ℓ_{20}

The single points on the surface are:

Points on surface but on no line

The surface has 75 points not on any line:
The points on the surface but not on lines are:

$0: P_{36} = (1,1,1,0)$
$1: P_{275} = (1,0,0,1)$
$2: P_{291} = (1,1,0,1)$
$3: P_{382} = (12,6,0,1)$
$4: P_{399} = (13,7,0,1)$
$5: P_{446} = (12,10,0,1)$
$6: P_{447} = (13,10,0,1)$
$7: P_{456} = (6,11,0,1)$
$8: P_{457} = (7,11,0,1)$
$9: P_{473} = (7,12,0,1)$
$10: P_{488} = (6,13,0,1)$
$11: P_{857} = (8,4,2,1)$
$12: P_{891} = (10,6,2,1)$
$13: P_{963} = (2,11,2,1)$
$14: P_{1017} = (8,14,2,1)$
$15: P_{1019} = (10,14,2,1)$
$16: P_{1175} = (6,8,3,1)$
$17: P_{1255} = (6,13,3,1)$
$18: P_{1340} = (11,2,4,1)$
$19: P_{1344} = (15,2,4,1)$
$20: P_{1456} = (15,9,4,1)$
$21: P_{1461} = (4,10,4,1)$
$22: P_{1516} = (11,13,4,1)$
$23: P_{1678} = (13,7,5,1)$
$24: P_{1806} = (13,15,5,1)$
$25: P_{1835} = (10,1,6,1)$
$26: P_{1903} = (14,5,6,1)$
$27: P_{1916} = (11,6,6,1)$
$28: P_{1943} = (6,8,6,1)$
$29: P_{1996} = (11,11,6,1)$
$30: P_{2027} = (10,13,6,1)$
$31: P_{2031} = (14,13,6,1)$
$32: P_{2091} = (10,1,7,1)$
$33: P_{2120} = (7,3,7,1)$
$34: P_{2188} = (11,7,7,1)$
$35: P_{2252} = (11,11,7,1)$
$36: P_{2261} = (4,12,7,1)$
$37: P_{2267} = (10,12,7,1)$
$38: P_{2309} = (4,15,7,1)$
$39: P_{2376} = (7,3,8,1)$
$40: P_{2520} = (7,12,8,1)$
$41: P_{2644} = (3,4,9,1)$
$42: P_{2651} = (10,4,9,1)$
$43: P_{2699} = (10,7,9,1)$
$44: P_{2762} = (9,11,9,1)$
$45: P_{2804} = (3,14,9,1)$
$46: P_{2872} = (7,2,10,1)$
$47: P_{2919} = (6,5,10,1)$
$48: P_{2983} = (6,9,10,1)$
$49: P_{3080} = (7,15,10,1)$
$50: P_{3149} = (12,3,11,1)$
$51: P_{3165} = (12,4,11,1)$
$52: P_{3230} = (13,8,11,1)$
$53: P_{3326} = (13,14,11,1)$
$54: P_{3372} = (11,1,12,1)$
$55: P_{3402} = (9,3,12,1)$
$56: P_{3437} = (12,5,12,1)$
$57: P_{3450} = (9,6,12,1)$
$58: P_{3452} = (11,6,12,1)$
$59: P_{3515} = (10,10,12,1)$
$60: P_{3547} = (10,12,12,1)$
$61: P_{3628} = (11,1,13,1)$
$62: P_{3715} = (2,7,13,1)$
$63: P_{3724} = (11,7,13,1)$
$64: P_{3731} = (2,8,13,1)$
$65: P_{3771} = (10,10,13,1)$
$66: P_{3819} = (10,13,13,1)$
$67: P_{3854} = (13,15,13,1)$
$68: P_{3894} = (5,2,14,1)$
$69: P_{4006} = (5,9,14,1)$
$70: P_{4012} = (11,9,14,1)$
$71: P_{4031} = (14,10,14,1)$
$72: P_{4060} = (11,12,14,1)$
$73: P_{4205} = (12,5,15,1)$
$74: P_{4221} = (12,6,15,1)$

