Rank-65867 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 0, 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(32) is -2112814043

General information

Number of lines	8
Number of points	1121
Number of singular points	3
Number of Eckardt points	2
Number of double points	6
Number of single points	242
Number of points off lines	870
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^8
Type of lines on points	4, 3^2, 2^6, 1^{242}, 0^{870}

Singular Points

The surface has 3 singular points:

$0: P_2 = \mathbf{P}(0,0,1,0) = \mathbf{P}(0,0,1,0)$
$1: P_{1059} = \mathbf{P}(1,0,0,1) = \mathbf{P}(1,0,0,1)$
$2: P_{1091} = \mathbf{P}(1,1,0,1) = \mathbf{P}(1,1,0,1)$

The 8 Lines

The lines and their Pluecker coordinates are:

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

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1024} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1024} = \mathbf{Pl}(0,0,1,0,0,0)_2$$

$$\ell_2 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{2081} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{2081} = \mathbf{Pl}(0,0,1,0,0,1)_{34912}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{33824} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{33824} = \mathbf{Pl}(1,0,0,1,0,0)_{66}$$

$$\ell_4 = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{35905} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{35905} = \mathbf{Pl}(0,1,1,0,0,1)_{34944}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{34848} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{34848} = \mathbf{Pl}(0,1,1,0,0,0)_{34}$$

$$\ell_6 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1090} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1090} = \mathbf{Pl}(1,1,1,0,1,1)_{68640}$$

$$\ell_7 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33857} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33857} = \mathbf{Pl}(1,1,1,1,1,0)_{5058}$$

Rank of lines: (0, 1024, 2081, 33824, 35905, 34848, 1090, 33857)
Rank of points on Klein quadric: (0, 2, 34912, 66, 34944, 34, 68640, 5058)

Eckardt Points

The surface has 2 Eckardt points:
$0 : P_{1059} = \mathbf{P}(1,0,0,1) = \mathbf{P}(1,0,0,1)$,
$1 : P_{1091} = \mathbf{P}(1,1,0,1) = \mathbf{P}(1,1,0,1)$.

Double Points

The surface has 6 Double points:
The double points on the surface are:

$P_0 = (1,0,0,0) = \ell_0 \cap \ell_1$
$P_5 = (1,1,0,0) = \ell_0 \cap \ell_2$
$P_1 = (0,1,0,0) = \ell_0 \cap \ell_3$
$P_{36} = (1,0,1,0) = \ell_1 \cap \ell_6$
$P_{68} = (1,1,1,0) = \ell_2 \cap \ell_7$
$P_{2114} = (0,1,1,1) = \ell_6 \cap \ell_7$

Single Points

The surface has 242 single points:
The single points on the surface are:

$0 : P_4 = (1,1,1,1)$ lies on line ℓ_4
$1 : P_6 = (2,1,0,0)$ lies on line ℓ_0
$2 : P_7 = (3,1,0,0)$ lies on line ℓ_0
$3 : P_8 = (4,1,0,0)$ lies on line ℓ_0
$4 : P_9 = (5,1,0,0)$ lies on line ℓ_0
$5 : P_{10} = (6,1,0,0)$ lies on line ℓ_0
$6 : P_{11} = (7,1,0,0)$ lies on line ℓ_0
$7 : P_{12} = (8,1,0,0)$ lies on line ℓ_0
$8 : P_{13} = (9,1,0,0)$ lies on line ℓ_0
$9 : P_{14} = (10,1,0,0)$ lies on line ℓ_0
$10 : P_{15} = (11,1,0,0)$ lies on line ℓ_0
$11 : P_{16} = (12,1,0,0)$ lies on line ℓ_0
$12 : P_{17} = (13,1,0,0)$ lies on line ℓ_0
$13 : P_{18} = (14,1,0,0)$ lies on line ℓ_0
$14 : P_{19} = (15,1,0,0)$ lies on line ℓ_0
$15 : P_{20} = (16,1,0,0)$ lies on line ℓ_0
$16 : P_{21} = (17,1,0,0)$ lies on line ℓ_0
$17 : P_{22} = (18,1,0,0)$ lies on line ℓ_0

