Rank-65634 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 1, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is -2111764410

General information

Number of lines	15
Number of points	1185
Number of singular points	0
Number of Eckardt points	0
Number of double points	45
Number of single points	405
Number of points off lines	735
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^{15}
Type of lines on points	2^{45}, 1^{405}, 0^{735}

Singular Points

The surface has 0 singular points:

The 15 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & \eta^{20} & \eta^{16} \\ 0 & 1 & \eta^{29} & \eta^{7} \end{bmatrix}_{926581} = \begin{bmatrix} 1 & 0 & 12 & 27 \\ 0 & 1 & 9 & 20 \end{bmatrix}_{926581} = \mathbf{Pl}(15, 13, 16, 11, 3, 1)_{151982}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & \eta^{6} & \eta^{15} \\ 0 & 1 & \eta^{21} & \eta^{6} \end{bmatrix}_{1059458} = \begin{bmatrix} 1 & 0 & 10 & 31 \\ 0 & 1 & 24 & 10 \end{bmatrix}_{1059458} = \mathbf{Pl}(17, 24, 21, 26, 1, 1)_{91999}$$

$$\ell_2 = \left[\begin{array}{cccc} 1 & 0 & \eta^{13} & \eta^{7} \\ 0 & 1 & \eta^{21} & \eta^{6} \end{array}\right]_{706420} = \left[\begin{array}{cccc} 1 & 0 & 28 & 20 \\ 0 & 1 & 24 & 10 \end{array}\right]_{706420} = \mathbf{Pl}(26,21,10,25,30,1)_{1030998}$$

$$\ell_3 = \left[\begin{array}{cccc} 1 & 0 & \eta^{26} & \eta^{14} \\ 0 & 1 & \eta^{11} & \eta^{12} \end{array}\right]_{1005662} = \left[\begin{array}{cccc} 1 & 0 & 23 & 29 \\ 0 & 1 & 7 & 14 \end{array}\right]_{1005662} = \mathbf{Pl}(3,28,14,6,19,1)_{673886}$$

$$\ell_4 = \left[\begin{array}{cccc} 1 & 0 & \eta^{21} & \eta^{28} \\ 0 & 1 & \eta^{22} & \eta^{24} \end{array}\right]_{770477} = \left[\begin{array}{cccc} 1 & 0 & 24 & 22 \\ 0 & 1 & 21 & 30 \end{array}\right]_{770477} = \mathbf{Pl}(5,23,30,20,8,1)_{328734}$$

$$\ell_5 = \left[\begin{array}{cccc} 1 & 0 & \eta^{22} & \eta^{19} \\ 0 & 1 & \eta^{26} & \eta^{3} \end{array}\right]_{225420} = \left[\begin{array}{cccc} 1 & 0 & 21 & 6 \\ 0 & 1 & 23 & 8 \end{array}\right]_{225420} = \mathbf{Pl}(12,7,8,22,14,1)_{504914}$$

$$\ell_6 = \left[\begin{array}{cccc} 1 & 0 & \eta^{12} & \eta^{30} \\ 0 & 1 & \eta^{11} & \eta^{12} \end{array}\right]_{624085} = \left[\begin{array}{cccc} 1 & 0 & 14 & 18 \\ 0 & 1 & 7 & 14 \end{array}\right]_{624085} = \mathbf{Pl}(12,7,28,3,1,1)_{98163}$$

$$\ell_7 = \left[\begin{array}{cccc} 1 & 0 & \eta^{9} & \eta \\ 0 & 1 & \eta^{27} & \eta^{14} \end{array}\right]_{96069} = \left[\begin{array}{cccc} 1 & 0 & 26 & 2 \\ 0 & 1 & 11 & 29 \end{array}\right]_{96069} = \mathbf{Pl}(31,27,13,15,5,1)_{214742}$$

$$\ell_8 = \left[\begin{array}{cccc} 1 & 0 & \eta^{17} & \eta^{27} \\ 0 & 1 & \eta^{13} & \eta^{17} \end{array}\right]_{392783} = \left[\begin{array}{cccc} 1 & 0 & 19 & 11 \\ 0 & 1 & 28 & 19 \end{array}\right]_{392783} = \mathbf{Pl}(3,28,24,17,1,1)_{94155}$$

$$\ell_9 = \left[\begin{array}{cccc} 1 & 0 & \eta^{5} & \eta^{4} \\ 0 & 1 & \eta^{15} & \eta^{25} \end{array}\right]_{547300} = \left[\begin{array}{cccc} 1 & 0 & 5 & 16 \\ 0 & 1 & 31 & 25 \end{array}\right]_{547300} = \mathbf{Pl}(9,4,2,18,12,1)_{433859}$$

$$\ell_{10} = \left[\begin{array}{cccc} 1 & 0 & \eta^{3} & \eta^{23} \\ 0 & 1 & \eta^{26} & \eta^{3} \end{array}\right]_{516095} = \left[\begin{array}{cccc} 1 & 0 & 8 & 15 \\ 0 & 1 & 23 & 8 \end{array}\right]_{516095} = \mathbf{Pl}(5,23,7,12,1,1)_{78471}$$

$$\ell_{11} = \left[\begin{array}{cccc} 1 & 0 & \eta^{10} & \eta^{8} \\ 0 & 1 & \eta^{30} & \eta^{19} \end{array}\right]_{457891} = \left[\begin{array}{cccc} 1 & 0 & 17 & 13 \\ 0 & 1 & 18 & 6 \end{array}\right]_{457891} = \mathbf{Pl}(11,16,4,9,26,1)_{894459}$$

$$\ell_{12} = \left[\begin{array}{cccc} 1 & 0 & \eta^{18} & \eta^{2} \\ 0 & 1 & \eta^{23} & \eta^{28} \end{array}\right]_{139186} = \left[\begin{array}{cccc} 1 & 0 & 3 & 4 \\ 0 & 1 & 15 & 22 \end{array}\right]_{139186} = \mathbf{Pl}(18,2,27,31,17,1)_{620953}$$

$$\ell_{13} = \left[\begin{array}{cccc} 1 & 0 & \eta^{24} & \eta^{29} \\ 0 & 1 & \eta^{22} & \eta^{24} \end{array}\right]_{337107} = \left[\begin{array}{cccc} 1 & 0 & 30 & 9 \\ 0 & 1 & 21 & 30 \end{array}\right]_{337107} = \mathbf{Pl}(26,21,23,5,1,1)_{93186}$$

$$\ell_{14} = \left[\begin{array}{cccc} 1 & 0 & \eta^{11} & \eta^{25} \\ 0 & 1 & \eta^{13} & \eta^{17} \end{array}\right]_{853635} = \left[\begin{array}{cccc} 1 & 0 & 7 & 25 \\ 0 & 1 & 28 & 19 \end{array}\right]_{853635} = \mathbf{Pl}(17,24,19,29,10,1)_{384360}$$

Rank of lines: (926581, 1059458, 706420, 1005662, 770477, 225420, 624085, 96069, 392783, 547300, 516095, 457891, 139186, 337107, 853635)
Rank of points on Klein quadric: (151982, 91999, 1030998, 673886, 328734, 504914, 98163, 214742, 94155, 433859, 78471, 894459, 620953, 93186, 384360)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 45 Double points:
The double points on the surface are:

$P_{244} = (17,6,1,0) = \ell_0 \cap \ell_1$
$P_{12841} = (8,16,11,1) = \ell_0 \cap \ell_5$
$P_{8076} = (11,27,6,1) = \ell_0 \cap \ell_6$
$P_{6750} = (29,17,5,1) = \ell_0 \cap \ell_7$
$P_{29718} = (21,31,27,1) = \ell_0 \cap \ell_8$
$P_{4309} = (20,5,3,1) = \ell_0 \cap \ell_{11}$
$P_{33601} = (0,25,31,1) = \ell_1 \cap \ell_2$
$P_{19254} = (21,24,17,1) = \ell_1 \cap \ell_3$