Line Intersection Graph

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	0	1	0	0	1	1	1	0	1	0	1	1	1	0	0	0	0	0	1	1	0
1	1	0	1	1	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1
2	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	1	1	1	0	0
3	0	1	1	0	0	1	0	0	1	0	0	1	0	0	1	1	0	0	0	1	0
4	1	1	0	0	0	0	1	0	1	0	0	0	1	0	1	1	1	1	0	1	0
5	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	1	1	1	0	0	0
6	1	0	1	0	1	1	0	1	1	0	0	0	1	0	1	0	0	0	0	1	1
7	0	1	0	0	0	0	1	0	1	0	0	1	0	1	0	1	0	1	1	0	0
8	1	0	0	1	1	0	1	1	0	1	1	0	1	0	0	0	1	0	0	1	0
9	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	0	0	1	1	0	1
10	1	0	1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	0	0	1
11	1	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0	1	1	0	0	1
12	1	0	1	0	1	0	1	0	1	1	0	1	0	1	0	1	0	0	0	1	0
13	0	1	0	0	0	1	0	1	0	0	1	0	1	0	1	0	1	0	0	1	0
14	0	0	0	1	1	0	1	0	0	1	1	1	0	1	0	0	0	0	1	0	0
15	0	0	0	1	1	1	0	1	0	0	1	0	1	0	0	0	0	0	1	0	1
16	0	0	1	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1
17	0	0	1	0	1	1	0	1	0	1	1	1	0	0	0	0	0	0	0	1	0
18	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	1	1	0	0	1	0
19	1	0	0	1	1	0	1	0	1	0	0	0	1	1	0	0	0	1	1	0	1
20	0	1	0	0	0	0	1	0	0	1	1	1	0	0	0	1	1	0	0	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_4	ℓ_5	ℓ_6	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{18}	ℓ_{19}
in point	P_{546}	P_4	P_{557}	P_4	P_4	P_{551}	P_{558}	P_4	P_{552}	P_4

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_7	ℓ_9	ℓ_{13}	ℓ_{20}
in point	P_{546}	P_1	P_1	P_{530}	P_{641}	P_{721}	P_{625}	P_{737}

Line 2 intersects

Line	ℓ_1	ℓ_3	ℓ_6	ℓ_{10}	ℓ_{12}	ℓ_{16}	ℓ_{17}	ℓ_{18}
in point	P_1	P_1	P_{3057}	P_{2929}	P_{2897}	P_{3041}	P_{3025}	P_{2945}

Line 3 intersects

Line	ℓ_1	ℓ_2	ℓ_5	ℓ_8	ℓ_{11}	ℓ_{14}	ℓ_{15}	ℓ_{19}
in point	P_1	P_1	P_{3281}	P_{3121}	P_{3297}	P_{3185}	P_{3201}	P_{3233}

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_6	ℓ_8	ℓ_{12}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{19}
in point	P_4	P_{530}	P_4	P_4	P_4	P_{750}	P_{733}	P_{648}	P_{631}	P_4

Line 5 intersects

Line	ℓ_0	ℓ_3	ℓ_6	ℓ_9	ℓ_{13}	ℓ_{15}	ℓ_{16}	ℓ_{17}
in point	P_{557}	P_{3281}	P_{3605}	P_{2281}	P_{1700}	P_{4192}	P_{1483}	P_{2716}

Line 6 intersects

Line	ℓ_0	ℓ_2	ℓ_4	ℓ_5	ℓ_7	ℓ_8	ℓ_{12}	ℓ_{14}	ℓ_{19}	ℓ_{20}
in point	P_4	P_{3057}	P_4	P_{3605}	P_{61}	P_4	P_4	P_{3391}	P_4	P_{333}

Line 7 intersects

Line	ℓ_1	ℓ_6	ℓ_8	ℓ_{11}	ℓ_{13}	ℓ_{15}	ℓ_{17}	ℓ_{18}
in point	P_{641}	P_{61}	P_{364}	P_{4153}	P_{3260}	P_{1796}	P_{3424}	P_{3702}