18 : $P_{23} = (19, 1, 0, 0)$ lies on line ℓ_0
19 : $P_{24} = (20, 1, 0, 0)$ lies on line ℓ_0
20 : $P_{25} = (21, 1, 0, 0)$ lies on line ℓ_0
21 : $P_{26} = (22, 1, 0, 0)$ lies on line ℓ_0
22 : $P_{27} = (23, 1, 0, 0)$ lies on line ℓ_0
23 : $P_{28} = (24, 1, 0, 0)$ lies on line ℓ_0
24 : $P_{29} = (25, 1, 0, 0)$ lies on line ℓ_0
25 : $P_{30} = (26, 1, 0, 0)$ lies on line ℓ_0
26 : $P_{31} = (27, 1, 0, 0)$ lies on line ℓ_0
27 : $P_{32} = (28, 1, 0, 0)$ lies on line ℓ_0
28 : $P_{33} = (29, 1, 0, 0)$ lies on line ℓ_0
29 : $P_{34} = (30, 1, 0, 0)$ lies on line ℓ_0
30 : $P_{35} = (31, 1, 0, 0)$ lies on line ℓ_0
31 : $P_{37} = (2, 0, 1, 0)$ lies on line ℓ_1
32 : $P_{38} = (3, 0, 1, 0)$ lies on line ℓ_1
33 : $P_{39} = (4, 0, 1, 0)$ lies on line ℓ_1
34 : $P_{40} = (5, 0, 1, 0)$ lies on line ℓ_1
35 : $P_{41} = (6, 0, 1, 0)$ lies on line ℓ_1
36 : $P_{42} = (7, 0, 1, 0)$ lies on line ℓ_1
37 : $P_{43} = (8, 0, 1, 0)$ lies on line ℓ_1
38 : $P_{44} = (9, 0, 1, 0)$ lies on line ℓ_1
39 : $P_{45} = (10, 0, 1, 0)$ lies on line ℓ_1
40 : $P_{46} = (11, 0, 1, 0)$ lies on line ℓ_1
41 : $P_{47} = (12, 0, 1, 0)$ lies on line ℓ_1
42 : $P_{48} = (13, 0, 1, 0)$ lies on line ℓ_1
43 : $P_{49} = (14, 0, 1, 0)$ lies on line ℓ_1
44 : $P_{50} = (15, 0, 1, 0)$ lies on line ℓ_1
45 : $P_{51} = (16, 0, 1, 0)$ lies on line ℓ_1
46 : $P_{52} = (17, 0, 1, 0)$ lies on line ℓ_1
47 : $P_{53} = (18, 0, 1, 0)$ lies on line ℓ_1
48 : $P_{54} = (19, 0, 1, 0)$ lies on line ℓ_1
49 : $P_{55} = (20, 0, 1, 0)$ lies on line ℓ_1
50 : $P_{56} = (21, 0, 1, 0)$ lies on line ℓ_1
51 : $P_{57} = (22, 0, 1, 0)$ lies on line ℓ_1
52 : $P_{58} = (23, 0, 1, 0)$ lies on line ℓ_1
53 : $P_{59} = (24, 0, 1, 0)$ lies on line ℓ_1
54 : $P_{60} = (25, 0, 1, 0)$ lies on line ℓ_1
55 : $P_{61} = (26, 0, 1, 0)$ lies on line ℓ_1
56 : $P_{62} = (27, 0, 1, 0)$ lies on line ℓ_1
57 : $P_{63} = (28, 0, 1, 0)$ lies on line ℓ_1
58 : $P_{64} = (29, 0, 1, 0)$ lies on line ℓ_1
59 : $P_{65} = (30, 0, 1, 0)$ lies on line ℓ_1
60 : $P_{66} = (31, 0, 1, 0)$ lies on line ℓ_1
61 : $P_{101} = (2, 2, 1, 0)$ lies on line ℓ_2
62 : $P_{134} = (3, 3, 1, 0)$ lies on line ℓ_2
63 : $P_{167} = (4, 4, 1, 0)$ lies on line ℓ_2
64 : $P_{200} = (5, 5, 1, 0)$ lies on line ℓ_2
65 : $P_{233} = (6, 6, 1, 0)$ lies on line ℓ_2
66 : $P_{266} = (7, 7, 1, 0)$ lies on line ℓ_2
67 : $P_{299} = (8, 8, 1, 0)$ lies on line ℓ_2
68 : $P_{332} = (9, 9, 1, 0)$ lies on line ℓ_2
69 : $P_{365} = (10, 10, 1, 0)$ lies on line ℓ_2
70 : $P_{398} = (11, 11, 1, 0)$ lies on line ℓ_2
71 : $P_{431} = (12, 12, 1, 0)$ lies on line ℓ_2
72 : $P_{464} = (13, 13, 1, 0)$ lies on line ℓ_2
73 : $P_{497} = (14, 14, 1, 0)$ lies on line ℓ_2
74 : $P_{530} = (15, 15, 1, 0)$ lies on line ℓ_2
75 : $P_{563} = (16, 16, 1, 0)$ lies on line ℓ_2
76 : $P_{596} = (17, 17, 1, 0)$ lies on line ℓ_2
77 : $P_{629} = (18, 18, 1, 0)$ lies on line ℓ_2
78 : $P_{662} = (19, 19, 1, 0)$ lies on line ℓ_2
79 : $P_{695} = (20, 20, 1, 0)$ lies on line ℓ_2
80 : $P_{728} = (21, 21, 1, 0)$ lies on line ℓ_2
81 : $P_{761} = (22, 22, 1, 0)$ lies on line ℓ_2
82 : $P_{794} = (23, 23, 1, 0)$ lies on line ℓ_2
83 : $P_{827} = (24, 24, 1, 0)$ lies on line ℓ_2
84 : $P_{860} = (25, 25, 1, 0)$ lies on line ℓ_2
85 : $P_{893} = (26, 26, 1, 0)$ lies on line ℓ_2
86 : $P_{926} = (27, 27, 1, 0)$ lies on line ℓ_2
87 : $P_{959} = (28, 28, 1, 0)$ lies on line ℓ_2
88 : $P_{992} = (29, 29, 1, 0)$ lies on line ℓ_2
89 : $P_{1025} = (30, 30, 1, 0)$ lies on line ℓ_2
90 : $P_{1058} = (31, 31, 1, 0)$ lies on line ℓ_2
91 : $P_{1123} = (1, 2, 0, 1)$ lies on line ℓ_3
92 : $P_{1155} = (1, 3, 0, 1)$ lies on line ℓ_3
93 : $P_{1187} = (1, 4, 0, 1)$ lies on line ℓ_3
94 : $P_{1219} = (1, 5, 0, 1)$ lies on line ℓ_3
95 : $P_{1251} = (1, 6, 0, 1)$ lies on line ℓ_3
96 : $P_{1283} = (1, 7, 0, 1)$ lies on line ℓ_3
97 : $P_{1315} = (1, 8, 0, 1)$ lies on line ℓ_3
98 : $P_{1347} = (1, 9, 0, 1)$ lies on line ℓ_3
99 : $P_{1379} = (1, 10, 0, 1)$ lies on line ℓ_3
100 : $P_{1411} = (1, 11, 0, 1)$ lies on line ℓ_3
101 : $P_{1443} = (1, 12, 0, 1)$ lies on line ℓ_3
102 : $P_{1475} = (1, 13, 0, 1)$ lies on line ℓ_3
103 : $P_{1507} = (1, 14, 0, 1)$ lies on line ℓ_3
104 : $P_{1539} = (1, 15, 0, 1)$ lies on line ℓ_3
105 : $P_{1571} = (1, 16, 0, 1)$ lies on line ℓ_3
106 : $P_{1603} = (1, 17, 0, 1)$ lies on line ℓ_3
107 : $P_{1635} = (1, 18, 0, 1)$ lies on line ℓ_3
108 : $P_{1667} = (1, 19, 0, 1)$ lies on line ℓ_3
109 : $P_{1699} = (1, 20, 0, 1)$ lies on line ℓ_3
110 : $P_{1731} = (1, 21, 0, 1)$ lies on line ℓ_3
111 : $P_{1763} = (1, 22, 0, 1)$ lies on line ℓ_3
112 : $P_{1795} = (1, 23, 0, 1)$ lies on line ℓ_3
113 : $P_{1827} = (1, 24, 0, 1)$ lies on line ℓ_3
114 : $P_{1859} = (1, 25, 0, 1)$ lies on line ℓ_3
115 : $P_{1891} = (1, 26, 0, 1)$ lies on line ℓ_3
116 : $P_{1923} = (1, 27, 0, 1)$ lies on line ℓ_3
117 : $P_{1955} = (1, 28, 0, 1)$ lies on line ℓ_3
118 : $P_{1987} = (1, 29, 0, 1)$ lies on line ℓ_3
119 : $P_{2019} = (1, 30, 0, 1)$ lies on line ℓ_3
120 : $P_{2051} = (1, 31, 0, 1)$ lies on line ℓ_3
121 : $P_{2083} = (1, 0, 1, 1)$ lies on line ℓ_5
122 : $P_{3106} = (1, 0, 2, 1)$ lies on line ℓ_5
123 : $P_{3138} = (1, 1, 2, 1)$ lies on line ℓ_4
124 : $P_{3140} = (3, 1, 2, 1)$ lies on line ℓ_6
125 : $P_{3172} = (3, 2, 2, 1)$ lies on line ℓ_7

