Rank-74247 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is 1090789445

General information

Number of lines	5
Number of points	4225
Number of singular points	1
Number of Eckardt points	0
Number of double points	6
Number of single points	313
Number of points off lines	3906
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^5
Type of lines on points	2^6, 1^{313}, 0^{3906}

Singular Points

The surface has 1 singular points:

$0: \ P_0 = \mathbf{P}(1,0,0,0) = \mathbf{P}(1,0,0,0)$

The 5 Lines

The lines and their Pluecker coordinates are:

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

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{65} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{65} = \mathbf{Pl}(1,0,1,0,1,0)_{4353}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{270530} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{270530} = \mathbf{Pl}(1,0,1,1,1,1)_{544579}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & \epsilon^{42} & 1 \\ 0 & 1 & \epsilon^{21} & 1 \end{bmatrix}_{499441} = \begin{bmatrix} 1 & 0 & 56 & 1 \\ 0 & 1 & 57 & 1 \end{bmatrix}_{499441} = \mathbf{Pl}(56,57,56,57,57,1)_{15447346}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & \epsilon^{21} & 1 \\ 0 & 1 & \epsilon^{42} & 1 \end{bmatrix}_{503601} = \begin{bmatrix} 1 & 0 & 57 & 1 \\ 0 & 1 & 56 & 1 \end{bmatrix}_{503601} = \mathbf{Pl}(57,56,57,56,56,1)_{15189236}$$

Rank of lines: (0, 65, 270530, 499441, 503601)
Rank of points on Klein quadric: (0, 4353, 544579, 15447346, 15189236)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

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

$P_0 = (1,0,0,0) = \ell_0 \cap \ell_1$
$P_5 = (1,1,0,0) = \ell_0 \cap \ell_2$
$P_{8322} = (0,1,1,1) = \ell_1 \cap \ell_2$
$P_{11961} = (56,57,1,1) = \ell_2 \cap \ell_3$
$P_{11898} = (57,56,1,1) = \ell_2 \cap \ell_4$
$P_{132} = (1,1,1,0) = \ell_3 \cap \ell_4$

Single Points

The surface has 313 single points:
The single points on the surface are:

0 : $P_1 = (0,1,0,0)$ lies on line ℓ_0
1 : $P_4 = (1,1,1,1)$ lies on line ℓ_1
2 : $P_6 = (2,1,0,0)$ lies on line ℓ_0
3 : $P_7 = (3,1,0,0)$ lies on line ℓ_0
4 : $P_8 = (4,1,0,0)$ lies on line ℓ_0
5 : $P_9 = (5,1,0,0)$ lies on line ℓ_0
6 : $P_{10} = (6,1,0,0)$ lies on line ℓ_0
7 : $P_{11} = (7,1,0,0)$ lies on line ℓ_0
8 : $P_{12} = (8,1,0,0)$ lies on line ℓ_0
9 : $P_{13} = (9,1,0,0)$ lies on line ℓ_0
10 : $P_{14} = (10,1,0,0)$ lies on line ℓ_0
11 : $P_{15} = (11,1,0,0)$ lies on line ℓ_0
12 : $P_{16} = (12,1,0,0)$ lies on line ℓ_0
13 : $P_{17} = (13,1,0,0)$ lies on line ℓ_0
14 : $P_{18} = (14,1,0,0)$ lies on line ℓ_0
15 : $P_{19} = (15,1,0,0)$ lies on line ℓ_0
16 : $P_{20} = (16,1,0,0)$ lies on line ℓ_0
17 : $P_{21} = (17,1,0,0)$ lies on line ℓ_0
18 : $P_{22} = (18,1,0,0)$ lies on line ℓ_0
19 : $P_{23} = (19,1,0,0)$ lies on line ℓ_0
20 : $P_{24} = (20,1,0,0)$ lies on line ℓ_0
21 : $P_{25} = (21,1,0,0)$ lies on line ℓ_0
22 : $P_{26} = (22,1,0,0)$ lies on line ℓ_0
23 : $P_{27} = (23,1,0,0)$ lies on line ℓ_0
24 : $P_{28} = (24,1,0,0)$ lies on line ℓ_0
25 : $P_{29} = (25,1,0,0)$ lies on line ℓ_0
26 : $P_{30} = (26,1,0,0)$ lies on line ℓ_0
27 : $P_{31} = (27,1,0,0)$ lies on line ℓ_0
28 : $P_{32} = (28,1,0,0)$ lies on line ℓ_0
29 : $P_{33} = (29,1,0,0)$ lies on line ℓ_0
30 : $P_{34} = (30,1,0,0)$ lies on line ℓ_0
31 : $P_{35} = (31,1,0,0)$ lies on line ℓ_0
32 : $P_{36} = (32,1,0,0)$ lies on line ℓ_0
33 : $P_{37} = (33,1,0,0)$ lies on line ℓ_0
34 : $P_{38} = (34,1,0,0)$ lies on line ℓ_0
35 : $P_{39} = (35,1,0,0)$ lies on line ℓ_0