$P_{18405} = (4, 30, 16, 1) = \ell_1 \cap \ell_4$
$P_{27082} = (9, 13, 25, 1) = \ell_1 \cap \ell_{11}$
$P_{5464} = (23, 9, 4, 1) = \ell_1 \cap \ell_{12}$
$P_{12603} = (26, 8, 11, 1) = \ell_2 \cap \ell_4$
$P_{16843} = (10, 13, 15, 1) = \ell_2 \cap \ell_7$
$P_{3452} = (27, 10, 2, 1) = \ell_2 \cap \ell_8$
$P_{6920} = (7, 23, 5, 1) = \ell_2 \cap \ell_{10}$
$P_{20466} = (17, 30, 18, 1) = \ell_2 \cap \ell_{14}$
$P_{10893} = (12, 19, 9, 1) = \ell_3 \cap \ell_5$
$P_{19681} = (0, 6, 18, 1) = \ell_3 \cap \ell_6$
$P_{5603} = (2, 14, 4, 1) = \ell_3 \cap \ell_{10}$
$P_{33679} = (14, 27, 31, 1) = \ell_3 \cap \ell_{12}$
$P_{16740} = (3, 10, 15, 1) = \ell_3 \cap \ell_{14}$
$P_{33254} = (5, 14, 31, 1) = \ell_4 \cap \ell_5$
$P_{13597} = (28, 7, 12, 1) = \ell_4 \cap \ell_6$
$P_{19583} = (30, 2, 18, 1) = \ell_4 \cap \ell_9$
$P_{10913} = (0, 20, 9, 1) = \ell_4 \cap \ell_{13}$
$P_{5049} = (24, 28, 3, 1) = \ell_5 \cap \ell_8$
$P_{17121} = (0, 22, 15, 1) = \ell_5 \cap \ell_{10}$
$P_{28974} = (13, 8, 27, 1) = \ell_5 \cap \ell_{13}$
$P_{687} = (12, 20, 1, 0) = \ell_6 \cap \ell_7$
$P_{17817} = (24, 11, 16, 1) = \ell_6 \cap \ell_9$
$P_{14993} = (16, 19, 13, 1) = \ell_6 \cap \ell_{14}$
$P_{3709} = (28, 18, 2, 1) = \ell_7 \cap \ell_{10}$
$P_{18871} = (22, 12, 17, 1) = \ell_7 \cap \ell_{12}$
$P_{21616} = (15, 2, 20, 1) = \ell_7 \cap \ell_{13}$
$P_{742} = (3, 22, 1, 0) = \ell_8 \cap \ell_9$
$P_{30912} = (31, 4, 29, 1) = \ell_8 \cap \ell_{12}$
$P_{13249} = (0, 29, 11, 1) = \ell_8 \cap \ell_{14}$
$P_{24115} = (18, 16, 22, 1) = \ell_9 \cap \ell_{10}$
$P_{27783} = (6, 3, 26, 1) = \ell_9 \cap \ell_{11}$
$P_{14202} = (25, 26, 12, 1) = \ell_9 \cap \ell_{12}$
$P_{840} = (5, 25, 1, 0) = \ell_{10} \cap \ell_{11}$
$P_{14856} = (7, 15, 13, 1) = \ell_{11} \cap \ell_{13}$
$P_{10420} = (19, 4, 9, 1) = \ell_{11} \cap \ell_{14}$
$P_{989} = (26, 29, 1, 0) = \ell_{12} \cap \ell_{13}$
$P_{28376} = (23, 21, 26, 1) = \ell_{13} \cap \ell_{14}$

Single Points

The surface has 405 single points:
The single points on the surface are:

0 : $P_{295} = (4, 8, 1, 0)$ lies on line ℓ_2
1 : $P_{371} = (16, 10, 1, 0)$ lies on line ℓ_3
2 : $P_{496} = (13, 14, 1, 0)$ lies on line ℓ_4
3 : $P_{645} = (2, 19, 1, 0)$ lies on line ℓ_5
4 : $P_{1022} = (27, 30, 1, 0)$ lies on line ℓ_{14}
5 : $P_{1162} = (8, 3, 0, 1)$ lies on line ℓ_3
6 : $P_{1183} = (29, 3, 0, 1)$ lies on line ℓ_8
7 : $P_{1228} = (10, 5, 0, 1)$ lies on line ℓ_4
8 : $P_{1240} = (22, 5, 0, 1)$ lies on line ℓ_{10}
9 : $P_{1359} = (13, 9, 0, 1)$ lies on line ℓ_9
10 : $P_{1437} = (27, 11, 0, 1)$ lies on line ℓ_{11}
11 : $P_{1448} = (6, 12, 0, 1)$ lies on line ℓ_6
12 : $P_{1472} = (30, 12, 0, 1)$ lies on line ℓ_5
13 : $P_{1540} = (2, 15, 0, 1)$ lies on line ℓ_0
14 : $P_{1616} = (14, 17, 0, 1)$ lies on line ℓ_{14}
15 : $P_{1627} = (25, 17, 0, 1)$ lies on line ℓ_1
16 : $P_{1650} = (16, 18, 0, 1)$ lies on line ℓ_{12}
17 : $P_{1909} = (19, 26, 0, 1)$ lies on line ℓ_2
18 : $P_{1910} = (20, 26, 0, 1)$ lies on line ℓ_{13}
19 : $P_{2054} = (4, 31, 0, 1)$ lies on line ℓ_7
20 : $P_{2319} = (14, 7, 1, 1)$ lies on line ℓ_{13}
21 : $P_{2388} = (19, 9, 1, 1)$ lies on line ℓ_0
22 : $P_{2393} = (24, 9, 1, 1)$ lies on line ℓ_3
23 : $P_{2440} = (7, 11, 1, 1)$ lies on line ℓ_4
24 : $P_{2441} = (8, 11, 1, 1)$ lies on line ℓ_7
25 : $P_{2571} = (10, 15, 1, 1)$ lies on line ℓ_{12}
26 : $P_{2582} = (21, 15, 1, 1)$ lies on line ℓ_{14}
27 : $P_{2680} = (23, 18, 1, 1)$ lies on line ℓ_2
28 : $P_{2687} = (30, 18, 1, 1)$ lies on line ℓ_{11}
29 : $P_{2783} = (30, 21, 1, 1)$ lies on line ℓ_8
30 : $P_{2825} = (8, 23, 1, 1)$ lies on line ℓ_1
31 : $P_{2859} = (10, 24, 1, 1)$ lies on line ℓ_6
32 : $P_{2996} = (19, 28, 1, 1)$ lies on line ℓ_{10}
33 : $P_{3087} = (14, 31, 1, 1)$ lies on line ℓ_9
34 : $P_{3101} = (28, 31, 1, 1)$ lies on line ℓ_5
35 : $P_{3116} = (11, 0, 2, 1)$ lies on line ℓ_9
36 : $P_{3167} = (30, 1, 2, 1)$ lies on line ℓ_6
37 : $P_{3206} = (5, 3, 2, 1)$ lies on line ℓ_0
38 : $P_{3270} = (5, 5, 2, 1)$ lies on line ℓ_{13}
39 : $P_{3390} = (29, 8, 2, 1)$ lies on line ℓ_{14}
40 : $P_{3522} = (1, 13, 2, 1)$ lies on line ℓ_{12}
41 : $P_{3611} = (26, 15, 2, 1)$ lies on line ℓ_5
42 : $P_{3854} = (13, 23, 2, 1)$ lies on line ℓ_3
43 : $P_{3921} = (16, 25, 2, 1)$ lies on line ℓ_4
44 : $P_{4018} = (17, 28, 2, 1)$ lies on line ℓ_{11}
45 : $P_{4063} = (30, 29, 2, 1)$ lies on line ℓ_1
46 : $P_{4224} = (31, 2, 3, 1)$ lies on line ℓ_2
47 : $P_{4337} = (16, 6, 3, 1)$ lies on line ℓ_7
48 : $P_{4506} = (25, 11, 3, 1)$ lies on line ℓ_{10}
49 : $P_{4668} = (27, 16, 3, 1)$ lies on line ℓ_{12}
50 : $P_{4819} = (18, 21, 3, 1)$ lies on line ℓ_6
51 : $P_{4839} = (6, 22, 3, 1)$ lies on line ℓ_{14}
52 : $P_{4841} = (8, 22, 3, 1)$ lies on line ℓ_9
53 : $P_{4894} = (29, 23, 3, 1)$ lies on line ℓ_4
54 : $P_{4928} = (31, 24, 3, 1)$ lies on line ℓ_{13}
55 : $P_{5008} = (15, 27, 3, 1)$ lies on line ℓ_1