126 : $P_{4130} = (1, 0, 3, 1)$ lies on line ℓ_5
127 : $P_{4162} = (1, 1, 3, 1)$ lies on line ℓ_4
128 : $P_{4163} = (2, 1, 3, 1)$ lies on line ℓ_6
129 : $P_{4227} = (2, 3, 3, 1)$ lies on line ℓ_7
130 : $P_{5154} = (1, 0, 4, 1)$ lies on line ℓ_5
131 : $P_{5186} = (1, 1, 4, 1)$ lies on line ℓ_4
132 : $P_{5190} = (5, 1, 4, 1)$ lies on line ℓ_6
133 : $P_{5286} = (5, 4, 4, 1)$ lies on line ℓ_7
134 : $P_{6178} = (1, 0, 5, 1)$ lies on line ℓ_5
135 : $P_{6210} = (1, 1, 5, 1)$ lies on line ℓ_4
136 : $P_{6213} = (4, 1, 5, 1)$ lies on line ℓ_6
137 : $P_{6341} = (4, 5, 5, 1)$ lies on line ℓ_7
138 : $P_{7202} = (1, 0, 6, 1)$ lies on line ℓ_5
139 : $P_{7234} = (1, 1, 6, 1)$ lies on line ℓ_4
140 : $P_{7240} = (7, 1, 6, 1)$ lies on line ℓ_6
141 : $P_{7400} = (7, 6, 6, 1)$ lies on line ℓ_7
142 : $P_{8226} = (1, 0, 7, 1)$ lies on line ℓ_5
143 : $P_{8258} = (1, 1, 7, 1)$ lies on line ℓ_4
144 : $P_{8263} = (6, 1, 7, 1)$ lies on line ℓ_6
145 : $P_{8455} = (6, 7, 7, 1)$ lies on line ℓ_7
146 : $P_{9250} = (1, 0, 8, 1)$ lies on line ℓ_5
147 : $P_{9282} = (1, 1, 8, 1)$ lies on line ℓ_4
148 : $P_{9290} = (9, 1, 8, 1)$ lies on line ℓ_6
149 : $P_{9514} = (9, 8, 8, 1)$ lies on line ℓ_7
150 : $P_{10274} = (1, 0, 9, 1)$ lies on line ℓ_5
151 : $P_{10306} = (1, 1, 9, 1)$ lies on line ℓ_4
152 : $P_{10313} = (8, 1, 9, 1)$ lies on line ℓ_6
153 : $P_{10569} = (8, 9, 9, 1)$ lies on line ℓ_7
154 : $P_{11298} = (1, 0, 10, 1)$ lies on line ℓ_5
155 : $P_{11330} = (1, 1, 10, 1)$ lies on line ℓ_4
156 : $P_{11340} = (11, 1, 10, 1)$ lies on line ℓ_6
157 : $P_{11628} = (11, 10, 10, 1)$ lies on line ℓ_7
158 : $P_{12322} = (1, 0, 11, 1)$ lies on line ℓ_5
159 : $P_{12354} = (1, 1, 11, 1)$ lies on line ℓ_4
160 : $P_{12363} = (10, 1, 11, 1)$ lies on line ℓ_6
161 : $P_{12683} = (10, 11, 11, 1)$ lies on line ℓ_7
162 : $P_{13346} = (1, 0, 12, 1)$ lies on line ℓ_5
163 : $P_{13378} = (1, 1, 12, 1)$ lies on line ℓ_4
164 : $P_{13390} = (13, 1, 12, 1)$ lies on line ℓ_6
165 : $P_{13742} = (13, 12, 12, 1)$ lies on line ℓ_7
166 : $P_{14370} = (1, 0, 13, 1)$ lies on line ℓ_5
167 : $P_{14402} = (1, 1, 13, 1)$ lies on line ℓ_4
168 : $P_{14413} = (12, 1, 13, 1)$ lies on line ℓ_6
169 : $P_{14797} = (12, 13, 13, 1)$ lies on line ℓ_7
170 : $P_{15394} = (1, 0, 14, 1)$ lies on line ℓ_5
171 : $P_{15426} = (1, 1, 14, 1)$ lies on line ℓ_4
172 : $P_{15440} = (15, 1, 14, 1)$ lies on line ℓ_6
173 : $P_{15856} = (15, 14, 14, 1)$ lies on line ℓ_7
174 : $P_{16418} = (1, 0, 15, 1)$ lies on line ℓ_5
175 : $P_{16450} = (1, 1, 15, 1)$ lies on line ℓ_4
176 : $P_{16463} = (14, 1, 15, 1)$ lies on line ℓ_6
177 : $P_{16911} = (14, 15, 15, 1)$ lies on line ℓ_7
178 : $P_{17442} = (1, 0, 16, 1)$ lies on line ℓ_5
179 : $P_{17474} = (1, 1, 16, 1)$ lies on line ℓ_4
180 : $P_{17490} = (17, 1, 16, 1)$ lies on line ℓ_6
181 : $P_{17970} = (17, 16, 16, 1)$ lies on line ℓ_7
182 : $P_{18466} = (1, 0, 17, 1)$ lies on line ℓ_5
183 : $P_{18498} = (1, 1, 17, 1)$ lies on line ℓ_4
184 : $P_{18513} = (16, 1, 17, 1)$ lies on line ℓ_6
185 : $P_{19025} = (16, 17, 17, 1)$ lies on line ℓ_7
186 : $P_{19490} = (1, 0, 18, 1)$ lies on line ℓ_5
187 : $P_{19522} = (1, 1, 18, 1)$ lies on line ℓ_4
188 : $P_{19540} = (19, 1, 18, 1)$ lies on line ℓ_6
189 : $P_{20084} = (19, 18, 18, 1)$ lies on line ℓ_7
190 : $P_{20514} = (1, 0, 19, 1)$ lies on line ℓ_5
191 : $P_{20546} = (1, 1, 19, 1)$ lies on line ℓ_4
192 : $P_{20563} = (18, 1, 19, 1)$ lies on line ℓ_6
193 : $P_{21139} = (18, 19, 19, 1)$ lies on line ℓ_7
194 : $P_{21538} = (1, 0, 20, 1)$ lies on line ℓ_5
195 : $P_{21570} = (1, 1, 20, 1)$ lies on line ℓ_4
196 : $P_{21590} = (21, 1, 20, 1)$ lies on line ℓ_6
197 : $P_{22198} = (21, 20, 20, 1)$ lies on line ℓ_7
198 : $P_{22562} = (1, 0, 21, 1)$ lies on line ℓ_5
199 : $P_{22594} = (1, 1, 21, 1)$ lies on line ℓ_4
200 : $P_{22613} = (20, 1, 21, 1)$ lies on line ℓ_6
201 : $P_{23253} = (20, 21, 21, 1)$ lies on line ℓ_7
202 : $P_{23586} = (1, 0, 22, 1)$ lies on line ℓ_5
203 : $P_{23618} = (1, 1, 22, 1)$ lies on line ℓ_4
204 : $P_{23640} = (23, 1, 22, 1)$ lies on line ℓ_6
205 : $P_{24312} = (23, 22, 22, 1)$ lies on line ℓ_7
206 : $P_{24610} = (1, 0, 23, 1)$ lies on line ℓ_5
207 : $P_{24642} = (1, 1, 23, 1)$ lies on line ℓ_4
208 : $P_{24663} = (22, 1, 23, 1)$ lies on line ℓ_6
209 : $P_{25367} = (22, 23, 23, 1)$ lies on line ℓ_7
210 : $P_{25634} = (1, 0, 24, 1)$ lies on line ℓ_5
211 : $P_{25666} = (1, 1, 24, 1)$ lies on line ℓ_4
212 : $P_{25690} = (25, 1, 24, 1)$ lies on line ℓ_6
213 : $P_{26426} = (25, 24, 24, 1)$ lies on line ℓ_7
214 : $P_{26658} = (1, 0, 25, 1)$ lies on line ℓ_5
215 : $P_{26690} = (1, 1, 25, 1)$ lies on line ℓ_4
216 : $P_{26713} = (24, 1, 25, 1)$ lies on line ℓ_6
217 : $P_{27481} = (24, 25, 25, 1)$ lies on line ℓ_7
218 : $P_{27682} = (1, 0, 26, 1)$ lies on line ℓ_5
219 : $P_{27714} = (1, 1, 26, 1)$ lies on line ℓ_4
220 : $P_{27740} = (27, 1, 26, 1)$ lies on line ℓ_6
221 : $P_{28540} = (27, 26, 26, 1)$ lies on line ℓ_7
222 : $P_{28706} = (1, 0, 27, 1)$ lies on line ℓ_5
223 : $P_{28738} = (1, 1, 27, 1)$ lies on line ℓ_4
224 : $P_{28763} = (26, 1, 27, 1)$ lies on line ℓ_6
225 : $P_{29595} = (26, 27, 27, 1)$ lies on line ℓ_7
226 : $P_{29730} = (1, 0, 28, 1)$ lies on line ℓ_5
227 : $P_{29762} = (1, 1, 28, 1)$ lies on line ℓ_4
228 : $P_{29790} = (29, 1, 28, 1)$ lies on line ℓ_6
229 : $P_{30654} = (29, 28, 28, 1)$ lies on line ℓ_7
230 : $P_{30754} = (1, 0, 29, 1)$ lies on line ℓ_5
231 : $P_{30786} = (1, 1, 29, 1)$ lies on line ℓ_4
232 : $P_{30813} = (28, 1, 29, 1)$ lies on line ℓ_6
233 : $P_{31709} = (28, 29, 29, 1)$ lies on line ℓ_7