36 : $P_{40} = (36, 1, 0, 0)$ lies on line ℓ_0
37 : $P_{41} = (37, 1, 0, 0)$ lies on line ℓ_0
38 : $P_{42} = (38, 1, 0, 0)$ lies on line ℓ_0
39 : $P_{43} = (39, 1, 0, 0)$ lies on line ℓ_0
40 : $P_{44} = (40, 1, 0, 0)$ lies on line ℓ_0
41 : $P_{45} = (41, 1, 0, 0)$ lies on line ℓ_0
42 : $P_{46} = (42, 1, 0, 0)$ lies on line ℓ_0
43 : $P_{47} = (43, 1, 0, 0)$ lies on line ℓ_0
44 : $P_{48} = (44, 1, 0, 0)$ lies on line ℓ_0
45 : $P_{49} = (45, 1, 0, 0)$ lies on line ℓ_0
46 : $P_{50} = (46, 1, 0, 0)$ lies on line ℓ_0
47 : $P_{51} = (47, 1, 0, 0)$ lies on line ℓ_0
48 : $P_{52} = (48, 1, 0, 0)$ lies on line ℓ_0
49 : $P_{53} = (49, 1, 0, 0)$ lies on line ℓ_0
50 : $P_{54} = (50, 1, 0, 0)$ lies on line ℓ_0
51 : $P_{55} = (51, 1, 0, 0)$ lies on line ℓ_0
52 : $P_{56} = (52, 1, 0, 0)$ lies on line ℓ_0
53 : $P_{57} = (53, 1, 0, 0)$ lies on line ℓ_0
54 : $P_{58} = (54, 1, 0, 0)$ lies on line ℓ_0
55 : $P_{59} = (55, 1, 0, 0)$ lies on line ℓ_0
56 : $P_{60} = (56, 1, 0, 0)$ lies on line ℓ_0
57 : $P_{61} = (57, 1, 0, 0)$ lies on line ℓ_0
58 : $P_{62} = (58, 1, 0, 0)$ lies on line ℓ_0
59 : $P_{63} = (59, 1, 0, 0)$ lies on line ℓ_0
60 : $P_{64} = (60, 1, 0, 0)$ lies on line ℓ_0
61 : $P_{65} = (61, 1, 0, 0)$ lies on line ℓ_0
62 : $P_{66} = (62, 1, 0, 0)$ lies on line ℓ_0
63 : $P_{67} = (63, 1, 0, 0)$ lies on line ℓ_0
64 : $P_{7803} = (57, 56, 0, 1)$ lies on line ℓ_3
65 : $P_{7866} = (56, 57, 0, 1)$ lies on line ℓ_4
66 : $P_{8259} = (1, 0, 1, 1)$ lies on line ℓ_2
67 : $P_{8323} = (2, 1, 1, 1)$ lies on line ℓ_1
68 : $P_{8324} = (3, 1, 1, 1)$ lies on line ℓ_1
69 : $P_{8325} = (4, 1, 1, 1)$ lies on line ℓ_1
70 : $P_{8326} = (5, 1, 1, 1)$ lies on line ℓ_1
71 : $P_{8327} = (6, 1, 1, 1)$ lies on line ℓ_1
72 : $P_{8328} = (7, 1, 1, 1)$ lies on line ℓ_1
73 : $P_{8329} = (8, 1, 1, 1)$ lies on line ℓ_1
74 : $P_{8330} = (9, 1, 1, 1)$ lies on line ℓ_1
75 : $P_{8331} = (10, 1, 1, 1)$ lies on line ℓ_1
76 : $P_{8332} = (11, 1, 1, 1)$ lies on line ℓ_1
77 : $P_{8333} = (12, 1, 1, 1)$ lies on line ℓ_1
78 : $P_{8334} = (13, 1, 1, 1)$ lies on line ℓ_1
79 : $P_{8335} = (14, 1, 1, 1)$ lies on line ℓ_1
80 : $P_{8336} = (15, 1, 1, 1)$ lies on line ℓ_1
81 : $P_{8337} = (16, 1, 1, 1)$ lies on line ℓ_1
82 : $P_{8338} = (17, 1, 1, 1)$ lies on line ℓ_1
83 : $P_{8339} = (18, 1, 1, 1)$ lies on line ℓ_1
84 : $P_{8340} = (19, 1, 1, 1)$ lies on line ℓ_1
85 : $P_{8341} = (20, 1, 1, 1)$ lies on line ℓ_1
86 : $P_{8342} = (21, 1, 1, 1)$ lies on line ℓ_1
87 : $P_{8343} = (22, 1, 1, 1)$ lies on line ℓ_1
88 : $P_{8344} = (23, 1, 1, 1)$ lies on line ℓ_1
89 : $P_{8345} = (24, 1, 1, 1)$ lies on line ℓ_1
90 : $P_{8346} = (25, 1, 1, 1)$ lies on line ℓ_1