Line 8 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_6	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{12}	ℓ_{16}	ℓ_{19}
in point	P_4	P_{3121}	P_4	P_4	P_{364}	P_{94}	P_{2074}	P_4	P_{1875}	P_4

Line 9 intersects

Line	ℓ_1	ℓ_5	ℓ_8	ℓ_{12}	ℓ_{14}	ℓ_{17}	ℓ_{18}	ℓ_{20}
in point	P_{721}	P_{2281}	P_{94}	P_{413}	P_{1956}	P_{2374}	P_{1120}	P_{3019}

Line 10 intersects

Line	ℓ_0	ℓ_2	ℓ_8	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{17}	ℓ_{20}
in point	P_{551}	P_{2929}	P_{2074}	P_{3472}	P_{4107}	P_{2748}	P_{1188}	P_{2550}

Line 11 intersects

Line	ℓ_0	ℓ_3	ℓ_7	ℓ_{12}	ℓ_{14}	ℓ_{16}	ℓ_{17}	ℓ_{20}
in point	P_{558}	P_{3297}	P_{4153}	P_{3359}	P_{1782}	P_{844}	P_{4043}	P_{2004}

Line 12 intersects

Line	ℓ_0	ℓ_2	ℓ_4	ℓ_6	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{13}	ℓ_{15}	ℓ_{19}
in point	P_4	P_{2897}	P_4	P_4	P_4	P_{413}	P_{3359}	P_{173}	P_{3749}	P_4

Line 13 intersects

Line	ℓ_1	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{12}	ℓ_{14}	ℓ_{16}	ℓ_{19}
in point	P_{625}	P_{1700}	P_{3260}	P_{3472}	P_{173}	P_{4201}	P_{3830}	P_{524}

Line 14 intersects

Line	ℓ_3	ℓ_4	ℓ_6	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{13}	ℓ_{18}
in point	P_{3185}	P_{750}	P_{3391}	P_{1956}	P_{4107}	P_{1782}	P_{4201}	P_{956}

Line 15 intersects

Line	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{12}	ℓ_{18}	ℓ_{20}
in point	P_{3201}	P_{733}	P_{4192}	P_{1796}	P_{2748}	P_{3749}	P_{1387}	P_{2105}

Line 16 intersects

Line	ℓ_2	ℓ_4	ℓ_5	ℓ_8	ℓ_{11}	ℓ_{13}	ℓ_{18}	ℓ_{20}
in point	P_{3041}	P_{648}	P_{1483}	P_{1875}	P_{844}	P_{3830}	P_{2361}	P_{1184}

Line 17 intersects

Line	ℓ_2	ℓ_4	ℓ_5	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{19}
in point	P_{3025}	P_{631}	P_{2716}	P_{3424}	P_{2374}	P_{1188}	P_{4043}	P_{2298}

Line 18 intersects

Line	ℓ_0	ℓ_2	ℓ_7	ℓ_9	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{19}
in point	P_{552}	P_{2945}	P_{3702}	P_{1120}	P_{956}	P_{1387}	P_{2361}	P_{1811}

Line 19 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_6	ℓ_8	ℓ_{12}	ℓ_{13}	ℓ_{17}	ℓ_{18}	ℓ_{20}
in point	P_4	P_{3233}	P_4	P_4	P_4	P_4	P_{524}	P_{2298}	P_{1811}	P_{254}

Line 20 intersects

Line	ℓ_1	ℓ_6	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{15}	ℓ_{16}	ℓ_{19}
in point	P_{737}	P_{333}	P_{3019}	P_{2550}	P_{2004}	P_{2105}	P_{1184}	P_{254}

The surface has 353 points:
The points on the surface are:

0 : $P_0 = (1,0,0,0)$
1 : $P_1 = (0,1,0,0)$
2 : $P_4 = (1,1,1,1)$
3 : $P_5 = (1,1,0,0)$
4 : $P_{36} = (1,1,1,0)$
5 : $P_{60} = (9,2,1,0)$
6 : $P_{61} = (10,2,1,0)$
7 : $P_{94} = (11,4,1,0)$
8 : $P_{97} = (14,4,1,0)$
9 : $P_{165} = (2,9,1,0)$
10 : $P_{173} = (10,9,1,0)$
11 : $P_{181} = (2,10,1,0)$
12 : $P_{188} = (9,10,1,0)$
13 : $P_{199} = (4,11,1,0)$
14 : $P_{209} = (14,11,1,0)$
15 : $P_{247} = (4,14,1,0)$
16 : $P_{254} = (11,14,1,0)$
17 : $P_{275} = (1,0,0,1)$
18 : $P_{291} = (1,1,0,1)$
19 : $P_{327} = (5,3,0,1)$
20 : $P_{333} = (11,3,0,1)$
21 : $P_{362} = (8,5,0,1)$
22 : $P_{364} = (10,5,0,1)$
23 : $P_{375} = (5,6,0,1)$
24 : $P_{382} = (12,6,0,1)$
25 : $P_{399} = (13,7,0,1)$
26 : $P_{401} = (15,7,0,1)$
27 : $P_{413} = (11,8,0,1)$
28 : $P_{417} = (15,8,0,1)$
29 : $P_{446} = (12,10,0,1)$
30 : $P_{447} = (13,10,0,1)$
31 : $P_{456} = (6,11,0,1)$
32 : $P_{457} = (7,11,0,1)$
33 : $P_{469} = (3,12,0,1)$
34 : $P_{473} = (7,12,0,1)$
35 : $P_{488} = (6,13,0,1)$
36 : $P_{490} = (8,13,0,1)$
37 : $P_{517} = (3,15,0,1)$
38 : $P_{524} = (10,15,0,1)$
39 : $P_{530} = (0,0,1,1)$
40 : $P_{546} = (0,1,1,1)$
41 : $P_{547} = (2,1,1,1)$
42 : $P_{548} = (3,1,1,1)$
43 : $P_{549} = (4,1,1,1)$
44 : $P_{550} = (5,1,1,1)$
45 : $P_{551} = (6,1,1,1)$
46 : $P_{552} = (7,1,1,1)$
47 : $P_{553} = (8,1,1,1)$
48 : $P_{554} = (9,1,1,1)$
49 : $P_{555} = (10,1,1,1)$
50 : $P_{556} = (11,1,1,1)$
51 : $P_{557} = (12,1,1,1)$
52 : $P_{558} = (13,1,1,1)$
53 : $P_{559} = (14,1,1,1)$
54 : $P_{560} = (15,1,1,1)$
55 : $P_{561} = (0,2,1,1)$
56 : $P_{563} = (2,2,1,1)$
57 : $P_{577} = (0,3,1,1)$
58 : $P_{580} = (3,3,1,1)$
59 : $P_{593} = (0,4,1,1)$
60 : $P_{597} = (4,4,1,1)$
61 : $P_{609} = (0,5,1,1)$
62 : $P_{614} = (5,5,1,1)$
63 : $P_{625} = (0,6,1,1)$
64 : $P_{631} = (6,6,1,1)$
65 : $P_{641} = (0,7,1,1)$
66 : $P_{648} = (7,7,1,1)$
67 : $P_{657} = (0,8,1,1)$
68 : $P_{665} = (8,8,1,1)$
69 : $P_{673} = (0,9,1,1)$