234 : $P_{31778} = (1, 0, 30, 1)$ lies on line ℓ_5
235 : $P_{31810} = (1, 1, 30, 1)$ lies on line ℓ_4
236 : $P_{31840} = (31, 1, 30, 1)$ lies on line ℓ_6
237 : $P_{32768} = (31, 30, 30, 1)$ lies on line ℓ_7
238 : $P_{32802} = (1, 0, 31, 1)$ lies on line ℓ_5
239 : $P_{32834} = (1, 1, 31, 1)$ lies on line ℓ_4
240 : $P_{32863} = (30, 1, 31, 1)$ lies on line ℓ_6
241 : $P_{33823} = (30, 31, 31, 1)$ lies on line ℓ_7

The single points on the surface are:

Points on surface but on no line

The surface has 870 points not on any line:
The points on the surface but not on lines are:

0 : $P_{2197} = (20, 3, 1, 1)$
1 : $P_{2200} = (23, 3, 1, 1)$
2 : $P_{2265} = (24, 5, 1, 1)$
3 : $P_{2270} = (29, 5, 1, 1)$
4 : $P_{2299} = (26, 6, 1, 1)$
5 : $P_{2301} = (28, 6, 1, 1)$
6 : $P_{2322} = (17, 7, 1, 1)$
7 : $P_{2327} = (22, 7, 1, 1)$
8 : $P_{2486} = (21, 12, 1, 1)$
9 : $P_{2490} = (25, 12, 1, 1)$
10 : $P_{2632} = (7, 17, 1, 1)$
11 : $P_{2647} = (22, 17, 1, 1)$
12 : $P_{2724} = (3, 20, 1, 1)$
13 : $P_{2744} = (23, 20, 1, 1)$
14 : $P_{2765} = (12, 21, 1, 1)$
15 : $P_{2778} = (25, 21, 1, 1)$
16 : $P_{2792} = (7, 22, 1, 1)$
17 : $P_{2802} = (17, 22, 1, 1)$
18 : $P_{2820} = (3, 23, 1, 1)$
19 : $P_{2837} = (20, 23, 1, 1)$
20 : $P_{2854} = (5, 24, 1, 1)$
21 : $P_{2878} = (29, 24, 1, 1)$
22 : $P_{2893} = (12, 25, 1, 1)$
23 : $P_{2902} = (21, 25, 1, 1)$
24 : $P_{2919} = (6, 26, 1, 1)$
25 : $P_{2941} = (28, 26, 1, 1)$
26 : $P_{2983} = (6, 28, 1, 1)$
27 : $P_{3003} = (26, 28, 1, 1)$
28 : $P_{3014} = (5, 29, 1, 1)$
29 : $P_{3033} = (24, 29, 1, 1)$
30 : $P_{3176} = (7, 2, 2, 1)$
31 : $P_{3252} = (19, 4, 2, 1)$
32 : $P_{3260} = (27, 4, 2, 1)$
33 : $P_{3272} = (7, 5, 2, 1)$
34 : $P_{3278} = (13, 5, 2, 1)$
35 : $P_{3347} = (18, 7, 2, 1)$
36 : $P_{3357} = (28, 7, 2, 1)$
37 : $P_{3374} = (13, 8, 2, 1)$
38 : $P_{3390} = (29, 8, 2, 1)$
39 : $P_{3399} = (6, 9, 2, 1)$
40 : $P_{3413} = (20, 9, 2, 1)$
41 : $P_{3591} = (6, 15, 2, 1)$
42 : $P_{3609} = (24, 15, 2, 1)$
43 : $P_{3747} = (2, 20, 2, 1)$
44 : $P_{3760} = (15, 20, 2, 1)$
45 : $P_{3795} = (18, 21, 2, 1)$
46 : $P_{3806} = (29, 21, 2, 1)$
47 : $P_{3811} = (2, 22, 2, 1)$
48 : $P_{3820} = (11, 22, 2, 1)$
49 : $P_{3860} = (19, 23, 2, 1)$
50 : $P_{3865} = (24, 23, 2, 1)$
51 : $P_{3984} = (15, 27, 2, 1)$
52 : $P_{3997} = (28, 27, 2, 1)$
53 : $P_{4044} = (11, 29, 2, 1)$
54 : $P_{4053} = (20, 29, 2, 1)$
55 : $P_{4097} = (0, 31, 2, 1)$
56 : $P_{4124} = (27, 31, 2, 1)$
57 : $P_{4212} = (19, 2, 3, 1)$
58 : $P_{4214} = (21, 2, 3, 1)$
59 : $P_{4232} = (7, 3, 3, 1)$
60 : $P_{4264} = (7, 4, 3, 1)$
61 : $P_{4268} = (11, 4, 3, 1)$
62 : $P_{4389} = (4, 8, 3, 1)$
63 : $P_{4413} = (28, 8, 3, 1)$
64 : $P_{4487} = (6, 11, 3, 1)$
65 : $P_{4508} = (27, 11, 3, 1)$
66 : $P_{4517} = (4, 12, 3, 1)$
67 : $P_{4529} = (16, 12, 3, 1)$
68 : $P_{4551} = (6, 13, 3, 1)$
69 : $P_{4562} = (17, 13, 3, 1)$
70 : $P_{4620} = (11, 15, 3, 1)$
71 : $P_{4635} = (26, 15, 3, 1)$
72 : $P_{4655} = (14, 16, 3, 1)$
73 : $P_{4668} = (27, 16, 3, 1)$
74 : $P_{4678} = (5, 17, 3, 1)$
75 : $P_{4692} = (19, 17, 3, 1)$
76 : $P_{4774} = (5, 20, 3, 1)$
77 : $P_{4797} = (28, 20, 3, 1)$