91 : $P_{8347} = (26, 1, 1, 1)$ lies on line ℓ_1
92 : $P_{8348} = (27, 1, 1, 1)$ lies on line ℓ_1
93 : $P_{8349} = (28, 1, 1, 1)$ lies on line ℓ_1
94 : $P_{8350} = (29, 1, 1, 1)$ lies on line ℓ_1
95 : $P_{8351} = (30, 1, 1, 1)$ lies on line ℓ_1
96 : $P_{8352} = (31, 1, 1, 1)$ lies on line ℓ_1
97 : $P_{8353} = (32, 1, 1, 1)$ lies on line ℓ_1
98 : $P_{8354} = (33, 1, 1, 1)$ lies on line ℓ_1
99 : $P_{8355} = (34, 1, 1, 1)$ lies on line ℓ_1
100 : $P_{8356} = (35, 1, 1, 1)$ lies on line ℓ_1
101 : $P_{8357} = (36, 1, 1, 1)$ lies on line ℓ_1
102 : $P_{8358} = (37, 1, 1, 1)$ lies on line ℓ_1
103 : $P_{8359} = (38, 1, 1, 1)$ lies on line ℓ_1
104 : $P_{8360} = (39, 1, 1, 1)$ lies on line ℓ_1
105 : $P_{8361} = (40, 1, 1, 1)$ lies on line ℓ_1
106 : $P_{8362} = (41, 1, 1, 1)$ lies on line ℓ_1
107 : $P_{8363} = (42, 1, 1, 1)$ lies on line ℓ_1
108 : $P_{8364} = (43, 1, 1, 1)$ lies on line ℓ_1
109 : $P_{8365} = (44, 1, 1, 1)$ lies on line ℓ_1
110 : $P_{8366} = (45, 1, 1, 1)$ lies on line ℓ_1
111 : $P_{8367} = (46, 1, 1, 1)$ lies on line ℓ_1
112 : $P_{8368} = (47, 1, 1, 1)$ lies on line ℓ_1
113 : $P_{8369} = (48, 1, 1, 1)$ lies on line ℓ_1
114 : $P_{8370} = (49, 1, 1, 1)$ lies on line ℓ_1
115 : $P_{8371} = (50, 1, 1, 1)$ lies on line ℓ_1
116 : $P_{8372} = (51, 1, 1, 1)$ lies on line ℓ_1
117 : $P_{8373} = (52, 1, 1, 1)$ lies on line ℓ_1
118 : $P_{8374} = (53, 1, 1, 1)$ lies on line ℓ_1
119 : $P_{8375} = (54, 1, 1, 1)$ lies on line ℓ_1
120 : $P_{8376} = (55, 1, 1, 1)$ lies on line ℓ_1
121 : $P_{8377} = (56, 1, 1, 1)$ lies on line ℓ_1
122 : $P_{8378} = (57, 1, 1, 1)$ lies on line ℓ_1
123 : $P_{8379} = (58, 1, 1, 1)$ lies on line ℓ_1
124 : $P_{8380} = (59, 1, 1, 1)$ lies on line ℓ_1
125 : $P_{8381} = (60, 1, 1, 1)$ lies on line ℓ_1
126 : $P_{8382} = (61, 1, 1, 1)$ lies on line ℓ_1
127 : $P_{8383} = (62, 1, 1, 1)$ lies on line ℓ_1
128 : $P_{8384} = (63, 1, 1, 1)$ lies on line ℓ_1
129 : $P_{8388} = (3, 2, 1, 1)$ lies on line ℓ_2
130 : $P_{8451} = (2, 3, 1, 1)$ lies on line ℓ_2
131 : $P_{8518} = (5, 4, 1, 1)$ lies on line ℓ_2
132 : $P_{8581} = (4, 5, 1, 1)$ lies on line ℓ_2
133 : $P_{8648} = (7, 6, 1, 1)$ lies on line ℓ_2
134 : $P_{8711} = (6, 7, 1, 1)$ lies on line ℓ_2
135 : $P_{8778} = (9, 8, 1, 1)$ lies on line ℓ_2
136 : $P_{8841} = (8, 9, 1, 1)$ lies on line ℓ_2
137 : $P_{8908} = (11, 10, 1, 1)$ lies on line ℓ_2
138 : $P_{8971} = (10, 11, 1, 1)$ lies on line ℓ_2
139 : $P_{9038} = (13, 12, 1, 1)$ lies on line ℓ_2
140 : $P_{9101} = (12, 13, 1, 1)$ lies on line ℓ_2
141 : $P_{9168} = (15, 14, 1, 1)$ lies on line ℓ_2
142 : $P_{9231} = (14, 15, 1, 1)$ lies on line ℓ_2
143 : $P_{9298} = (17, 16, 1, 1)$ lies on line ℓ_2