56 : $P_{5086} = (29, 29, 3, 1)$ lies on line ℓ_3
57 : $P_{5168} = (15, 0, 4, 1)$ lies on line ℓ_{11}
58 : $P_{5204} = (19, 1, 4, 1)$ lies on line ℓ_{13}
59 : $P_{5330} = (17, 5, 4, 1)$ lies on line ℓ_7
60 : $P_{5358} = (13, 6, 4, 1)$ lies on line ℓ_{14}
61 : $P_{5495} = (22, 10, 4, 1)$ lies on line ℓ_5
62 : $P_{5714} = (17, 17, 4, 1)$ lies on line ℓ_8
63 : $P_{5876} = (19, 22, 4, 1)$ lies on line ℓ_6
64 : $P_{5901} = (12, 23, 4, 1)$ lies on line ℓ_0
65 : $P_{5948} = (27, 24, 4, 1)$ lies on line ℓ_4
66 : $P_{6018} = (1, 27, 4, 1)$ lies on line ℓ_9
67 : $P_{6148} = (3, 31, 4, 1)$ lies on line ℓ_2
68 : $P_{6272} = (31, 2, 5, 1)$ lies on line ℓ_6
69 : $P_{6323} = (18, 4, 5, 1)$ lies on line ℓ_3
70 : $P_{6419} = (18, 7, 5, 1)$ lies on line ℓ_8
71 : $P_{6595} = (2, 13, 5, 1)$ lies on line ℓ_9
72 : $P_{6663} = (6, 15, 5, 1)$ lies on line ℓ_1
73 : $P_{6830} = (13, 20, 5, 1)$ lies on line ℓ_{12}
74 : $P_{6903} = (22, 22, 5, 1)$ lies on line ℓ_4
75 : $P_{6967} = (22, 24, 5, 1)$ lies on line ℓ_{14}
76 : $P_{6987} = (10, 25, 5, 1)$ lies on line ℓ_{11}
77 : $P_{6997} = (20, 25, 5, 1)$ lies on line ℓ_5
78 : $P_{7082} = (9, 28, 5, 1)$ lies on line ℓ_{13}
79 : $P_{7330} = (1, 4, 6, 1)$ lies on line ℓ_4
80 : $P_{7377} = (16, 5, 6, 1)$ lies on line ℓ_1
81 : $P_{7466} = (9, 8, 6, 1)$ lies on line ℓ_7
82 : $P_{7507} = (18, 9, 6, 1)$ lies on line ℓ_5
83 : $P_{7692} = (11, 15, 6, 1)$ lies on line ℓ_2
84 : $P_{7784} = (7, 18, 6, 1)$ lies on line ℓ_9
85 : $P_{7911} = (6, 22, 6, 1)$ lies on line ℓ_{12}
86 : $P_{7942} = (5, 23, 6, 1)$ lies on line ℓ_{11}
87 : $P_{7992} = (23, 24, 6, 1)$ lies on line ℓ_8
88 : $P_{8009} = (8, 25, 6, 1)$ lies on line ℓ_{10}
89 : $P_{8040} = (7, 26, 6, 1)$ lies on line ℓ_3
90 : $P_{8163} = (2, 30, 6, 1)$ lies on line ℓ_{13}
91 : $P_{8223} = (30, 31, 6, 1)$ lies on line ℓ_{14}
92 : $P_{8238} = (13, 0, 7, 1)$ lies on line ℓ_{10}
93 : $P_{8262} = (5, 1, 7, 1)$ lies on line ℓ_{14}
94 : $P_{8322} = (1, 3, 7, 1)$ lies on line ℓ_1
95 : $P_{8345} = (24, 3, 7, 1)$ lies on line ℓ_{13}
96 : $P_{8357} = (4, 4, 7, 1)$ lies on line ℓ_9
97 : $P_{8464} = (15, 7, 7, 1)$ lies on line ℓ_2
98 : $P_{8557} = (12, 10, 7, 1)$ lies on line ℓ_4
99 : $P_{8605} = (28, 11, 7, 1)$ lies on line ℓ_{12}
100 : $P_{8673} = (0, 14, 7, 1)$ lies on line ℓ_{11}
101 : $P_{8693} = (20, 14, 7, 1)$ lies on line ℓ_8
102 : $P_{8712} = (7, 15, 7, 1)$ lies on line ℓ_6
103 : $P_{8760} = (23, 16, 7, 1)$ lies on line ℓ_3
104 : $P_{9073} = (16, 26, 7, 1)$ lies on line ℓ_5
105 : $P_{9126} = (5, 28, 7, 1)$ lies on line ℓ_7
106 : $P_{9179} = (26, 29, 7, 1)$ lies on line ℓ_0
107 : $P_{9263} = (14, 0, 8, 1)$ lies on line ℓ_5
108 : $P_{9311} = (30, 1, 8, 1)$ lies on line ℓ_{12}
109 : $P_{9318} = (5, 2, 8, 1)$ lies on line ℓ_8
110 : $P_{9382} = (5, 4, 8, 1)$ lies on line ℓ_1
111 : $P_{9526} = (21, 8, 8, 1)$ lies on line ℓ_9
112 : $P_{9563} = (26, 9, 8, 1)$ lies on line ℓ_{13}
113 : $P_{9708} = (11, 14, 8, 1)$ lies on line ℓ_7
114 : $P_{9783} = (22, 16, 8, 1)$ lies on line ℓ_2
115 : $P_{9884} = (27, 19, 8, 1)$ lies on line ℓ_{10}
116 : $P_{10077} = (28, 25, 8, 1)$ lies on line ℓ_3
117 : $P_{10089} = (8, 26, 8, 1)$ lies on line ℓ_{14}
118 : $P_{10094} = (13, 26, 8, 1)$ lies on line ℓ_4
119 : $P_{10111} = (30, 26, 8, 1)$ lies on line ℓ_0
120 : $P_{10186} = (9, 29, 8, 1)$ lies on line ℓ_6
121 : $P_{10199} = (22, 29, 8, 1)$ lies on line ℓ_{11}
122 : $P_{10357} = (20, 2, 9, 1)$ lies on line ℓ_1
123 : $P_{10566} = (5, 9, 9, 1)$ lies on line ℓ_6
124 : $P_{10623} = (30, 10, 9, 1)$ lies on line ℓ_{10}
125 : $P_{10919} = (6, 20, 9, 1)$ lies on line ℓ_8
126 : $P_{11059} = (18, 24, 9, 1)$ lies on line ℓ_2
127 : $P_{11112} = (7, 26, 9, 1)$ lies on line ℓ_7
128 : $P_{11173} = (4, 28, 9, 1)$ lies on line ℓ_{12}
129 : $P_{11184} = (15, 28, 9, 1)$ lies on line ℓ_0
130 : $P_{11255} = (22, 30, 9, 1)$ lies on line ℓ_9
131 : $P_{11327} = (30, 0, 10, 1)$ lies on line ℓ_2
132 : $P_{11348} = (19, 1, 10, 1)$ lies on line ℓ_9
133 : $P_{11403} = (10, 3, 10, 1)$ lies on line ℓ_5
134 : $P_{11412} = (19, 3, 10, 1)$ lies on line ℓ_7
135 : $P_{11420} = (27, 3, 10, 1)$ lies on line ℓ_{14}
136 : $P_{11442} = (17, 4, 10, 1)$ lies on line ℓ_{10}
137 : $P_{11512} = (23, 6, 10, 1)$ lies on line ℓ_4
138 : $P_{11555} = (2, 8, 10, 1)$ lies on line ℓ_1
139 : $P_{11645} = (28, 10, 10, 1)$ lies on line ℓ_{11}
140 : $P_{11652} = (3, 11, 10, 1)$ lies on line ℓ_8
141 : $P_{11738} = (25, 13, 10, 1)$ lies on line ℓ_3
142 : $P_{11826} = (17, 16, 10, 1)$ lies on line ℓ_6
143 : $P_{12012} = (11, 22, 10, 1)$ lies on line ℓ_{13}
144 : $P_{12026} = (25, 22, 10, 1)$ lies on line ℓ_0
145 : $P_{12272} = (15, 30, 10, 1)$ lies on line ℓ_{12}
146 : $P_{12438} = (21, 3, 11, 1)$ lies on line ℓ_{12}
147 : $P_{12478} = (29, 4, 11, 1)$ lies on line ℓ_6
148 : $P_{12554} = (9, 7, 11, 1)$ lies on line ℓ_3
149 : $P_{12690} = (17, 11, 11, 1)$ lies on line ℓ_{13}
150 : $P_{12788} = (19, 14, 11, 1)$ lies on line ℓ_1
151 : $P_{12954} = (25, 19, 11, 1)$ lies on line ℓ_{11}
152 : $P_{13073} = (16, 23, 11, 1)$ lies on line ℓ_9
153 : $P_{13088} = (31, 23, 11, 1)$ lies on line ℓ_7
154 : $P_{13269} = (20, 29, 11, 1)$ lies on line ℓ_{10}
155 : $P_{13425} = (16, 2, 12, 1)$ lies on line ℓ_0
156 : $P_{13543} = (6, 6, 12, 1)$ lies on line ℓ_5
157 : $P_{13772} = (11, 13, 12, 1)$ lies on line ℓ_{14}
158 : $P_{13866} = (9, 16, 12, 1)$ lies on line ℓ_8
159 : $P_{13950} = (29, 18, 12, 1)$ lies on line ℓ_{13}
160 : $P_{14007} = (22, 20, 12, 1)$ lies on line ℓ_3
161 : $P_{14015} = (30, 20, 12, 1)$ lies on line ℓ_7
162 : $P_{14023} = (6, 21, 12, 1)$ lies on line ℓ_2
163 : $P_{14051} = (2, 22, 12, 1)$ lies on line ℓ_{11}