78 : $P_{4801} = (0, 21, 3, 1)$
79 : $P_{4827} = (26, 21, 3, 1)$
80 : $P_{4874} = (9, 23, 3, 1)$
81 : $P_{4886} = (21, 23, 3, 1)$
82 : $P_{5041} = (16, 28, 3, 1)$
83 : $P_{5042} = (17, 28, 3, 1)$
84 : $P_{5098} = (9, 30, 3, 1)$
85 : $P_{5103} = (14, 30, 3, 1)$
86 : $P_{5240} = (23, 2, 4, 1)$
87 : $P_{5248} = (31, 2, 4, 1)$
88 : $P_{5302} = (21, 4, 4, 1)$
89 : $P_{5495} = (22, 10, 4, 1)$
90 : $P_{5500} = (27, 10, 4, 1)$
91 : $P_{5525} = (20, 11, 4, 1)$
92 : $P_{5534} = (29, 11, 4, 1)$
93 : $P_{5667} = (2, 16, 4, 1)$
94 : $P_{5673} = (8, 16, 4, 1)$
95 : $P_{5718} = (21, 17, 4, 1)$
96 : $P_{5724} = (27, 17, 4, 1)$
97 : $P_{5729} = (0, 18, 4, 1)$
98 : $P_{5731} = (2, 18, 4, 1)$
99 : $P_{5834} = (9, 21, 4, 1)$
100 : $P_{5848} = (23, 21, 4, 1)$
101 : $P_{5872} = (15, 22, 4, 1)$
102 : $P_{5886} = (29, 22, 4, 1)$
103 : $P_{5928} = (7, 24, 4, 1)$
104 : $P_{5929} = (8, 24, 4, 1)$
105 : $P_{5957} = (4, 25, 4, 1)$
106 : $P_{5968} = (15, 25, 4, 1)$
107 : $P_{6058} = (9, 28, 4, 1)$
108 : $P_{6071} = (22, 28, 4, 1)$
109 : $P_{6085} = (4, 29, 4, 1)$
110 : $P_{6112} = (31, 29, 4, 1)$
111 : $P_{6152} = (7, 31, 4, 1)$
112 : $P_{6165} = (20, 31, 4, 1)$
113 : $P_{6313} = (8, 4, 5, 1)$
114 : $P_{6333} = (28, 4, 5, 1)$
115 : $P_{6358} = (21, 5, 5, 1)$
116 : $P_{6513} = (16, 10, 5, 1)$
117 : $P_{6520} = (23, 10, 5, 1)$
118 : $P_{6569} = (8, 12, 5, 1)$
119 : $P_{6578} = (17, 12, 5, 1)$
120 : $P_{6595} = (2, 13, 5, 1)$
121 : $P_{6623} = (30, 13, 5, 1)$
122 : $P_{6659} = (2, 15, 5, 1)$
123 : $P_{6677} = (20, 15, 5, 1)$
124 : $P_{6704} = (15, 16, 5, 1)$
125 : $P_{6710} = (21, 16, 5, 1)$
126 : $P_{6796} = (11, 19, 5, 1)$
127 : $P_{6815} = (30, 19, 5, 1)$
128 : $P_{6925} = (12, 23, 5, 1)$
129 : $P_{6926} = (13, 23, 5, 1)$
130 : $P_{6956} = (11, 24, 5, 1)$
131 : $P_{6973} = (28, 24, 5, 1)$
132 : $P_{7022} = (13, 26, 5, 1)$
133 : $P_{7025} = (16, 26, 5, 1)$
134 : $P_{7053} = (12, 27, 5, 1)$
135 : $P_{7061} = (20, 27, 5, 1)$
136 : $P_{7073} = (0, 28, 5, 1)$
137 : $P_{7076} = (3, 28, 5, 1)$
138 : $P_{7122} = (17, 29, 5, 1)$
139 : $P_{7128} = (23, 29, 5, 1)$
140 : $P_{7172} = (3, 31, 5, 1)$
141 : $P_{7184} = (15, 31, 5, 1)$
142 : $P_{7271} = (6, 2, 6, 1)$
143 : $P_{7275} = (10, 2, 6, 1)$
144 : $P_{7335} = (6, 4, 6, 1)$
145 : $P_{7359} = (30, 4, 6, 1)$
146 : $P_{7412} = (19, 6, 6, 1)$
147 : $P_{7467} = (10, 8, 6, 1)$
148 : $P_{7488} = (31, 8, 6, 1)$
149 : $P_{7521} = (0, 10, 6, 1)$
150 : $P_{7546} = (25, 10, 6, 1)$
151 : $P_{7671} = (22, 14, 6, 1)$
152 : $P_{7672} = (23, 14, 6, 1)$
153 : $P_{7708} = (27, 15, 6, 1)$
154 : $P_{7709} = (28, 15, 6, 1)$
155 : $P_{7785} = (8, 18, 6, 1)$
156 : $P_{7788} = (11, 18, 6, 1)$
157 : $P_{7834} = (25, 19, 6, 1)$
158 : $P_{7837} = (28, 19, 6, 1)$
159 : $P_{7853} = (12, 20, 6, 1)$
160 : $P_{7868} = (27, 20, 6, 1)$
161 : $P_{7875} = (2, 21, 6, 1)$
162 : $P_{7892} = (19, 21, 6, 1)$
163 : $P_{7939} = (2, 23, 6, 1)$
164 : $P_{7968} = (31, 23, 6, 1)$
165 : $P_{7981} = (12, 24, 6, 1)$
166 : $P_{7991} = (22, 24, 6, 1)$
167 : $P_{8012} = (11, 25, 6, 1)$
168 : $P_{8024} = (23, 25, 6, 1)$
169 : $P_{8041} = (8, 26, 6, 1)$
170 : $P_{8063} = (30, 26, 6, 1)$
171 : $P_{8365} = (12, 4, 7, 1)$
172 : $P_{8369} = (16, 4, 7, 1)$
173 : $P_{8468} = (19, 7, 7, 1)$
174 : $P_{8493} = (12, 8, 7, 1)$
175 : $P_{8498} = (17, 8, 7, 1)$
176 : $P_{8515} = (2, 9, 7, 1)$
177 : $P_{8537} = (24, 9, 7, 1)$
178 : $P_{8579} = (2, 11, 7, 1)$
179 : $P_{8599} = (22, 11, 7, 1)$
180 : $P_{8639} = (30, 12, 7, 1)$
181 : $P_{8640} = (31, 12, 7, 1)$
182 : $P_{8659} = (18, 13, 7, 1)$
183 : $P_{8661} = (20, 13, 7, 1)$
184 : $P_{8769} = (0, 17, 7, 1)$
185 : $P_{8793} = (24, 17, 7, 1)$