144 : $P_{9361} = (16, 17, 1, 1)$ lies on line ℓ_2
145 : $P_{9428} = (19, 18, 1, 1)$ lies on line ℓ_2
146 : $P_{9491} = (18, 19, 1, 1)$ lies on line ℓ_2
147 : $P_{9558} = (21, 20, 1, 1)$ lies on line ℓ_2
148 : $P_{9621} = (20, 21, 1, 1)$ lies on line ℓ_2
149 : $P_{9688} = (23, 22, 1, 1)$ lies on line ℓ_2
150 : $P_{9751} = (22, 23, 1, 1)$ lies on line ℓ_2
151 : $P_{9818} = (25, 24, 1, 1)$ lies on line ℓ_2
152 : $P_{9881} = (24, 25, 1, 1)$ lies on line ℓ_2
153 : $P_{9948} = (27, 26, 1, 1)$ lies on line ℓ_2
154 : $P_{10011} = (26, 27, 1, 1)$ lies on line ℓ_2
155 : $P_{10078} = (29, 28, 1, 1)$ lies on line ℓ_2
156 : $P_{10141} = (28, 29, 1, 1)$ lies on line ℓ_2
157 : $P_{10208} = (31, 30, 1, 1)$ lies on line ℓ_2
158 : $P_{10271} = (30, 31, 1, 1)$ lies on line ℓ_2
159 : $P_{10338} = (33, 32, 1, 1)$ lies on line ℓ_2
160 : $P_{10401} = (32, 33, 1, 1)$ lies on line ℓ_2
161 : $P_{10468} = (35, 34, 1, 1)$ lies on line ℓ_2
162 : $P_{10531} = (34, 35, 1, 1)$ lies on line ℓ_2
163 : $P_{10598} = (37, 36, 1, 1)$ lies on line ℓ_2
164 : $P_{10661} = (36, 37, 1, 1)$ lies on line ℓ_2
165 : $P_{10728} = (39, 38, 1, 1)$ lies on line ℓ_2
166 : $P_{10791} = (38, 39, 1, 1)$ lies on line ℓ_2
167 : $P_{10858} = (41, 40, 1, 1)$ lies on line ℓ_2
168 : $P_{10921} = (40, 41, 1, 1)$ lies on line ℓ_2
169 : $P_{10988} = (43, 42, 1, 1)$ lies on line ℓ_2
170 : $P_{11051} = (42, 43, 1, 1)$ lies on line ℓ_2
171 : $P_{11118} = (45, 44, 1, 1)$ lies on line ℓ_2
172 : $P_{11181} = (44, 45, 1, 1)$ lies on line ℓ_2
173 : $P_{11248} = (47, 46, 1, 1)$ lies on line ℓ_2
174 : $P_{11311} = (46, 47, 1, 1)$ lies on line ℓ_2
175 : $P_{11378} = (49, 48, 1, 1)$ lies on line ℓ_2
176 : $P_{11441} = (48, 49, 1, 1)$ lies on line ℓ_2
177 : $P_{11508} = (51, 50, 1, 1)$ lies on line ℓ_2
178 : $P_{11571} = (50, 51, 1, 1)$ lies on line ℓ_2
179 : $P_{11638} = (53, 52, 1, 1)$ lies on line ℓ_2
180 : $P_{11701} = (52, 53, 1, 1)$ lies on line ℓ_2
181 : $P_{11768} = (55, 54, 1, 1)$ lies on line ℓ_2
182 : $P_{11831} = (54, 55, 1, 1)$ lies on line ℓ_2
183 : $P_{12028} = (59, 58, 1, 1)$ lies on line ℓ_2
184 : $P_{12091} = (58, 59, 1, 1)$ lies on line ℓ_2
185 : $P_{12158} = (61, 60, 1, 1)$ lies on line ℓ_2
186 : $P_{12221} = (60, 61, 1, 1)$ lies on line ℓ_2
187 : $P_{12288} = (63, 62, 1, 1)$ lies on line ℓ_2
188 : $P_{12351} = (62, 63, 1, 1)$ lies on line ℓ_2
189 : $P_{16124} = (59, 58, 2, 1)$ lies on line ℓ_3
190 : $P_{16187} = (58, 59, 2, 1)$ lies on line ℓ_4
191 : $P_{20220} = (59, 58, 3, 1)$ lies on line ℓ_4
192 : $P_{20283} = (58, 59, 3, 1)$ lies on line ℓ_3
193 : $P_{24446} = (61, 60, 4, 1)$ lies on line ℓ_3
194 : $P_{24509} = (60, 61, 4, 1)$ lies on line ℓ_4
195 : $P_{28542} = (61, 60, 5, 1)$ lies on line ℓ_4
196 : $P_{28605} = (60, 61, 5, 1)$ lies on line ℓ_3
197 : $P_{32768} = (63, 62, 6, 1)$ lies on line ℓ_3
198 : $P_{32831} = (62, 63, 6, 1)$ lies on line ℓ_4