164 : $P_{14128} = (15, 24, 12, 1)$ lies on line ℓ_{10}
165 : $P_{14252} = (11, 28, 12, 1)$ lies on line ℓ_{1}
166 : $P_{14387} = (18, 0, 13, 1)$ lies on line ℓ_{7}
167 : $P_{14411} = (10, 1, 13, 1)$ lies on line ℓ_{10}
168 : $P_{14498} = (1, 4, 13, 1)$ lies on line ℓ_{0}
169 : $P_{14571} = (10, 6, 13, 1)$ lies on line ℓ_{8}
170 : $P_{14596} = (3, 7, 13, 1)$ lies on line ℓ_{12}
171 : $P_{14674} = (17, 9, 13, 1)$ lies on line ℓ_{4}
172 : $P_{14779} = (26, 12, 13, 1)$ lies on line ℓ_{9}
173 : $P_{15045} = (4, 21, 13, 1)$ lies on line ℓ_{5}
174 : $P_{15227} = (26, 26, 13, 1)$ lies on line ℓ_{1}
175 : $P_{15299} = (2, 29, 13, 1)$ lies on line ℓ_{2}
176 : $P_{15335} = (6, 30, 13, 1)$ lies on line ℓ_{3}
177 : $P_{15412} = (19, 0, 14, 1)$ lies on line ℓ_{3}
178 : $P_{15433} = (8, 1, 14, 1)$ lies on line ℓ_{11}
179 : $P_{15555} = (2, 5, 14, 1)$ lies on line ℓ_{5}
180 : $P_{15561} = (8, 5, 14, 1)$ lies on line ℓ_{12}
181 : $P_{15567} = (14, 5, 14, 1)$ lies on line ℓ_{2}
182 : $P_{15717} = (4, 10, 14, 1)$ lies on line ℓ_{6}
183 : $P_{15821} = (12, 13, 14, 1)$ lies on line ℓ_{13}
184 : $P_{15864} = (23, 14, 14, 1)$ lies on line ℓ_{0}
185 : $P_{15878} = (5, 15, 14, 1)$ lies on line ℓ_{10}
186 : $P_{15917} = (12, 16, 14, 1)$ lies on line ℓ_{1}
187 : $P_{16032} = (31, 19, 14, 1)$ lies on line ℓ_{9}
188 : $P_{16057} = (24, 20, 14, 1)$ lies on line ℓ_{14}
189 : $P_{16199} = (6, 25, 14, 1)$ lies on line ℓ_{7}
190 : $P_{16208} = (15, 25, 14, 1)$ lies on line ℓ_{8}
191 : $P_{16263} = (6, 27, 14, 1)$ lies on line ℓ_{4}
192 : $P_{16605} = (28, 5, 15, 1)$ lies on line ℓ_{9}
193 : $P_{16679} = (6, 8, 15, 1)$ lies on line ℓ_{0}
194 : $P_{16909} = (12, 15, 15, 1)$ lies on line ℓ_{8}
195 : $P_{16951} = (22, 16, 15, 1)$ lies on line ℓ_{13}
196 : $P_{17100} = (11, 21, 15, 1)$ lies on line ℓ_{4}
197 : $P_{17150} = (29, 22, 15, 1)$ lies on line ℓ_{1}
198 : $P_{17198} = (13, 24, 15, 1)$ lies on line ℓ_{11}
199 : $P_{17203} = (18, 24, 15, 1)$ lies on line ℓ_{12}
200 : $P_{17385} = (8, 30, 15, 1)$ lies on line ℓ_{6}
201 : $P_{17472} = (31, 0, 16, 1)$ lies on line ℓ_{0}
202 : $P_{17481} = (8, 1, 16, 1)$ lies on line ℓ_{8}
203 : $P_{17506} = (1, 2, 16, 1)$ lies on line ℓ_{11}
204 : $P_{17667} = (2, 7, 16, 1)$ lies on line ℓ_{14}
205 : $P_{17837} = (12, 12, 16, 1)$ lies on line ℓ_{10}
206 : $P_{17914} = (25, 14, 16, 1)$ lies on line ℓ_{2}
207 : $P_{17997} = (12, 17, 16, 1)$ lies on line ℓ_{12}
208 : $P_{18022} = (5, 18, 16, 1)$ lies on line ℓ_{3}
209 : $P_{18108} = (27, 20, 16, 1)$ lies on line ℓ_{5}
210 : $P_{18235} = (26, 24, 16, 1)$ lies on line ℓ_{7}
211 : $P_{18249} = (8, 25, 16, 1)$ lies on line ℓ_{13}
212 : $P_{18611} = (18, 4, 17, 1)$ lies on line ℓ_{13}
213 : $P_{18671} = (14, 6, 17, 1)$ lies on line ℓ_{0}
214 : $P_{18686} = (29, 6, 17, 1)$ lies on line ℓ_{2}
215 : $P_{18714} = (25, 7, 17, 1)$ lies on line ℓ_{5}
216 : $P_{18986} = (9, 16, 17, 1)$ lies on line ℓ_{4}
217 : $P_{19146} = (9, 21, 17, 1)$ lies on line ℓ_{10}
218 : $P_{19212} = (11, 23, 17, 1)$ lies on line ℓ_{8}
219 : $P_{19290} = (25, 25, 17, 1)$ lies on line ℓ_{14}
220 : $P_{19333} = (4, 27, 17, 1)$ lies on line ℓ_{11}
221 : $P_{19420} = (27, 29, 17, 1)$ lies on line ℓ_{9}
222 : $P_{19477} = (20, 31, 17, 1)$ lies on line ℓ_{6}
223 : $P_{19706} = (25, 6, 18, 1)$ lies on line ℓ_{13}
224 : $P_{19759} = (14, 8, 18, 1)$ lies on line ℓ_{8}
225 : $P_{19897} = (24, 12, 18, 1)$ lies on line ℓ_{0}
226 : $P_{19966} = (29, 14, 18, 1)$ lies on line ℓ_{12}
227 : $P_{20068} = (3, 18, 18, 1)$ lies on line ℓ_{1}
228 : $P_{20163} = (2, 21, 18, 1)$ lies on line ℓ_{7}
229 : $P_{20172} = (11, 21, 18, 1)$ lies on line ℓ_{11}
230 : $P_{20256} = (31, 23, 18, 1)$ lies on line ℓ_{5}
231 : $P_{20359} = (6, 27, 18, 1)$ lies on line ℓ_{10}
232 : $P_{20523} = (10, 0, 19, 1)$ lies on line ℓ_{14}
233 : $P_{20559} = (14, 1, 19, 1)$ lies on line ℓ_{7}
234 : $P_{20580} = (3, 2, 19, 1)$ lies on line ℓ_{10}
235 : $P_{20670} = (29, 4, 19, 1)$ lies on line ℓ_{5}
236 : $P_{20842} = (9, 10, 19, 1)$ lies on line ℓ_{0}
237 : $P_{20911} = (14, 12, 19, 1)$ lies on line ℓ_{11}
238 : $P_{20913} = (16, 12, 19, 1)$ lies on line ℓ_{3}
239 : $P_{20916} = (19, 12, 19, 1)$ lies on line ℓ_{4}
240 : $P_{21101} = (12, 18, 19, 1)$ lies on line ℓ_{6}
241 : $P_{21128} = (7, 19, 19, 1)$ lies on line ℓ_{12}
242 : $P_{21171} = (18, 20, 19, 1)$ lies on line ℓ_{1}
243 : $P_{21182} = (29, 20, 19, 1)$ lies on line ℓ_{9}
244 : $P_{21238} = (21, 22, 19, 1)$ lies on line ℓ_{2}
245 : $P_{21380} = (3, 27, 19, 1)$ lies on line ℓ_{13}
246 : $P_{21486} = (13, 30, 19, 1)$ lies on line ℓ_{8}
247 : $P_{21654} = (21, 3, 20, 1)$ lies on line ℓ_{4}
248 : $P_{21739} = (10, 6, 20, 1)$ lies on line ℓ_{1}
249 : $P_{21785} = (24, 7, 20, 1)$ lies on line ℓ_{10}
250 : $P_{21846} = (21, 9, 20, 1)$ lies on line ℓ_{11}
251 : $P_{21868} = (11, 10, 20, 1)$ lies on line ℓ_{12}
252 : $P_{21898} = (9, 11, 20, 1)$ lies on line ℓ_{2}
253 : $P_{22050} = (1, 16, 20, 1)$ lies on line ℓ_{14}
254 : $P_{22094} = (13, 17, 20, 1)$ lies on line ℓ_{6}
255 : $P_{22132} = (19, 18, 20, 1)$ lies on line ℓ_{5}
256 : $P_{22149} = (4, 19, 20, 1)$ lies on line ℓ_{8}
257 : $P_{22322} = (17, 24, 20, 1)$ lies on line ℓ_{0}
258 : $P_{22357} = (20, 25, 20, 1)$ lies on line ℓ_{9}
259 : $P_{22544} = (15, 31, 20, 1)$ lies on line ℓ_{3}
260 : $P_{22588} = (27, 0, 21, 1)$ lies on line ℓ_{1}
261 : $P_{22610} = (17, 1, 21, 1)$ lies on line ℓ_{5}
262 : $P_{22670} = (13, 3, 21, 1)$ lies on line ℓ_{2}
263 : $P_{22722} = (1, 5, 21, 1)$ lies on line ℓ_{6}
264 : $P_{22728} = (7, 5, 21, 1)$ lies on line ℓ_{8}
265 : $P_{23001} = (24, 13, 21, 1)$ lies on line ℓ_{4}
266 : $P_{23035} = (26, 14, 21, 1)$ lies on line ℓ_{14}
267 : $P_{23064} = (23, 15, 21, 1)$ lies on line ℓ_{9}
268 : $P_{23089} = (16, 16, 21, 1)$ lies on line ℓ_{11}
269 : $P_{23264} = (31, 21, 21, 1)$ lies on line ℓ_{3}
270 : $P_{23268} = (3, 22, 21, 1)$ lies on line ℓ_{7}
271 : $P_{23314} = (17, 23, 21, 1)$ lies on line ℓ_{12}