186 : $P_{8816} = (15, 18, 7, 1)$
187 : $P_{8831} = (30, 18, 7, 1)$
188 : $P_{8842} = (9, 19, 7, 1)$
189 : $P_{8864} = (31, 19, 7, 1)$
190 : $P_{8881} = (16, 20, 7, 1)$
191 : $P_{8884} = (19, 20, 7, 1)$
192 : $P_{9042} = (17, 25, 7, 1)$
193 : $P_{9045} = (20, 25, 7, 1)$
194 : $P_{9062} = (5, 26, 7, 1)$
195 : $P_{9066} = (9, 26, 7, 1)$
196 : $P_{9168} = (15, 29, 7, 1)$
197 : $P_{9175} = (22, 29, 7, 1)$
198 : $P_{9222} = (5, 31, 7, 1)$
199 : $P_{9235} = (18, 31, 7, 1)$
200 : $P_{9325} = (12, 2, 8, 1)$
201 : $P_{9341} = (28, 2, 8, 1)$
202 : $P_{9427} = (18, 5, 8, 1)$
203 : $P_{9440} = (31, 5, 8, 1)$
204 : $P_{9508} = (3, 8, 8, 1)$
205 : $P_{9558} = (21, 9, 8, 1)$
206 : $P_{9560} = (23, 9, 8, 1)$
207 : $P_{9604} = (3, 11, 8, 1)$
208 : $P_{9618} = (17, 11, 8, 1)$
209 : $P_{9653} = (20, 12, 8, 1)$
210 : $P_{9660} = (27, 12, 8, 1)$
211 : $P_{9709} = (12, 14, 8, 1)$
212 : $P_{9716} = (19, 14, 8, 1)$
213 : $P_{9835} = (10, 18, 8, 1)$
214 : $P_{9839} = (14, 18, 8, 1)$
215 : $P_{10003} = (18, 23, 8, 1)$
216 : $P_{10012} = (27, 23, 8, 1)$
217 : $P_{10027} = (10, 24, 8, 1)$
218 : $P_{10037} = (20, 24, 8, 1)$
219 : $P_{10098} = (17, 26, 8, 1)$
220 : $P_{10112} = (31, 26, 8, 1)$
221 : $P_{10159} = (14, 28, 8, 1)$
222 : $P_{10166} = (21, 28, 8, 1)$
223 : $P_{10177} = (0, 29, 8, 1)$
224 : $P_{10196} = (19, 29, 8, 1)$
225 : $P_{10232} = (23, 30, 8, 1)$
226 : $P_{10237} = (28, 30, 8, 1)$
227 : $P_{10337} = (0, 2, 9, 1)$
228 : $P_{10355} = (18, 2, 9, 1)$
229 : $P_{10374} = (5, 3, 9, 1)$
230 : $P_{10399} = (30, 3, 9, 1)$
231 : $P_{10453} = (20, 5, 9, 1)$
232 : $P_{10461} = (28, 5, 9, 1)$
233 : $P_{10470} = (5, 6, 9, 1)$
234 : $P_{10487} = (22, 6, 9, 1)$
235 : $P_{10554} = (25, 8, 9, 1)$
236 : $P_{10556} = (27, 8, 9, 1)$
237 : $P_{10564} = (3, 9, 9, 1)$
238 : $P_{10596} = (3, 10, 9, 1)$
239 : $P_{10612} = (19, 10, 9, 1)$
240 : $P_{10705} = (16, 13, 9, 1)$
241 : $P_{10715} = (26, 13, 9, 1)$
242 : $P_{10803} = (18, 16, 9, 1)$
243 : $P_{10807} = (22, 16, 9, 1)$
244 : $P_{10837} = (20, 17, 9, 1)$
245 : $P_{10842} = (25, 17, 9, 1)$
246 : $P_{10885} = (4, 19, 9, 1)$
247 : $P_{10908} = (27, 19, 9, 1)$
248 : $P_{11013} = (4, 23, 9, 1)$
249 : $P_{11035} = (26, 23, 9, 1)$
250 : $P_{11092} = (19, 25, 9, 1)$
251 : $P_{11101} = (28, 25, 9, 1)$
252 : $P_{11217} = (16, 29, 9, 1)$
253 : $P_{11231} = (30, 29, 9, 1)$
254 : $P_{11405} = (12, 3, 10, 1)$
255 : $P_{11411} = (18, 3, 10, 1)$
256 : $P_{11448} = (23, 4, 10, 1)$
257 : $P_{11451} = (26, 4, 10, 1)$
258 : $P_{11535} = (14, 7, 10, 1)$
259 : $P_{11550} = (29, 7, 10, 1)$
260 : $P_{11599} = (14, 9, 10, 1)$
261 : $P_{11615} = (30, 9, 10, 1)$
262 : $P_{11622} = (5, 10, 10, 1)$
263 : $P_{11673} = (24, 11, 10, 1)$
264 : $P_{11677} = (28, 11, 10, 1)$
265 : $P_{11782} = (5, 15, 10, 1)$
266 : $P_{11789} = (12, 15, 10, 1)$
267 : $P_{11850} = (9, 17, 10, 1)$
268 : $P_{11859} = (18, 17, 10, 1)$
269 : $P_{11928} = (23, 19, 10, 1)$
270 : $P_{11929} = (24, 19, 10, 1)$
271 : $P_{12001} = (0, 22, 10, 1)$
272 : $P_{12009} = (8, 22, 10, 1)$
273 : $P_{12061} = (28, 23, 10, 1)$
274 : $P_{12063} = (30, 23, 10, 1)$
275 : $P_{12067} = (2, 24, 10, 1)$
276 : $P_{12074} = (9, 24, 10, 1)$
277 : $P_{12131} = (2, 26, 10, 1)$
278 : $P_{12158} = (29, 26, 10, 1)$
279 : $P_{12265} = (8, 30, 10, 1)$
280 : $P_{12283} = (26, 30, 10, 1)$
281 : $P_{12449} = (0, 4, 11, 1)$
282 : $P_{12458} = (9, 4, 11, 1)$
283 : $P_{12498} = (17, 5, 11, 1)$
284 : $P_{12500} = (19, 5, 11, 1)$
285 : $P_{12521} = (8, 6, 11, 1)$
286 : $P_{12536} = (23, 6, 11, 1)$
287 : $P_{12579} = (2, 8, 11, 1)$
288 : $P_{12593} = (16, 8, 11, 1)$
289 : $P_{12643} = (2, 10, 11, 1)$
290 : $P_{12647} = (6, 10, 11, 1)$
291 : $P_{12678} = (5, 11, 11, 1)$
292 : $P_{12711} = (6, 12, 11, 1)$
293 : $P_{12734} = (29, 12, 11, 1)$

