Rank-139 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
The point rank of the equation over GF(64) is -2113396593

General information

Number of lines	6
Number of points	4289
Number of singular points	1
Number of Eckardt points	2
Number of double points	3
Number of single points	378
Number of points off lines	3906
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^6
Type of lines on points	3^2, 2^3, 1^{378}, 0^{3906}

Singular Points

The surface has 1 singular points:

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

The 6 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_1 = \mathbf{Pl}(1,0,1,0,0,0)_3$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{64} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{64} = \mathbf{Pl}(1,0,0,0,1,0)_{4226}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{4097} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{4097} = \mathbf{Pl}(0,0,1,0,1,0)_{4352}$$

$$\ell_3 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{8258} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{8258} = \mathbf{Pl}(0,0,1,1,1,1)_{544578}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{4225} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{4225} = \mathbf{Pl}(1,1,0,0,1,1)_{536577}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{266305} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{266305} = \mathbf{Pl}(1,1,1,1,0,0)_{256}$$

Rank of lines: (1, 64, 4097, 8258, 4225, 266305)
Rank of points on Klein quadric: (3, 4226, 4352, 544578, 536577, 256)

Eckardt Points

The surface has 2 Eckardt points:
$0 : P_0 = \mathbf{P}(1,0,0,0) = \mathbf{P}(1,0,0,0)$,
$1 : P_4 = \mathbf{P}(1,1,1,1) = \mathbf{P}(1,1,1,1)$.

Double Points

The surface has 3 Double points:
The double points on the surface are:

$P_{131} = (0,1,1,0) = \ell_0 \cap \ell_5$
$P_{4226} = (0,1,0,1) = \ell_1 \cap \ell_4$
$P_{8258} = (0,0,1,1) = \ell_2 \cap \ell_3$

Single Points

The surface has 378 single points:
The single points on the surface are:

$0 : P_5 = (1,1,0,0)$ lies on line ℓ_3
$1 : P_{68} = (1,0,1,0)$ lies on line ℓ_4
$2 : P_{132} = (1,1,1,0)$ lies on line ℓ_0
$3 : P_{133} = (2,1,1,0)$ lies on line ℓ_0
$4 : P_{134} = (3,1,1,0)$ lies on line ℓ_0
$5 : P_{135} = (4,1,1,0)$ lies on line ℓ_0
$6 : P_{136} = (5,1,1,0)$ lies on line ℓ_0
$7 : P_{137} = (6,1,1,0)$ lies on line ℓ_0
$8 : P_{138} = (7,1,1,0)$ lies on line ℓ_0
$9 : P_{139} = (8,1,1,0)$ lies on line ℓ_0
$10 : P_{140} = (9,1,1,0)$ lies on line ℓ_0
$11 : P_{141} = (10,1,1,0)$ lies on line ℓ_0
$12 : P_{142} = (11,1,1,0)$ lies on line ℓ_0
$13 : P_{143} = (12,1,1,0)$ lies on line ℓ_0
$14 : P_{144} = (13,1,1,0)$ lies on line ℓ_0
$15 : P_{145} = (14,1,1,0)$ lies on line ℓ_0
$16 : P_{146} = (15,1,1,0)$ lies on line ℓ_0
$17 : P_{147} = (16,1,1,0)$ lies on line ℓ_0
$18 : P_{148} = (17,1,1,0)$ lies on line ℓ_0
$19 : P_{149} = (18,1,1,0)$ lies on line ℓ_0
$20 : P_{150} = (19,1,1,0)$ lies on line ℓ_0
$21 : P_{151} = (20,1,1,0)$ lies on line ℓ_0
$22 : P_{152} = (21,1,1,0)$ lies on line ℓ_0
$23 : P_{153} = (22,1,1,0)$ lies on line ℓ_0
$24 : P_{154} = (23,1,1,0)$ lies on line ℓ_0
$25 : P_{155} = (24,1,1,0)$ lies on line ℓ_0
$26 : P_{156} = (25,1,1,0)$ lies on line ℓ_0
$27 : P_{157} = (26,1,1,0)$ lies on line ℓ_0
$28 : P_{158} = (27,1,1,0)$ lies on line ℓ_0
$29 : P_{159} = (28,1,1,0)$ lies on line ℓ_0
$30 : P_{160} = (29,1,1,0)$ lies on line ℓ_0
$31 : P_{161} = (30,1,1,0)$ lies on line ℓ_0