272 : $P_{23521} = (0, 30, 21, 1)$ lies on line ℓ_0
273 : $P_{23550} = (29, 30, 21, 1)$ lies on line ℓ_{10}
274 : $P_{23574} = (21, 31, 21, 1)$ lies on line ℓ_{13}
275 : $P_{23891} = (18, 9, 22, 1)$ lies on line ℓ_{14}
276 : $P_{23918} = (13, 10, 22, 1)$ lies on line ℓ_1
277 : $P_{23947} = (10, 11, 22, 1)$ lies on line ℓ_3
278 : $P_{24088} = (23, 15, 22, 1)$ lies on line ℓ_7
279 : $P_{24152} = (23, 17, 22, 1)$ lies on line ℓ_5
280 : $P_{24247} = (22, 20, 22, 1)$ lies on line ℓ_0
281 : $P_{24283} = (26, 21, 22, 1)$ lies on line ℓ_{12}
282 : $P_{24419} = (2, 26, 22, 1)$ lies on line ℓ_8
283 : $P_{24450} = (1, 27, 22, 1)$ lies on line ℓ_2
284 : $P_{24502} = (21, 28, 22, 1)$ lies on line ℓ_6
285 : $P_{24543} = (30, 29, 22, 1)$ lies on line ℓ_{13}
286 : $P_{24576} = (31, 30, 22, 1)$ lies on line ℓ_{11}
287 : $P_{24592} = (15, 31, 22, 1)$ lies on line ℓ_4
288 : $P_{24613} = (4, 0, 23, 1)$ lies on line ℓ_{13}
289 : $P_{24667} = (26, 1, 23, 1)$ lies on line ℓ_3
290 : $P_{24694} = (21, 2, 23, 1)$ lies on line ℓ_5
291 : $P_{24818} = (17, 6, 23, 1)$ lies on line ℓ_9
292 : $P_{24859} = (26, 7, 23, 1)$ lies on line ℓ_{11}
293 : $P_{24865} = (0, 8, 23, 1)$ lies on line ℓ_{12}
294 : $P_{24890} = (25, 8, 23, 1)$ lies on line ℓ_6
295 : $P_{24920} = (23, 9, 23, 1)$ lies on line ℓ_{10}
296 : $P_{24994} = (1, 12, 23, 1)$ lies on line ℓ_8
297 : $P_{25021} = (28, 12, 23, 1)$ lies on line ℓ_1
298 : $P_{25155} = (2, 17, 23, 1)$ lies on line ℓ_4
299 : $P_{25192} = (7, 18, 23, 1)$ lies on line ℓ_0
300 : $P_{25222} = (5, 19, 23, 1)$ lies on line ℓ_2
301 : $P_{25354} = (9, 23, 23, 1)$ lies on line ℓ_{14}
302 : $P_{25500} = (27, 27, 23, 1)$ lies on line ℓ_7
303 : $P_{25649} = (16, 0, 24, 1)$ lies on line ℓ_8
304 : $P_{25668} = (3, 1, 24, 1)$ lies on line ℓ_4
305 : $P_{25699} = (2, 2, 24, 1)$ lies on line ℓ_{12}
306 : $P_{25789} = (28, 4, 24, 1)$ lies on line ℓ_2
307 : $P_{25906} = (17, 8, 24, 1)$ lies on line ℓ_3
308 : $P_{25942} = (21, 9, 24, 1)$ lies on line ℓ_7
309 : $P_{25953} = (0, 10, 24, 1)$ lies on line ℓ_9
310 : $P_{25959} = (6, 10, 24, 1)$ lies on line ℓ_{13}
311 : $P_{26009} = (24, 11, 24, 1)$ lies on line ℓ_1
312 : $P_{26021} = (4, 12, 24, 1)$ lies on line ℓ_{14}
313 : $P_{26285} = (12, 20, 24, 1)$ lies on line ℓ_{11}
314 : $P_{26308} = (3, 21, 24, 1)$ lies on line ℓ_0
315 : $P_{26412} = (11, 24, 24, 1)$ lies on line ℓ_5
316 : $P_{26466} = (1, 26, 24, 1)$ lies on line ℓ_{10}
317 : $P_{26488} = (23, 26, 24, 1)$ lies on line ℓ_6
318 : $P_{26722} = (1, 2, 25, 1)$ lies on line ℓ_3
319 : $P_{26757} = (4, 3, 25, 1)$ lies on line ℓ_{10}
320 : $P_{27018} = (9, 11, 25, 1)$ lies on line ℓ_5
321 : $P_{27065} = (24, 12, 25, 1)$ lies on line ℓ_2
322 : $P_{27132} = (27, 14, 25, 1)$ lies on line ℓ_6
323 : $P_{27151} = (14, 15, 25, 1)$ lies on line ℓ_4
324 : $P_{27264} = (31, 18, 25, 1)$ lies on line ℓ_{14}
325 : $P_{27283} = (18, 19, 25, 1)$ lies on line ℓ_0
326 : $P_{27380} = (19, 22, 25, 1)$ lies on line ℓ_8
327 : $P_{27421} = (28, 23, 25, 1)$ lies on line ℓ_{13}
328 : $P_{27556} = (3, 28, 25, 1)$ lies on line ℓ_9
329 : $P_{27610} = (25, 29, 25, 1)$ lies on line ℓ_7
330 : $P_{27673} = (24, 31, 25, 1)$ lies on line ℓ_{12}
331 : $P_{27822} = (13, 4, 26, 1)$ lies on line ℓ_7
332 : $P_{27936} = (31, 7, 26, 1)$ lies on line ℓ_1
333 : $P_{27991} = (22, 9, 26, 1)$ lies on line ℓ_8
334 : $P_{28108} = (11, 13, 26, 1)$ lies on line ℓ_{10}
335 : $P_{28341} = (20, 20, 26, 1)$ lies on line ℓ_2
336 : $P_{28432} = (15, 23, 26, 1)$ lies on line ℓ_6
337 : $P_{28485} = (4, 25, 26, 1)$ lies on line ℓ_0
338 : $P_{28560} = (15, 27, 26, 1)$ lies on line ℓ_5
339 : $P_{28597} = (20, 28, 26, 1)$ lies on line ℓ_3
340 : $P_{28628} = (19, 29, 26, 1)$ lies on line ℓ_{12}
341 : $P_{28634} = (25, 29, 26, 1)$ lies on line ℓ_4
342 : $P_{28714} = (9, 0, 27, 1)$ lies on line ℓ_{12}
343 : $P_{28751} = (14, 1, 27, 1)$ lies on line ℓ_1
344 : $P_{28804} = (3, 3, 27, 1)$ lies on line ℓ_6
345 : $P_{29069} = (12, 11, 27, 1)$ lies on line ℓ_{14}
346 : $P_{29218} = (1, 16, 27, 1)$ lies on line ℓ_7
347 : $P_{29333} = (20, 19, 27, 1)$ lies on line ℓ_4
348 : $P_{29359} = (14, 20, 27, 1)$ lies on line ℓ_{10}
349 : $P_{29382} = (5, 21, 27, 1)$ lies on line ℓ_9
350 : $P_{29413} = (4, 22, 27, 1)$ lies on line ℓ_3
351 : $P_{29540} = (3, 26, 27, 1)$ lies on line ℓ_{11}
352 : $P_{29617} = (16, 28, 27, 1)$ lies on line ℓ_2
353 : $P_{29731} = (2, 0, 28, 1)$ lies on line ℓ_6
354 : $P_{29773} = (12, 1, 28, 1)$ lies on line ℓ_2
355 : $P_{29916} = (27, 5, 28, 1)$ lies on line ℓ_3
356 : $P_{30158} = (13, 13, 28, 1)$ lies on line ℓ_0
357 : $P_{30274} = (1, 17, 28, 1)$ lies on line ℓ_{13}
358 : $P_{30294} = (21, 17, 28, 1)$ lies on line ℓ_{10}
359 : $P_{30333} = (28, 18, 28, 1)$ lies on line ℓ_8
360 : $P_{30337} = (0, 19, 28, 1)$ lies on line ℓ_7
361 : $P_{30359} = (22, 19, 28, 1)$ lies on line ℓ_1
362 : $P_{30509} = (12, 24, 28, 1)$ lies on line ℓ_9
363 : $P_{30534} = (5, 25, 28, 1)$ lies on line ℓ_{12}
364 : $P_{30600} = (7, 27, 28, 1)$ lies on line ℓ_{14}
365 : $P_{30643} = (18, 28, 28, 1)$ lies on line ℓ_4
366 : $P_{30692} = (3, 30, 28, 1)$ lies on line ℓ_5
367 : $P_{30745} = (24, 31, 28, 1)$ lies on line ℓ_{11}
368 : $P_{30941} = (28, 5, 29, 1)$ lies on line ℓ_{14}
369 : $P_{30974} = (29, 6, 29, 1)$ lies on line ℓ_{11}
370 : $P_{30989} = (12, 7, 29, 1)$ lies on line ℓ_7
371 : $P_{31025} = (16, 8, 29, 1)$ lies on line ℓ_{10}
372 : $P_{31049} = (8, 9, 29, 1)$ lies on line ℓ_2
373 : $P_{31133} = (28, 11, 29, 1)$ lies on line ℓ_0
374 : $P_{31164} = (27, 12, 29, 1)$ lies on line ℓ_{13}
375 : $P_{31170} = (1, 13, 29, 1)$ lies on line ℓ_5
376 : $P_{31216} = (15, 14, 29, 1)$ lies on line ℓ_9
377 : $P_{31244} = (11, 15, 29, 1)$ lies on line ℓ_3
378 : $P_{31360} = (31, 18, 29, 1)$ lies on line ℓ_4
379 : $P_{31407} = (14, 20, 29, 1)$ lies on line ℓ_6