$294: P_{12746} = (9, 13, 11, 1)$
$295: P_{12762} = (25, 13, 11, 1)$
$296: P_{12774} = (5, 14, 11, 1)$
$297: P_{12777} = (8, 14, 11, 1)$
$298: P_{12888} = (23, 17, 11, 1)$
$299: P_{12894} = (29, 17, 11, 1)$
$300: P_{12978} = (17, 20, 11, 1)$
$301: P_{12986} = (25, 20, 11, 1)$
$302: P_{13038} = (13, 22, 11, 1)$
$303: P_{13044} = (19, 22, 11, 1)$
$304: P_{13092} = (3, 24, 11, 1)$
$305: P_{13105} = (16, 24, 11, 1)$
$306: P_{13188} = (3, 27, 11, 1)$
$307: P_{13198} = (13, 27, 11, 1)$
$308: P_{13417} = (8, 2, 12, 1)$
$309: P_{13425} = (16, 2, 12, 1)$
$310: P_{13455} = (14, 3, 12, 1)$
$311: P_{13467} = (26, 3, 12, 1)$
$312: P_{13476} = (3, 4, 12, 1)$
$313: P_{13495} = (22, 4, 12, 1)$
$314: P_{13507} = (2, 5, 12, 1)$
$315: P_{13532} = (27, 5, 12, 1)$
$316: P_{13571} = (2, 7, 12, 1)$
$317: P_{13572} = (3, 7, 12, 1)$
$318: P_{13650} = (17, 9, 12, 1)$
$319: P_{13651} = (18, 9, 12, 1)$
$320: P_{13673} = (8, 10, 12, 1)$
$321: P_{13696} = (31, 10, 12, 1)$
$322: P_{13752} = (23, 12, 12, 1)$
$323: P_{13775} = (14, 13, 12, 1)$
$324: P_{13785} = (24, 13, 12, 1)$
$325: P_{13937} = (16, 18, 12, 1)$
$326: P_{13943} = (22, 18, 12, 1)$
$327: P_{14041} = (24, 21, 12, 1)$
$328: P_{14048} = (31, 21, 12, 1)$
$329: P_{14113} = (0, 24, 12, 1)$
$330: P_{14130} = (17, 24, 12, 1)$
$331: P_{14152} = (7, 25, 12, 1)$
$332: P_{14171} = (26, 25, 12, 1)$
$333: P_{14227} = (18, 27, 12, 1)$
$334: P_{14232} = (23, 27, 12, 1)$
$335: P_{14312} = (7, 30, 12, 1)$
$336: P_{14332} = (27, 30, 12, 1)$
$337: P_{14579} = (18, 6, 13, 1)$
$338: P_{14586} = (25, 6, 13, 1)$
$339: P_{14679} = (22, 9, 13, 1)$
$340: P_{14685} = (28, 9, 13, 1)$
$341: P_{14721} = (0, 11, 13, 1)$
$342: P_{14737} = (16, 11, 13, 1)$
$343: P_{14808} = (23, 13, 13, 1)$
$344: P_{14888} = (7, 16, 13, 1)$
$345: P_{14890} = (9, 16, 13, 1)$
$346: P_{15022} = (13, 20, 13, 1)$
$347: P_{15027} = (18, 20, 13, 1)$
$348: P_{15055} = (14, 21, 13, 1)$
$349: P_{15069} = (28, 21, 13, 1)$
$350: P_{15112} = (7, 23, 13, 1)$
$351: P_{15120} = (15, 23, 13, 1)$
$352: P_{15143} = (6, 24, 13, 1)$
$353: P_{15152} = (15, 24, 13, 1)$
$354: P_{15178} = (9, 25, 13, 1)$
$355: P_{15182} = (13, 25, 13, 1)$
$356: P_{15205} = (4, 26, 13, 1)$
$357: P_{15224} = (23, 26, 13, 1)$
$358: P_{15247} = (14, 27, 13, 1)$
$359: P_{15249} = (16, 27, 13, 1)$
$360: P_{15333} = (4, 30, 13, 1)$
$361: P_{15335} = (6, 30, 13, 1)$
$362: P_{15383} = (22, 31, 13, 1)$
$363: P_{15386} = (25, 31, 13, 1)$
$364: P_{15493} = (4, 3, 14, 1)$
$365: P_{15511} = (22, 3, 14, 1)$
$366: P_{15562} = (9, 5, 14, 1)$
$367: P_{15579} = (26, 5, 14, 1)$
$368: P_{15621} = (4, 7, 14, 1)$
$369: P_{15628} = (11, 7, 14, 1)$
$370: P_{15656} = (7, 8, 14, 1)$
$371: P_{15673} = (24, 8, 14, 1)$
$372: P_{15764} = (19, 11, 14, 1)$
$373: P_{15775} = (30, 11, 14, 1)$
$374: P_{15786} = (9, 12, 14, 1)$
$375: P_{15788} = (11, 12, 14, 1)$
$376: P_{15858} = (17, 14, 14, 1)$
$377: P_{15880} = (7, 15, 14, 1)$
$378: P_{15896} = (23, 15, 14, 1)$
$379: P_{15908} = (3, 16, 14, 1)$
$380: P_{15929} = (24, 16, 14, 1)$
$381: P_{16004} = (3, 19, 14, 1)$
$382: P_{16011} = (10, 19, 14, 1)$
$383: P_{16087} = (22, 21, 14, 1)$
$384: P_{16095} = (30, 21, 14, 1)$
$385: P_{16180} = (19, 24, 14, 1)$
$386: P_{16184} = (23, 24, 14, 1)$
$387: P_{16193} = (0, 25, 14, 1)$
$388: P_{16203} = (10, 25, 14, 1)$
$389: P_{16402} = (17, 31, 14, 1)$
$390: P_{16411} = (26, 31, 14, 1)$
$391: P_{16486} = (5, 2, 15, 1)$
$392: P_{16508} = (27, 2, 15, 1)$
$393: P_{16646} = (5, 7, 15, 1)$
$394: P_{16654} = (13, 7, 15, 1)$
$395: P_{16741} = (4, 10, 15, 1)$
$396: P_{16750} = (13, 10, 15, 1)$
$397: P_{16823} = (22, 12, 15, 1)$
$398: P_{16825} = (24, 12, 15, 1)$
$399: P_{16869} = (4, 14, 15, 1)$
$400: P_{16885} = (20, 14, 15, 1)$
$401: P_{16914} = (17, 15, 15, 1)$