70 : $P_{682} = (9,9,1,1)$
71 : $P_{689} = (0,10,1,1)$
72 : $P_{699} = (10,10,1,1)$
73 : $P_{705} = (0,11,1,1)$
74 : $P_{716} = (11,11,1,1)$
75 : $P_{721} = (0,12,1,1)$
76 : $P_{733} = (12,12,1,1)$
77 : $P_{737} = (0,13,1,1)$
78 : $P_{750} = (13,13,1,1)$
79 : $P_{753} = (0,14,1,1)$
80 : $P_{767} = (14,14,1,1)$
81 : $P_{769} = (0,15,1,1)$
82 : $P_{784} = (15,15,1,1)$
83 : $P_{789} = (4,0,2,1)$
84 : $P_{808} = (7,1,2,1)$
85 : $P_{830} = (13,2,2,1)$
86 : $P_{839} = (6,3,2,1)$
87 : $P_{844} = (11,3,2,1)$
88 : $P_{856} = (7,4,2,1)$
89 : $P_{857} = (8,4,2,1)$
90 : $P_{885} = (4,6,2,1)$
91 : $P_{891} = (10,6,2,1)$
92 : $P_{903} = (6,7,2,1)$
93 : $P_{911} = (14,7,2,1)$
94 : $P_{950} = (5,10,2,1)$
95 : $P_{956} = (11,10,2,1)$
96 : $P_{963} = (2,11,2,1)$
97 : $P_{975} = (14,11,2,1)$
98 : $P_{998} = (5,13,2,1)$
99 : $P_{1006} = (13,13,2,1)$
100 : $P_{1017} = (8,14,2,1)$
101 : $P_{1019} = (10,14,2,1)$
102 : $P_{1050} = (9,0,3,1)$
103 : $P_{1064} = (7,1,3,1)$
104 : $P_{1102} = (13,3,3,1)$
105 : $P_{1119} = (14,4,3,1)$
106 : $P_{1120} = (15,4,3,1)$
107 : $P_{1128} = (7,5,3,1)$
108 : $P_{1133} = (12,5,3,1)$
109 : $P_{1175} = (6,8,3,1)$
110 : $P_{1184} = (15,8,3,1)$
111 : $P_{1188} = (3,9,3,1)$
112 : $P_{1199} = (14,9,3,1)$
113 : $P_{1210} = (9,10,3,1)$
114 : $P_{1213} = (12,10,3,1)$
115 : $P_{1255} = (6,13,3,1)$
116 : $P_{1262} = (13,13,3,1)$
117 : $P_{1306} = (9,0,4,1)$
118 : $P_{1325} = (12,1,4,1)$
119 : $P_{1340} = (11,2,4,1)$
120 : $P_{1344} = (15,2,4,1)$
121 : $P_{1368} = (7,4,4,1)$
122 : $P_{1387} = (10,5,4,1)$
123 : $P_{1390} = (13,5,4,1)$
124 : $P_{1416} = (7,7,4,1)$
125 : $P_{1417} = (8,7,4,1)$
126 : $P_{1453} = (12,9,4,1)$
127 : $P_{1456} = (15,9,4,1)$
128 : $P_{1459} = (2,10,4,1)$
129 : $P_{1461} = (4,10,4,1)$
130 : $P_{1481} = (8,11,4,1)$
131 : $P_{1483} = (10,11,4,1)$
132 : $P_{1491} = (2,12,4,1)$
133 : $P_{1502} = (13,12,4,1)$
134 : $P_{1514} = (9,13,4,1)$