380 : $P_{31432} = (7, 21, 29, 1)$ lies on line ℓ_1
381 : $P_{31785} = (8, 0, 30, 1)$ lies on line ℓ_4
382 : $P_{31819} = (10, 1, 30, 1)$ lies on line ℓ_0
383 : $P_{31861} = (20, 2, 30, 1)$ lies on line ℓ_{14}
384 : $P_{31989} = (20, 6, 30, 1)$ lies on line ℓ_{12}
385 : $P_{32000} = (31, 6, 30, 1)$ lies on line ℓ_{10}
386 : $P_{32051} = (18, 8, 30, 1)$ lies on line ℓ_{11}
387 : $P_{32219} = (26, 13, 30, 1)$ lies on line ℓ_6
388 : $P_{32241} = (16, 14, 30, 1)$ lies on line ℓ_{13}
389 : $P_{32325} = (4, 17, 30, 1)$ lies on line ℓ_2
390 : $P_{32331} = (10, 17, 30, 1)$ lies on line ℓ_9
391 : $P_{32351} = (30, 17, 30, 1)$ lies on line ℓ_3
392 : $P_{32667} = (26, 27, 30, 1)$ lies on line ℓ_8
393 : $P_{32712} = (7, 29, 30, 1)$ lies on line ℓ_5
394 : $P_{32761} = (24, 30, 30, 1)$ lies on line ℓ_7
395 : $P_{32786} = (17, 31, 30, 1)$ lies on line ℓ_1
396 : $P_{33034} = (9, 7, 31, 1)$ lies on line ℓ_9
397 : $P_{33052} = (27, 7, 31, 1)$ lies on line ℓ_0
398 : $P_{33141} = (20, 10, 31, 1)$ lies on line ℓ_7
399 : $P_{33242} = (25, 13, 31, 1)$ lies on line ℓ_8
400 : $P_{33368} = (23, 17, 31, 1)$ lies on line ℓ_{11}
401 : $P_{33419} = (10, 19, 31, 1)$ lies on line ℓ_{13}
402 : $P_{33623} = (22, 25, 31, 1)$ lies on line ℓ_6
403 : $P_{33712} = (15, 28, 31, 1)$ lies on line ℓ_{14}
404 : $P_{33819} = (26, 31, 31, 1)$ lies on line ℓ_{10}

The single points on the surface are:

Points on surface but on no line

The surface has 735 points not on any line:
The points on the surface but not on lines are:

0 : $P_{36} = (1, 0, 1, 0)$
1 : $P_{67} = (0, 1, 1, 0)$
2 : $P_{235} = (8, 6, 1, 0)$
3 : $P_{258} = (31, 6, 1, 0)$
4 : $P_{685} = (10, 20, 1, 0)$
5 : $P_{693} = (18, 20, 1, 0)$
6 : $P_{750} = (11, 22, 1, 0)$
7 : $P_{769} = (30, 22, 1, 0)$
8 : $P_{850} = (15, 25, 1, 0)$
9 : $P_{854} = (19, 25, 1, 0)$
10 : $P_{972} = (9, 29, 1, 0)$
11 : $P_{977} = (14, 29, 1, 0)$
12 : $P_{1090} = (0, 1, 0, 1)$
13 : $P_{1127} = (5, 2, 0, 1)$
14 : $P_{1177} = (23, 3, 0, 1)$
15 : $P_{1203} = (17, 4, 0, 1)$
16 : $P_{1242} = (24, 5, 0, 1)$
17 : $P_{1286} = (4, 7, 0, 1)$
18 : $P_{1298} = (16, 7, 0, 1)$
19 : $P_{1300} = (18, 7, 0, 1)$
20 : $P_{1463} = (21, 12, 0, 1)$
21 : $P_{1500} = (26, 13, 0, 1)$
22 : $P_{1582} = (12, 16, 0, 1)$
23 : $P_{1609} = (7, 17, 0, 1)$
24 : $P_{1739} = (9, 21, 0, 1)$
25 : $P_{1743} = (13, 21, 0, 1)$
26 : $P_{1746} = (16, 21, 0, 1)$
27 : $P_{1796} = (2, 23, 0, 1)$
28 : $P_{1809} = (15, 23, 0, 1)$
29 : $P_{1821} = (27, 23, 0, 1)$
30 : $P_{1828} = (2, 24, 0, 1)$
31 : $P_{1830} = (4, 24, 0, 1)$
32 : $P_{1857} = (31, 24, 0, 1)$
33 : $P_{1918} = (28, 26, 0, 1)$
34 : $P_{1925} = (3, 27, 0, 1)$
35 : $P_{1965} = (11, 28, 0, 1)$
36 : $P_{1967} = (13, 28, 0, 1)$
37 : $P_{1981} = (27, 28, 0, 1)$
38 : $P_{2082} = (0, 0, 1, 1)$
39 : $P_{2083} = (1, 0, 1, 1)$
40 : $P_{2327} = (22, 7, 1, 1)$
41 : $P_{2335} = (30, 7, 1, 1)$
42 : $P_{2372} = (3, 9, 1, 1)$
43 : $P_{2438} = (5, 11, 1, 1)$
44 : $P_{2578} = (17, 15, 1, 1)$
45 : $P_{2683} = (26, 18, 1, 1)$
46 : $P_{2772} = (19, 21, 1, 1)$
47 : $P_{2778} = (25, 21, 1, 1)$
48 : $P_{2827} = (10, 23, 1, 1)$
49 : $P_{2837} = (20, 23, 1, 1)$
50 : $P_{2863} = (14, 24, 1, 1)$
51 : $P_{2878} = (29, 24, 1, 1)$
52 : $P_{2983} = (6, 28, 1, 1)$
53 : $P_{2985} = (8, 28, 1, 1)$
54 : $P_{3085} = (12, 31, 1, 1)$
55 : $P_{3177} = (8, 2, 2, 1)$
56 : $P_{3211} = (10, 3, 2, 1)$
57 : $P_{3214} = (13, 3, 2, 1)$
58 : $P_{3287} = (22, 5, 2, 1)$
59 : $P_{3288} = (23, 5, 2, 1)$
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465 : $P_{22121} = (8, 18, 20, 1)$
466 : $P_{22184} = (7, 20, 20, 1)$
467 : $P_{22249} = (8, 22, 20, 1)$
468 : $P_{22424} = (23, 27, 20, 1)$
469 : $P_{22456} = (23, 28, 20, 1)$
470 : $P_{22478} = (13, 29, 20, 1)$
471 : $P_{22480} = (15, 29, 20, 1)$
472 : $P_{22495} = (30, 29, 20, 1)$
473 : $P_{22501} = (4, 30, 20, 1)$
474 : $P_{22568} = (7, 0, 21, 1)$
475 : $P_{22590} = (29, 0, 21, 1)$
476 : $P_{22680} = (23, 3, 21, 1)$
477 : $P_{22681} = (24, 3, 21, 1)$
478 : $P_{22723} = (2, 5, 21, 1)$
479 : $P_{22789} = (4, 7, 21, 1)$
480 : $P_{22858} = (9, 9, 21, 1)$
481 : $P_{22884} = (3, 10, 21, 1)$
482 : $P_{22917} = (4, 11, 21, 1)$
483 : $P_{22949} = (4, 12, 21, 1)$
484 : $P_{22968} = (23, 12, 21, 1)$
485 : $P_{22975} = (30, 12, 21, 1)$
486 : $P_{22990} = (13, 13, 21, 1)$
487 : $P_{23002} = (25, 13, 21, 1)$
488 : $P_{23022} = (13, 14, 21, 1)$
489 : $P_{23033} = (24, 14, 21, 1)$
490 : $P_{23231} = (30, 20, 21, 1)$
491 : $P_{23270} = (5, 22, 21, 1)$
492 : $P_{23282} = (17, 22, 21, 1)$
493 : $P_{23348} = (19, 24, 21, 1)$