199 : $P_{36864} = (63, 62, 7, 1)$ lies on line ℓ_4
200 : $P_{36927} = (62, 63, 7, 1)$ lies on line ℓ_3
201 : $P_{40050} = (49, 48, 8, 1)$ lies on line ℓ_3
202 : $P_{40113} = (48, 49, 8, 1)$ lies on line ℓ_4
203 : $P_{44146} = (49, 48, 9, 1)$ lies on line ℓ_4
204 : $P_{44209} = (48, 49, 9, 1)$ lies on line ℓ_3
205 : $P_{48372} = (51, 50, 10, 1)$ lies on line ℓ_3
206 : $P_{48435} = (50, 51, 10, 1)$ lies on line ℓ_4
207 : $P_{52468} = (51, 50, 11, 1)$ lies on line ℓ_4
208 : $P_{52531} = (50, 51, 11, 1)$ lies on line ℓ_3
209 : $P_{56694} = (53, 52, 12, 1)$ lies on line ℓ_3
210 : $P_{56757} = (52, 53, 12, 1)$ lies on line ℓ_4
211 : $P_{60790} = (53, 52, 13, 1)$ lies on line ℓ_4
212 : $P_{60853} = (52, 53, 13, 1)$ lies on line ℓ_3
213 : $P_{65016} = (55, 54, 14, 1)$ lies on line ℓ_3
214 : $P_{65079} = (54, 55, 14, 1)$ lies on line ℓ_4
215 : $P_{69112} = (55, 54, 15, 1)$ lies on line ℓ_4
216 : $P_{69175} = (54, 55, 15, 1)$ lies on line ℓ_3
217 : $P_{72298} = (41, 40, 16, 1)$ lies on line ℓ_3
218 : $P_{72361} = (40, 41, 16, 1)$ lies on line ℓ_4
219 : $P_{76394} = (41, 40, 17, 1)$ lies on line ℓ_4
220 : $P_{76457} = (40, 41, 17, 1)$ lies on line ℓ_3
221 : $P_{80620} = (43, 42, 18, 1)$ lies on line ℓ_3
222 : $P_{80683} = (42, 43, 18, 1)$ lies on line ℓ_4
223 : $P_{84716} = (43, 42, 19, 1)$ lies on line ℓ_4
224 : $P_{84779} = (42, 43, 19, 1)$ lies on line ℓ_3
225 : $P_{88942} = (45, 44, 20, 1)$ lies on line ℓ_3
226 : $P_{89005} = (44, 45, 20, 1)$ lies on line ℓ_4
227 : $P_{93038} = (45, 44, 21, 1)$ lies on line ℓ_4
228 : $P_{93101} = (44, 45, 21, 1)$ lies on line ℓ_3
229 : $P_{97264} = (47, 46, 22, 1)$ lies on line ℓ_3
230 : $P_{97327} = (46, 47, 22, 1)$ lies on line ℓ_4
231 : $P_{101360} = (47, 46, 23, 1)$ lies on line ℓ_4
232 : $P_{101423} = (46, 47, 23, 1)$ lies on line ℓ_3
233 : $P_{104546} = (33, 32, 24, 1)$ lies on line ℓ_3
234 : $P_{104609} = (32, 33, 24, 1)$ lies on line ℓ_4
235 : $P_{108642} = (33, 32, 25, 1)$ lies on line ℓ_4
236 : $P_{108705} = (32, 33, 25, 1)$ lies on line ℓ_3
237 : $P_{112868} = (35, 34, 26, 1)$ lies on line ℓ_3
238 : $P_{112931} = (34, 35, 26, 1)$ lies on line ℓ_4
239 : $P_{116964} = (35, 34, 27, 1)$ lies on line ℓ_4
240 : $P_{117027} = (34, 35, 27, 1)$ lies on line ℓ_3
241 : $P_{121190} = (37, 36, 28, 1)$ lies on line ℓ_3
242 : $P_{121253} = (36, 37, 28, 1)$ lies on line ℓ_4
243 : $P_{125286} = (37, 36, 29, 1)$ lies on line ℓ_4
244 : $P_{125349} = (36, 37, 29, 1)$ lies on line ℓ_3
245 : $P_{129512} = (39, 38, 30, 1)$ lies on line ℓ_3
246 : $P_{129575} = (38, 39, 30, 1)$ lies on line ℓ_4
247 : $P_{133608} = (39, 38, 31, 1)$ lies on line ℓ_4
248 : $P_{133671} = (38, 39, 31, 1)$ lies on line ℓ_3
249 : $P_{136794} = (25, 24, 32, 1)$ lies on line ℓ_3
250 : $P_{136857} = (24, 25, 32, 1)$ lies on line ℓ_4
251 : $P_{140890} = (25, 24, 33, 1)$ lies on line ℓ_4