135 : $P_{1516} = (11, 13, 4, 1)$
136 : $P_{1567} = (14, 0, 5, 1)$
137 : $P_{1581} = (12, 1, 5, 1)$
138 : $P_{1640} = (7, 5, 5, 1)$
139 : $P_{1672} = (7, 7, 5, 1)$
140 : $P_{1678} = (13, 7, 5, 1)$
141 : $P_{1687} = (6, 8, 5, 1)$
142 : $P_{1693} = (12, 8, 5, 1)$
143 : $P_{1699} = (2, 9, 5, 1)$
144 : $P_{1700} = (3, 9, 5, 1)$
145 : $P_{1735} = (6, 11, 5, 1)$
146 : $P_{1743} = (14, 11, 5, 1)$
147 : $P_{1779} = (2, 14, 5, 1)$
148 : $P_{1782} = (5, 14, 5, 1)$
149 : $P_{1796} = (3, 15, 5, 1)$
150 : $P_{1806} = (13, 15, 5, 1)$
151 : $P_{1811} = (2, 0, 6, 1)$
152 : $P_{1835} = (10, 1, 6, 1)$
153 : $P_{1875} = (2, 4, 6, 1)$
154 : $P_{1880} = (7, 4, 6, 1)$
155 : $P_{1896} = (7, 5, 6, 1)$
156 : $P_{1903} = (14, 5, 6, 1)$
157 : $P_{1916} = (11, 6, 6, 1)$
158 : $P_{1938} = (1, 8, 6, 1)$
159 : $P_{1943} = (6, 8, 6, 1)$
160 : $P_{1956} = (3, 9, 6, 1)$
161 : $P_{1957} = (4, 9, 6, 1)$
162 : $P_{1989} = (4, 11, 6, 1)$
163 : $P_{1996} = (11, 11, 6, 1)$
164 : $P_{2004} = (3, 12, 6, 1)$
165 : $P_{2006} = (5, 12, 6, 1)$
166 : $P_{2027} = (10, 13, 6, 1)$
167 : $P_{2031} = (14, 13, 6, 1)$
168 : $P_{2050} = (1, 15, 6, 1)$
169 : $P_{2054} = (5, 15, 6, 1)$
170 : $P_{2074} = (9, 0, 7, 1)$
171 : $P_{2091} = (10, 1, 7, 1)$
172 : $P_{2105} = (8, 2, 7, 1)$
173 : $P_{2111} = (14, 2, 7, 1)$
174 : $P_{2114} = (1, 3, 7, 1)$
175 : $P_{2120} = (7, 3, 7, 1)$
176 : $P_{2146} = (1, 5, 7, 1)$
177 : $P_{2160} = (15, 5, 7, 1)$
178 : $P_{2188} = (11, 7, 7, 1)$
179 : $P_{2252} = (11, 11, 7, 1)$
180 : $P_{2255} = (14, 11, 7, 1)$
181 : $P_{2261} = (4, 12, 7, 1)$
182 : $P_{2267} = (10, 12, 7, 1)$
183 : $P_{2281} = (8, 13, 7, 1)$
184 : $P_{2288} = (15, 13, 7, 1)$
185 : $P_{2295} = (6, 14, 7, 1)$
186 : $P_{2298} = (9, 14, 7, 1)$
187 : $P_{2309} = (4, 15, 7, 1)$
188 : $P_{2311} = (6, 15, 7, 1)$
189 : $P_{2323} = (2, 0, 8, 1)$
190 : $P_{2343} = (6, 1, 8, 1)$
191 : $P_{2357} = (4, 2, 8, 1)$
192 : $P_{2361} = (8, 2, 8, 1)$
193 : $P_{2374} = (5, 3, 8, 1)$
194 : $P_{2376} = (7, 3, 8, 1)$
195 : $P_{2461} = (12, 8, 8, 1)$
196 : $P_{2483} = (2, 10, 8, 1)$
197 : $P_{2494} = (13, 10, 8, 1)$
198 : $P_{2520} = (7, 12, 8, 1)$
199 : $P_{2525} = (12, 12, 8, 1)$
200 : $P_{2549} = (4, 14, 8, 1)$
201 : $P_{2550} = (5, 14, 8, 1)$
202 : $P_{2567} = (6, 15, 8, 1)$
203 : $P_{2574} = (13, 15, 8, 1)$
204 : $P_{2591} = (14, 0, 9, 1)$
205 : $P_{2599} = (6, 1, 9, 1)$
206 : $P_{2644} = (3, 4, 9, 1)$
207 : $P_{2651} = (10, 4, 9, 1)$
208 : $P_{2677} = (4, 6, 9, 1)$
209 : $P_{2680} = (7, 6, 9, 1)$
210 : $P_{2699} = (10, 7, 9, 1)$
211 : $P_{2703} = (14, 7, 9, 1)$
212 : $P_{2712} = (7, 8, 9, 1)$
213 : $P_{2716} = (11, 8, 9, 1)$
214 : $P_{2733} = (12, 9, 9, 1)$
215 : $P_{2748} = (11, 10, 9, 1)$
216 : $P_{2752} = (15, 10, 9, 1)$