494 : $P_{23349} = (20, 24, 21, 1)$
495 : $P_{23359} = (30, 24, 21, 1)$
496 : $P_{23408} = (15, 26, 21, 1)$
497 : $P_{23427} = (2, 27, 21, 1)$
498 : $P_{23460} = (3, 28, 21, 1)$
499 : $P_{23516} = (27, 29, 21, 1)$
500 : $P_{23523} = (2, 30, 21, 1)$
501 : $P_{23662} = (13, 2, 22, 1)$
502 : $P_{23683} = (2, 3, 22, 1)$
503 : $P_{23696} = (15, 3, 22, 1)$
504 : $P_{23720} = (7, 4, 22, 1)$
505 : $P_{23791} = (14, 6, 22, 1)$
506 : $P_{23854} = (13, 8, 22, 1)$
507 : $P_{23951} = (14, 11, 22, 1)$
508 : $P_{24010} = (9, 13, 22, 1)$
509 : $P_{24012} = (11, 13, 22, 1)$
510 : $P_{24015} = (14, 13, 22, 1)$
511 : $P_{24065} = (0, 15, 22, 1)$
512 : $P_{24090} = (25, 15, 22, 1)$
513 : $P_{24148} = (19, 17, 22, 1)$
514 : $P_{24149} = (20, 17, 22, 1)$
515 : $P_{24317} = (28, 22, 22, 1)$
516 : $P_{24360} = (7, 24, 22, 1)$
517 : $P_{24387} = (2, 25, 22, 1)$
518 : $P_{24393} = (8, 25, 22, 1)$
519 : $P_{24403} = (18, 25, 22, 1)$
520 : $P_{24488} = (7, 28, 22, 1)$
521 : $P_{24496} = (15, 28, 22, 1)$
522 : $P_{24568} = (23, 30, 22, 1)$
523 : $P_{24634} = (25, 0, 23, 1)$
524 : $P_{24637} = (28, 0, 23, 1)$
525 : $P_{24675} = (2, 2, 23, 1)$
526 : $P_{24693} = (20, 2, 23, 1)$
527 : $P_{24712} = (7, 3, 23, 1)$
528 : $P_{24713} = (8, 3, 23, 1)$
529 : $P_{24718} = (13, 3, 23, 1)$
530 : $P_{24753} = (16, 4, 23, 1)$
531 : $P_{24787} = (18, 5, 23, 1)$
532 : $P_{24813} = (12, 6, 23, 1)$
533 : $P_{24827} = (26, 6, 23, 1)$
534 : $P_{24881} = (16, 8, 23, 1)$
535 : $P_{25009} = (16, 12, 23, 1)$
536 : $P_{25104} = (15, 15, 23, 1)$
537 : $P_{25160} = (7, 17, 23, 1)$
538 : $P_{25174} = (21, 17, 23, 1)$
539 : $P_{25219} = (2, 19, 23, 1)$
540 : $P_{25238} = (21, 19, 23, 1)$
541 : $P_{25289} = (8, 21, 23, 1)$
542 : $P_{25291} = (10, 21, 23, 1)$
543 : $P_{25303} = (22, 21, 23, 1)$
544 : $P_{25321} = (8, 22, 23, 1)$
545 : $P_{25394} = (17, 24, 23, 1)$
546 : $P_{25413} = (4, 25, 23, 1)$
547 : $P_{25518} = (13, 28, 23, 1)$
548 : $P_{25586} = (17, 30, 23, 1)$
549 : $P_{25614} = (13, 31, 23, 1)$
550 : $P_{25639} = (6, 0, 24, 1)$
551 : $P_{25656} = (23, 0, 24, 1)$
552 : $P_{25765} = (4, 4, 24, 1)$
553 : $P_{25790} = (29, 4, 24, 1)$
554 : $P_{25803} = (10, 5, 24, 1)$
555 : $P_{25814} = (21, 5, 24, 1)$
556 : $P_{25820} = (27, 5, 24, 1)$
557 : $P_{25841} = (16, 6, 24, 1)$
558 : $P_{25869} = (12, 7, 24, 1)$
559 : $P_{25893} = (4, 8, 24, 1)$
560 : $P_{25917} = (28, 8, 24, 1)$
561 : $P_{25966} = (13, 10, 24, 1)$
562 : $P_{26038} = (21, 12, 24, 1)$
563 : $P_{26045} = (28, 12, 24, 1)$
564 : $P_{26158} = (13, 16, 24, 1)$
565 : $P_{26186} = (9, 17, 24, 1)$
566 : $P_{26236} = (27, 18, 24, 1)$
567 : $P_{26253} = (12, 19, 24, 1)$
568 : $P_{26276} = (3, 20, 24, 1)$
569 : $P_{26299} = (26, 20, 24, 1)$
570 : $P_{26396} = (27, 23, 24, 1)$
571 : $P_{26443} = (10, 25, 24, 1)$
572 : $P_{26478} = (13, 26, 24, 1)$
573 : $P_{26539} = (10, 28, 24, 1)$
574 : $P_{26543} = (14, 28, 24, 1)$
575 : $P_{26554} = (25, 28, 24, 1)$
576 : $P_{26656} = (31, 31, 24, 1)$
577 : $P_{26812} = (27, 4, 25, 1)$
578 : $P_{26821} = (4, 5, 25, 1)$
579 : $P_{26848} = (31, 5, 25, 1)$
580 : $P_{26853} = (4, 6, 25, 1)$
581 : $P_{26858} = (9, 6, 25, 1)$
582 : $P_{26859} = (10, 6, 25, 1)$
583 : $P_{26902} = (21, 7, 25, 1)$
584 : $P_{27004} = (27, 10, 25, 1)$
585 : $P_{27049} = (8, 12, 25, 1)$
586 : $P_{27070} = (29, 12, 25, 1)$
587 : $P_{27167} = (30, 15, 25, 1)$
588 : $P_{27190} = (21, 16, 25, 1)$
589 : $P_{27289} = (24, 19, 25, 1)$
590 : $P_{27327} = (30, 20, 25, 1)$
591 : $P_{27414} = (21, 23, 25, 1)$
592 : $P_{27424} = (31, 23, 25, 1)$
593 : $P_{27480} = (23, 25, 25, 1)$
594 : $P_{27532} = (11, 27, 25, 1)$
595 : $P_{27536} = (15, 27, 25, 1)$
596 : $P_{27551} = (30, 27, 25, 1)$
597 : $P_{27649} = (0, 31, 25, 1)$
598 : $P_{27655} = (6, 31, 25, 1)$
599 : $P_{27684} = (3, 0, 26, 1)$
600 : $P_{27736} = (23, 1, 26, 1)$
601 : $P_{27772} = (27, 2, 26, 1)$

602 : $P_{27809} = (0, 4, 26, 1)$
603 : $P_{27817} = (8, 4, 26, 1)$
604 : $P_{27875} = (2, 6, 26, 1)$
605 : $P_{27957} = (20, 8, 26, 1)$
606 : $P_{28004} = (3, 10, 26, 1)$
607 : $P_{28061} = (28, 11, 26, 1)$
608 : $P_{28080} = (15, 12, 26, 1)$
609 : $P_{28148} = (19, 14, 26, 1)$
610 : $P_{28237} = (12, 17, 26, 1)$
611 : $P_{28299} = (10, 19, 26, 1)$
612 : $P_{28300} = (11, 19, 26, 1)$
613 : $P_{28308} = (19, 19, 26, 1)$
614 : $P_{28343} = (22, 20, 26, 1)$
615 : $P_{28344} = (23, 20, 26, 1)$
616 : $P_{28422} = (5, 23, 26, 1)$
617 : $P_{28445} = (28, 23, 26, 1)$
618 : $P_{28475} = (26, 24, 26, 1)$
619 : $P_{28530} = (17, 26, 26, 1)$
620 : $P_{28598} = (21, 28, 26, 1)$
621 : $P_{28605} = (28, 28, 26, 1)$
622 : $P_{28631} = (22, 29, 26, 1)$
623 : $P_{28652} = (11, 30, 26, 1)$
624 : $P_{28829} = (28, 3, 27, 1)$
625 : $P_{28830} = (29, 3, 27, 1)$
626 : $P_{28855} = (22, 4, 27, 1)$
627 : $P_{28867} = (2, 5, 27, 1)$
628 : $P_{28913} = (16, 6, 27, 1)$
629 : $P_{29052} = (27, 10, 27, 1)$
630 : $P_{29106} = (17, 12, 27, 1)$
631 : $P_{29144} = (23, 13, 27, 1)$
632 : $P_{29196} = (11, 15, 27, 1)$
633 : $P_{29249} = (0, 17, 27, 1)$
634 : $P_{29391} = (14, 21, 27, 1)$
635 : $P_{29408} = (31, 21, 27, 1)$
636 : $P_{29508} = (3, 25, 27, 1)$
637 : $P_{29545} = (8, 26, 27, 1)$
638 : $P_{29553} = (16, 26, 27, 1)$
639 : $P_{29588} = (19, 27, 27, 1)$
640 : $P_{29642} = (9, 29, 27, 1)$
641 : $P_{29750} = (21, 0, 28, 1)$
642 : $P_{29751} = (22, 0, 28, 1)$
643 : $P_{29797} = (4, 2, 28, 1)$
644 : $P_{29856} = (31, 3, 28, 1)$
645 : $P_{29896} = (7, 5, 28, 1)$
646 : $P_{29913} = (24, 5, 28, 1)$
647 : $P_{29961} = (8, 7, 28, 1)$
648 : $P_{29972} = (19, 7, 28, 1)$
649 : $P_{29982} = (29, 7, 28, 1)$
650 : $P_{30092} = (11, 11, 28, 1)$
651 : $P_{30182} = (5, 14, 28, 1)$
652 : $P_{30225} = (16, 15, 28, 1)$
653 : $P_{30277} = (4, 17, 28, 1)$
654 : $P_{30341} = (4, 19, 28, 1)$
655 : $P_{30417} = (16, 21, 28, 1)$
656 : $P_{30435} = (2, 22, 28, 1)$
657 : $P_{30470} = (5, 23, 28, 1)$
658 : $P_{30541} = (12, 25, 28, 1)$
659 : $P_{30546} = (17, 25, 28, 1)$
660 : $P_{30577} = (16, 26, 28, 1)$
661 : $P_{30580} = (19, 26, 28, 1)$
662 : $P_{30585} = (24, 26, 28, 1)$
663 : $P_{30599} = (6, 27, 28, 1)$
664 : $P_{30620} = (27, 27, 28, 1)$
665 : $P_{30676} = (19, 29, 28, 1)$
666 : $P_{30696} = (7, 30, 28, 1)$
667 : $P_{30716} = (27, 30, 28, 1)$
668 : $P_{30841} = (24, 2, 29, 1)$
669 : $P_{30919} = (6, 5, 29, 1)$
670 : $P_{30943} = (30, 5, 29, 1)$
671 : $P_{31051} = (10, 9, 29, 1)$
672 : $P_{31105} = (0, 11, 29, 1)$
673 : $P_{31127} = (22, 11, 29, 1)$
674 : $P_{31229} = (28, 14, 29, 1)$
675 : $P_{31274} = (9, 16, 29, 1)$
676 : $P_{31275} = (10, 16, 29, 1)$
677 : $P_{31283} = (18, 16, 29, 1)$
678 : $P_{31377} = (16, 19, 29, 1)$
679 : $P_{31436} = (11, 21, 29, 1)$
680 : $P_{31449} = (24, 21, 29, 1)$
681 : $P_{31476} = (19, 22, 29, 1)$
682 : $P_{31484} = (27, 22, 29, 1)$
683 : $P_{31488} = (31, 22, 29, 1)$
684 : $P_{31513} = (24, 23, 29, 1)$
685 : $P_{31563} = (10, 25, 29, 1)$
686 : $P_{31596} = (11, 26, 29, 1)$
687 : $P_{31612} = (27, 26, 29, 1)$
688 : $P_{31633} = (16, 27, 29, 1)$
689 : $P_{31702} = (21, 29, 29, 1)$
690 : $P_{31811} = (2, 1, 30, 1)$
691 : $P_{31817} = (8, 1, 30, 1)$
692 : $P_{31925} = (20, 4, 30, 1)$
693 : $P_{31981} = (12, 6, 30, 1)$
694 : $P_{32114} = (17, 10, 30, 1)$
695 : $P_{32180} = (19, 12, 30, 1)$
696 : $P_{32229} = (4, 14, 30, 1)$
697 : $P_{32252} = (27, 14, 30, 1)$
698 : $P_{32299} = (10, 16, 30, 1)$
699 : $P_{32381} = (28, 18, 30, 1)$
700 : $P_{32406} = (21, 19, 30, 1)$
701 : $P_{32435} = (18, 20, 30, 1)$
702 : $P_{32449} = (0, 21, 30, 1)$
703 : $P_{32454} = (5, 21, 30, 1)$
704 : $P_{32466} = (17, 21, 30, 1)$
705 : $P_{32507} = (26, 22, 30, 1)$
706 : $P_{32612} = (3, 26, 30, 1)$
707 : $P_{32653} = (12, 27, 30, 1)$
708 : $P_{32691} = (18, 28, 30, 1)$
709 : $P_{32717} = (12, 29, 30, 1)$