252 : $P_{140953} = (24, 25, 33, 1)$ lies on line ℓ_3
253 : $P_{145116} = (27, 26, 34, 1)$ lies on line ℓ_3
254 : $P_{145179} = (26, 27, 34, 1)$ lies on line ℓ_4
255 : $P_{149212} = (27, 26, 35, 1)$ lies on line ℓ_4
256 : $P_{149275} = (26, 27, 35, 1)$ lies on line ℓ_3
257 : $P_{153438} = (29, 28, 36, 1)$ lies on line ℓ_3
258 : $P_{153501} = (28, 29, 36, 1)$ lies on line ℓ_4
259 : $P_{157534} = (29, 28, 37, 1)$ lies on line ℓ_4
260 : $P_{157597} = (28, 29, 37, 1)$ lies on line ℓ_3
261 : $P_{161760} = (31, 30, 38, 1)$ lies on line ℓ_3
262 : $P_{161823} = (30, 31, 38, 1)$ lies on line ℓ_4
263 : $P_{165856} = (31, 30, 39, 1)$ lies on line ℓ_4
264 : $P_{165919} = (30, 31, 39, 1)$ lies on line ℓ_3
265 : $P_{169042} = (17, 16, 40, 1)$ lies on line ℓ_3
266 : $P_{169105} = (16, 17, 40, 1)$ lies on line ℓ_4
267 : $P_{173138} = (17, 16, 41, 1)$ lies on line ℓ_4
268 : $P_{173201} = (16, 17, 41, 1)$ lies on line ℓ_3
269 : $P_{177364} = (19, 18, 42, 1)$ lies on line ℓ_3
270 : $P_{177427} = (18, 19, 42, 1)$ lies on line ℓ_4
271 : $P_{181460} = (19, 18, 43, 1)$ lies on line ℓ_4
272 : $P_{181523} = (18, 19, 43, 1)$ lies on line ℓ_3
273 : $P_{185686} = (21, 20, 44, 1)$ lies on line ℓ_3
274 : $P_{185749} = (20, 21, 44, 1)$ lies on line ℓ_4
275 : $P_{189782} = (21, 20, 45, 1)$ lies on line ℓ_4
276 : $P_{189845} = (20, 21, 45, 1)$ lies on line ℓ_3
277 : $P_{194008} = (23, 22, 46, 1)$ lies on line ℓ_3
278 : $P_{194071} = (22, 23, 46, 1)$ lies on line ℓ_4
279 : $P_{198104} = (23, 22, 47, 1)$ lies on line ℓ_4
280 : $P_{198167} = (22, 23, 47, 1)$ lies on line ℓ_3
281 : $P_{201290} = (9, 8, 48, 1)$ lies on line ℓ_3
282 : $P_{201353} = (8, 9, 48, 1)$ lies on line ℓ_4
283 : $P_{205386} = (9, 8, 49, 1)$ lies on line ℓ_4
284 : $P_{205449} = (8, 9, 49, 1)$ lies on line ℓ_3
285 : $P_{209612} = (11, 10, 50, 1)$ lies on line ℓ_3
286 : $P_{209675} = (10, 11, 50, 1)$ lies on line ℓ_4
287 : $P_{213708} = (11, 10, 51, 1)$ lies on line ℓ_4