$402: P_{16929} = (0, 16, 15, 1)$
$403: P_{16940} = (11, 16, 15, 1)$
$404: P_{16969} = (8, 17, 15, 1)$
$405: P_{16973} = (12, 17, 15, 1)$
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$407: P_{17081} = (24, 20, 15, 1)$
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$811: P_{31499} = (10, 23, 29, 1)$
$812: P_{31505} = (16, 23, 29, 1)$
$813: P_{31691} = (10, 29, 29, 1)$
$814: P_{31713} = (0, 30, 29, 1)$
$815: P_{31733} = (20, 30, 29, 1)$
$816: P_{31953} = (16, 5, 30, 1)$
$817: P_{31962} = (25, 5, 30, 1)$
$818: P_{31969} = (0, 6, 30, 1)$
$819: P_{31983} = (14, 6, 30, 1)$
$820: P_{32009} = (8, 7, 30, 1)$
$821: P_{32025} = (24, 7, 30, 1)$
$822: P_{32038} = (5, 8, 30, 1)$
$823: P_{32047} = (14, 8, 30, 1)$
$824: P_{32104} = (7, 10, 30, 1)$
$825: P_{32118} = (21, 10, 30, 1)$
$826: P_{32198} = (5, 13, 30, 1)$
$827: P_{32200} = (7, 13, 30, 1)$
$828: P_{32265} = (8, 15, 30, 1)$
$829: P_{32276} = (19, 15, 30, 1)$
$830: P_{32324} = (3, 17, 30, 1)$
$831: P_{32332} = (11, 17, 30, 1)$
$832: P_{32356} = (3, 18, 30, 1)$
$833: P_{32365} = (12, 18, 30, 1)$

834 : $P_{32464} = (15, 21, 30, 1)$
835 : $P_{32465} = (16, 21, 30, 1)$
836 : $P_{32620} = (11, 26, 30, 1)$
837 : $P_{32624} = (15, 26, 30, 1)$
838 : $P_{32692} = (19, 28, 30, 1)$
839 : $P_{32698} = (25, 28, 30, 1)$
840 : $P_{32749} = (12, 30, 30, 1)$
841 : $P_{32790} = (21, 31, 30, 1)$
842 : $P_{32793} = (24, 31, 30, 1)$
843 : $P_{32880} = (15, 2, 31, 1)$
844 : $P_{32885} = (20, 2, 31, 1)$
845 : $P_{32922} = (25, 3, 31, 1)$
846 : $P_{32926} = (29, 3, 31, 1)$
847 : $P_{32931} = (2, 4, 31, 1)$
848 : $P_{32946} = (17, 4, 31, 1)$
849 : $P_{32995} = (2, 6, 31, 1)$
850 : $P_{33003} = (10, 6, 31, 1)$
851 : $P_{33195} = (10, 12, 31, 1)$
852 : $P_{33211} = (26, 12, 31, 1)$
853 : $P_{33217} = (0, 13, 31, 1)$
854 : $P_{33232} = (15, 13, 31, 1)$
855 : $P_{33265} = (16, 14, 31, 1)$
856 : $P_{33276} = (27, 14, 31, 1)$
857 : $P_{33421} = (12, 19, 31, 1)$
858 : $P_{33423} = (14, 19, 31, 1)$
859 : $P_{33490} = (17, 21, 31, 1)$
860 : $P_{33500} = (27, 21, 31, 1)$
861 : $P_{33525} = (20, 22, 31, 1)$
862 : $P_{33531} = (26, 22, 31, 1)$
863 : $P_{33640} = (7, 26, 31, 1)$
864 : $P_{33658} = (25, 26, 31, 1)$
865 : $P_{33736} = (7, 29, 31, 1)$
866 : $P_{33743} = (14, 29, 31, 1)$
867 : $P_{33777} = (16, 30, 31, 1)$
868 : $P_{33790} = (29, 30, 31, 1)$
869 : $P_{33805} = (12, 31, 31, 1)$

Line Intersection Graph

	0	1	2	3	4	5	6	7
0	0	1	1	1	0	0	0	0
1	1	0	1	0	1	1	1	0
2	1	1	0	0	1	1	0	1
3	1	0	0	0	1	1	1	1
4	0	1	1	1	0	1	1	0
5	0	1	1	1	1	0	0	1
6	0	1	0	1	1	0	0	1
7	0	0	1	1	0	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3
in point	P_0	P_5	P_1

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_4	ℓ_5	ℓ_6
in point	P_0	P_2	P_2	P_2	P_{36}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_4	ℓ_5	ℓ_7
in point	P_5	P_2	P_2	P_2	P_{68}

Line 3 intersects

Line	ℓ_0	ℓ_4	ℓ_5	ℓ_6	ℓ_7
in point	P_1	P_{1091}	P_{1059}	P_{1091}	P_{1059}

Line 4 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_5	ℓ_6
in point	P_2	P_2	P_{1091}	P_2	P_{1091}

Line 5 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_7
in point	P_2	P_2	P_{1059}	P_2	P_{1059}

Line 6 intersects

Line	ℓ_1	ℓ_3	ℓ_4	ℓ_7
in point	P_{36}	P_{1091}	P_{1091}	P_{2114}

Line 7 intersects

Line	ℓ_2	ℓ_3	ℓ_5	ℓ_6
in point	P_{68}	P_{1059}	P_{1059}	P_{2114}

The surface has 1121 points:
Too many to print.