710 : $P_{32728} = (23, 29, 30, 1)$
711 : $P_{32746} = (9, 30, 30, 1)$
712 : $P_{32751} = (14, 30, 30, 1)$
713 : $P_{32773} = (4, 31, 30, 1)$
714 : $P_{32780} = (11, 31, 30, 1)$
715 : $P_{32879} = (14, 2, 31, 1)$
716 : $P_{32918} = (21, 3, 31, 1)$
717 : $P_{32933} = (4, 4, 31, 1)$
718 : $P_{32980} = (19, 5, 31, 1)$
719 : $P_{33045} = (20, 7, 31, 1)$
720 : $P_{33176} = (23, 11, 31, 1)$
721 : $P_{33218} = (1, 13, 31, 1)$
722 : $P_{33237} = (20, 13, 31, 1)$
723 : $P_{33267} = (18, 14, 31, 1)$
724 : $P_{33273} = (24, 14, 31, 1)$
725 : $P_{33289} = (8, 15, 31, 1)$
726 : $P_{33470} = (29, 20, 31, 1)$
727 : $P_{33486} = (13, 21, 31, 1)$
728 : $P_{33510} = (5, 22, 31, 1)$
729 : $P_{33574} = (5, 24, 31, 1)$
730 : $P_{33615} = (14, 25, 31, 1)$
731 : $P_{33656} = (23, 26, 31, 1)$
732 : $P_{33676} = (11, 27, 31, 1)$
733 : $P_{33696} = (31, 27, 31, 1)$
734 : $P_{33746} = (17, 29, 31, 1)$

Line Intersection Graph

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	0	1	0	0	0	1	1	1	1	0	0	1	0	0	0
1	1	0	1	1	1	0	0	0	0	0	0	1	1	0	0
2	0	1	0	0	1	0	0	1	1	0	1	0	0	0	1
3	0	1	0	0	0	1	1	0	0	0	1	0	1	0	1
4	0	1	1	0	0	1	1	0	0	1	0	0	0	1	0
5	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0
6	1	0	0	1	1	0	0	1	0	1	0	0	0	0	1
7	1	0	1	0	0	0	1	0	0	0	1	0	1	1	0
8	1	0	1	0	0	1	0	0	0	1	0	0	1	0	1
9	0	0	0	0	1	0	1	0	1	0	1	1	1	0	0
10	0	0	1	1	0	1	0	1	0	1	0	1	0	0	0
11	1	1	0	0	0	0	0	0	0	1	1	0	0	1	1
12	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0
13	0	0	0	0	1	1	0	1	0	0	0	1	1	0	1
14	0	0	1	1	0	0	1	0	1	0	0	1	0	1	0

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_{11}
in point	P_{244}	P_{12841}	P_{8076}	P_{6750}	P_{29718}	P_{4309}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_{11}	ℓ_{12}
in point	P_{244}	P_{33601}	P_{19254}	P_{18405}	P_{27082}	P_{5464}

Line 2 intersects

Line	ℓ_1	ℓ_4	ℓ_7	ℓ_8	ℓ_{10}	ℓ_{14}
in point	P_{33601}	P_{12603}	P_{16843}	P_{3452}	P_{6920}	P_{20466}

Line 3 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_{10}	ℓ_{12}	ℓ_{14}
in point	P_{19254}	P_{10893}	P_{19681}	P_{5603}	P_{33679}	P_{16740}

Line 4 intersects

Line	ℓ_1	ℓ_2	ℓ_5	ℓ_6	ℓ_9	ℓ_{13}
in point	P_{18405}	P_{12603}	P_{33254}	P_{13597}	P_{19583}	P_{10913}

Line 5 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_8	ℓ_{10}	ℓ_{13}
in point	P_{12841}	P_{10893}	P_{33254}	P_{5049}	P_{17121}	P_{28974}

Line 6 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_7	ℓ_9	ℓ_{14}
in point	P_{8076}	P_{19681}	P_{13597}	P_{687}	P_{17817}	P_{14993}

Line 7 intersects

Line	ℓ_0	ℓ_2	ℓ_6	ℓ_{10}	ℓ_{12}	ℓ_{13}
in point	P_{6750}	P_{16843}	P_{687}	P_{3709}	P_{18871}	P_{21616}

Line 8 intersects

Line	ℓ_0	ℓ_2	ℓ_5	ℓ_9	ℓ_{12}	ℓ_{14}
in point	P_{29718}	P_{3452}	P_{5049}	P_{742}	P_{30912}	P_{13249}

Line 9 intersects

Line	ℓ_4	ℓ_6	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}
in point	P_{19583}	P_{17817}	P_{742}	P_{24115}	P_{27783}	P_{14202}

Line 10 intersects

Line	ℓ_2	ℓ_3	ℓ_5	ℓ_7	ℓ_9	ℓ_{11}
in point	P_{6920}	P_{5603}	P_{17121}	P_{3709}	P_{24115}	P_{840}

Line 11 intersects

Line	ℓ_0	ℓ_1	ℓ_9	ℓ_{10}	ℓ_{13}	ℓ_{14}
in point	P_{4309}	P_{27082}	P_{27783}	P_{840}	P_{14856}	P_{10420}

Line 12 intersects

Line	ℓ_1	ℓ_3	ℓ_7	ℓ_8	ℓ_9	ℓ_{13}
in point	P_{5464}	P_{33679}	P_{18871}	P_{30912}	P_{14202}	P_{989}

Line 13 intersects

Line	ℓ_4	ℓ_5	ℓ_7	ℓ_{11}	ℓ_{12}	ℓ_{14}
in point	P_{10913}	P_{28974}	P_{21616}	P_{14856}	P_{989}	P_{28376}

Line 14 intersects

Line	ℓ_2	ℓ_3	ℓ_6	ℓ_8	ℓ_{11}	ℓ_{13}
in point	P_{20466}	P_{16740}	P_{14993}	P_{13249}	P_{10420}	P_{28376}

The surface has 1185 points:
Too many to print.