288 : $P_{213771} = (10, 11, 51, 1)$ lies on line ℓ_3
289 : $P_{217934} = (13, 12, 52, 1)$ lies on line ℓ_3
290 : $P_{217997} = (12, 13, 52, 1)$ lies on line ℓ_4
291 : $P_{222030} = (13, 12, 53, 1)$ lies on line ℓ_4
292 : $P_{222093} = (12, 13, 53, 1)$ lies on line ℓ_3
293 : $P_{226256} = (15, 14, 54, 1)$ lies on line ℓ_3
294 : $P_{226319} = (14, 15, 54, 1)$ lies on line ℓ_4
295 : $P_{230352} = (15, 14, 55, 1)$ lies on line ℓ_4
296 : $P_{230415} = (14, 15, 55, 1)$ lies on line ℓ_3
297 : $P_{233538} = (1, 0, 56, 1)$ lies on line ℓ_3
298 : $P_{233601} = (0, 1, 56, 1)$ lies on line ℓ_4
299 : $P_{237634} = (1, 0, 57, 1)$ lies on line ℓ_4
300 : $P_{237697} = (0, 1, 57, 1)$ lies on line ℓ_3
301 : $P_{241860} = (3, 2, 58, 1)$ lies on line ℓ_3
302 : $P_{241923} = (2, 3, 58, 1)$ lies on line ℓ_4
303 : $P_{245956} = (3, 2, 59, 1)$ lies on line ℓ_4
304 : $P_{246019} = (2, 3, 59, 1)$ lies on line ℓ_3
305 : $P_{250182} = (5, 4, 60, 1)$ lies on line ℓ_3
306 : $P_{250245} = (4, 5, 60, 1)$ lies on line ℓ_4
307 : $P_{254278} = (5, 4, 61, 1)$ lies on line ℓ_4
308 : $P_{254341} = (4, 5, 61, 1)$ lies on line ℓ_3
309 : $P_{258504} = (7, 6, 62, 1)$ lies on line ℓ_3
310 : $P_{258567} = (6, 7, 62, 1)$ lies on line ℓ_4
311 : $P_{262600} = (7, 6, 63, 1)$ lies on line ℓ_4
312 : $P_{262663} = (6, 7, 63, 1)$ lies on line ℓ_3

The single points on the surface are:

Points on surface but on no line

The surface has 3906 points not on any line:
Too many to print.

Line Intersection Graph

	0	1	2	3	4
0	0	1	1	0	0
1	1	0	1	0	0
2	1	1	0	1	1
3	0	0	1	0	1
4	0	0	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2
in point	P_0	P_5

Line 1 intersects

Line	ℓ_0	ℓ_2
in point	P_0	P_{8322}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4
in point	P_5	P_{8322}	P_{11961}	P_{11898}

Line 3 intersects

Line	ℓ_2	ℓ_4
in point	P_{11961}	P_{132}

Line 4 intersects

Line	ℓ_2	ℓ_3
in point	P_{11898}	P_{132}

The surface has 4225 points:
Too many to print.