217 : $P_{2757} = (4, 11, 9, 1)$
218 : $P_{2762} = (9, 11, 9, 1)$
219 : $P_{2781} = (12, 12, 9, 1)$
220 : $P_{2784} = (15, 12, 9, 1)$
221 : $P_{2804} = (3, 14, 9, 1)$
222 : $P_{2807} = (6, 14, 9, 1)$
223 : $P_{2833} = (0, 0, 10, 1)$
224 : $P_{2849} = (0, 1, 10, 1)$
225 : $P_{2865} = (0, 2, 10, 1)$
226 : $P_{2872} = (7, 2, 10, 1)$
227 : $P_{2881} = (0, 3, 10, 1)$
228 : $P_{2882} = (1, 3, 10, 1)$
229 : $P_{2897} = (0, 4, 10, 1)$
230 : $P_{2899} = (2, 4, 10, 1)$
231 : $P_{2913} = (0, 5, 10, 1)$
232 : $P_{2919} = (6, 5, 10, 1)$
233 : $P_{2929} = (0, 6, 10, 1)$
234 : $P_{2940} = (11, 6, 10, 1)$
235 : $P_{2945} = (0, 7, 10, 1)$
236 : $P_{2956} = (11, 7, 10, 1)$
237 : $P_{2961} = (0, 8, 10, 1)$
238 : $P_{2962} = (1, 8, 10, 1)$
239 : $P_{2977} = (0, 9, 10, 1)$
240 : $P_{2983} = (6, 9, 10, 1)$
241 : $P_{2993} = (0, 10, 10, 1)$
242 : $P_{3009} = (0, 11, 10, 1)$
243 : $P_{3019} = (10, 11, 10, 1)$
244 : $P_{3025} = (0, 12, 10, 1)$
245 : $P_{3027} = (2, 12, 10, 1)$
246 : $P_{3041} = (0, 13, 10, 1)$
247 : $P_{3050} = (9, 13, 10, 1)$
248 : $P_{3057} = (0, 14, 10, 1)$
249 : $P_{3066} = (9, 14, 10, 1)$
250 : $P_{3073} = (0, 15, 10, 1)$
251 : $P_{3080} = (7, 15, 10, 1)$
252 : $P_{3089} = (0, 0, 11, 1)$
253 : $P_{3105} = (0, 1, 11, 1)$
254 : $P_{3121} = (0, 2, 11, 1)$
255 : $P_{3135} = (14, 2, 11, 1)$
256 : $P_{3137} = (0, 3, 11, 1)$
257 : $P_{3149} = (12, 3, 11, 1)$
258 : $P_{3153} = (0, 4, 11, 1)$
259 : $P_{3165} = (12, 4, 11, 1)$
260 : $P_{3169} = (0, 5, 11, 1)$
261 : $P_{3170} = (1, 5, 11, 1)$
262 : $P_{3185} = (0, 6, 11, 1)$
263 : $P_{3189} = (4, 6, 11, 1)$
264 : $P_{3201} = (0, 7, 11, 1)$
265 : $P_{3215} = (14, 7, 11, 1)$
266 : $P_{3217} = (0, 8, 11, 1)$
267 : $P_{3230} = (13, 8, 11, 1)$
268 : $P_{3233} = (0, 9, 11, 1)$
269 : $P_{3237} = (4, 9, 11, 1)$
270 : $P_{3249} = (0, 10, 11, 1)$
271 : $P_{3260} = (11, 10, 11, 1)$
272 : $P_{3265} = (0, 11, 11, 1)$
273 : $P_{3281} = (0, 12, 11, 1)$
274 : $P_{3291} = (10, 12, 11, 1)$
275 : $P_{3297} = (0, 13, 11, 1)$
276 : $P_{3307} = (10, 13, 11, 1)$
277 : $P_{3313} = (0, 14, 11, 1)$
278 : $P_{3326} = (13, 14, 11, 1)$
279 : $P_{3329} = (0, 15, 11, 1)$
280 : $P_{3330} = (1, 15, 11, 1)$
281 : $P_{3359} = (14, 0, 12, 1)$
282 : $P_{3372} = (11, 1, 12, 1)$
283 : $P_{3390} = (13, 2, 12, 1)$
284 : $P_{3391} = (14, 2, 12, 1)$
285 : $P_{3402} = (9, 3, 12, 1)$
286 : $P_{3406} = (13, 3, 12, 1)$
287 : $P_{3411} = (2, 4, 12, 1)$
288 : $P_{3424} = (15, 4, 12, 1)$
289 : $P_{3426} = (1, 5, 12, 1)$
290 : $P_{3437} = (12, 5, 12, 1)$
291 : $P_{3450} = (9, 6, 12, 1)$
292 : $P_{3452} = (11, 6, 12, 1)$
293 : $P_{3460} = (3, 7, 12, 1)$
294 : $P_{3472} = (15, 7, 12, 1)$
295 : $P_{3474} = (1, 8, 12, 1)$
296 : $P_{3476} = (3, 8, 12, 1)$

297 : $P_{3507} = (2, 10, 12, 1)$
298 : $P_{3515} = (10, 10, 12, 1)$
299 : $P_{3547} = (10, 12, 12, 1)$
300 : $P_{3605} = (4, 0, 13, 1)$
301 : $P_{3628} = (11, 1, 13, 1)$
302 : $P_{3650} = (1, 3, 13, 1)$
303 : $P_{3657} = (8, 3, 13, 1)$
304 : $P_{3702} = (5, 6, 13, 1)$
305 : $P_{3705} = (8, 6, 13, 1)$
306 : $P_{3715} = (2, 7, 13, 1)$
307 : $P_{3724} = (11, 7, 13, 1)$
308 : $P_{3731} = (2, 8, 13, 1)$
309 : $P_{3741} = (12, 8, 13, 1)$
310 : $P_{3749} = (4, 9, 13, 1)$
311 : $P_{3757} = (12, 9, 13, 1)$
312 : $P_{3770} = (9, 10, 13, 1)$
313 : $P_{3771} = (10, 10, 13, 1)$
314 : $P_{3819} = (10, 13, 13, 1)$
315 : $P_{3830} = (5, 14, 13, 1)$
316 : $P_{3834} = (9, 14, 13, 1)$
317 : $P_{3842} = (1, 15, 13, 1)$
318 : $P_{3854} = (13, 15, 13, 1)$
319 : $P_{3859} = (2, 0, 14, 1)$
320 : $P_{3886} = (13, 1, 14, 1)$
321 : $P_{3894} = (5, 2, 14, 1)$
322 : $P_{3902} = (13, 2, 14, 1)$
323 : $P_{3956} = (3, 6, 14, 1)$
324 : $P_{3959} = (6, 6, 14, 1)$
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326 : $P_{4012} = (11, 9, 14, 1)$
327 : $P_{4026} = (9, 10, 14, 1)$
328 : $P_{4031} = (14, 10, 14, 1)$
329 : $P_{4036} = (3, 11, 14, 1)$
330 : $P_{4043} = (10, 11, 14, 1)$
331 : $P_{4051} = (2, 12, 14, 1)$
332 : $P_{4060} = (11, 12, 14, 1)$
333 : $P_{4074} = (9, 13, 14, 1)$
334 : $P_{4077} = (12, 13, 14, 1)$
335 : $P_{4087} = (6, 14, 14, 1)$
336 : $P_{4107} = (10, 15, 14, 1)$
337 : $P_{4109} = (12, 15, 14, 1)$
338 : $P_{4117} = (4, 0, 15, 1)$
339 : $P_{4142} = (13, 1, 15, 1)$
340 : $P_{4153} = (8, 2, 15, 1)$
341 : $P_{4154} = (9, 2, 15, 1)$
342 : $P_{4168} = (7, 3, 15, 1)$
343 : $P_{4174} = (13, 3, 15, 1)$
344 : $P_{4186} = (9, 4, 15, 1)$
345 : $P_{4192} = (15, 4, 15, 1)$
346 : $P_{4201} = (8, 5, 15, 1)$
347 : $P_{4205} = (12, 5, 15, 1)$
348 : $P_{4215} = (6, 6, 15, 1)$
349 : $P_{4221} = (12, 6, 15, 1)$
350 : $P_{4293} = (4, 11, 15, 1)$
351 : $P_{4296} = (7, 11, 15, 1)$
352 : $P_{4359} = (6, 15, 15, 1)$