32 : $P_{162} = (31, 1, 1, 0)$ lies on line ℓ_0
33 : $P_{163} = (32, 1, 1, 0)$ lies on line ℓ_0
34 : $P_{164} = (33, 1, 1, 0)$ lies on line ℓ_0
35 : $P_{165} = (34, 1, 1, 0)$ lies on line ℓ_0
36 : $P_{166} = (35, 1, 1, 0)$ lies on line ℓ_0
37 : $P_{167} = (36, 1, 1, 0)$ lies on line ℓ_0
38 : $P_{168} = (37, 1, 1, 0)$ lies on line ℓ_0
39 : $P_{169} = (38, 1, 1, 0)$ lies on line ℓ_0
40 : $P_{170} = (39, 1, 1, 0)$ lies on line ℓ_0
41 : $P_{171} = (40, 1, 1, 0)$ lies on line ℓ_0
42 : $P_{172} = (41, 1, 1, 0)$ lies on line ℓ_0
43 : $P_{173} = (42, 1, 1, 0)$ lies on line ℓ_0
44 : $P_{174} = (43, 1, 1, 0)$ lies on line ℓ_0
45 : $P_{175} = (44, 1, 1, 0)$ lies on line ℓ_0
46 : $P_{176} = (45, 1, 1, 0)$ lies on line ℓ_0
47 : $P_{177} = (46, 1, 1, 0)$ lies on line ℓ_0
48 : $P_{178} = (47, 1, 1, 0)$ lies on line ℓ_0
49 : $P_{179} = (48, 1, 1, 0)$ lies on line ℓ_0
50 : $P_{180} = (49, 1, 1, 0)$ lies on line ℓ_0
51 : $P_{181} = (50, 1, 1, 0)$ lies on line ℓ_0
52 : $P_{182} = (51, 1, 1, 0)$ lies on line ℓ_0
53 : $P_{183} = (52, 1, 1, 0)$ lies on line ℓ_0
54 : $P_{184} = (53, 1, 1, 0)$ lies on line ℓ_0
55 : $P_{185} = (54, 1, 1, 0)$ lies on line ℓ_0
56 : $P_{186} = (55, 1, 1, 0)$ lies on line ℓ_0
57 : $P_{187} = (56, 1, 1, 0)$ lies on line ℓ_0
58 : $P_{188} = (57, 1, 1, 0)$ lies on line ℓ_0
59 : $P_{189} = (58, 1, 1, 0)$ lies on line ℓ_0
60 : $P_{190} = (59, 1, 1, 0)$ lies on line ℓ_0
61 : $P_{191} = (60, 1, 1, 0)$ lies on line ℓ_0
62 : $P_{192} = (61, 1, 1, 0)$ lies on line ℓ_0
63 : $P_{193} = (62, 1, 1, 0)$ lies on line ℓ_0
64 : $P_{194} = (63, 1, 1, 0)$ lies on line ℓ_0
65 : $P_{4163} = (1, 0, 0, 1)$ lies on line ℓ_5
66 : $P_{4227} = (1, 1, 0, 1)$ lies on line ℓ_1
67 : $P_{4228} = (2, 1, 0, 1)$ lies on line ℓ_1
68 : $P_{4229} = (3, 1, 0, 1)$ lies on line ℓ_1
69 : $P_{4230} = (4, 1, 0, 1)$ lies on line ℓ_1
70 : $P_{4231} = (5, 1, 0, 1)$ lies on line ℓ_1
71 : $P_{4232} = (6, 1, 0, 1)$ lies on line ℓ_1
72 : $P_{4233} = (7, 1, 0, 1)$ lies on line ℓ_1
73 : $P_{4234} = (8, 1, 0, 1)$ lies on line ℓ_1
74 : $P_{4235} = (9, 1, 0, 1)$ lies on line ℓ_1
75 : $P_{4236} = (10, 1, 0, 1)$ lies on line ℓ_1
76 : $P_{4237} = (11, 1, 0, 1)$ lies on line ℓ_1
77 : $P_{4238} = (12, 1, 0, 1)$ lies on line ℓ_1
78 : $P_{4239} = (13, 1, 0, 1)$ lies on line ℓ_1
79 : $P_{4240} = (14, 1, 0, 1)$ lies on line ℓ_1
80 : $P_{4241} = (15, 1, 0, 1)$ lies on line ℓ_1
81 : $P_{4242} = (16, 1, 0, 1)$ lies on line ℓ_1
82 : $P_{4243} = (17, 1, 0, 1)$ lies on line ℓ_1
83 : $P_{4244} = (18, 1, 0, 1)$ lies on line ℓ_1
84 : $P_{4245} = (19, 1, 0, 1)$ lies on line ℓ_1
85 : $P_{4246} = (20, 1, 0, 1)$ lies on line ℓ_1
86 : $P_{4247} = (21, 1, 0, 1)$ lies on line ℓ_1
87 : $P_{4248} = (22, 1, 0, 1)$ lies on line ℓ_1
88 : $P_{4249} = (23, 1, 0, 1)$ lies on line ℓ_1
89 : $P_{4250} = (24, 1, 0, 1)$ lies on line ℓ_1
90 : $P_{4251} = (25, 1, 0, 1)$ lies on line ℓ_1
91 : $P_{4252} = (26, 1, 0, 1)$ lies on line ℓ_1
92 : $P_{4253} = (27, 1, 0, 1)$ lies on line ℓ_1
93 : $P_{4254} = (28, 1, 0, 1)$ lies on line ℓ_1
94 : $P_{4255} = (29, 1, 0, 1)$ lies on line ℓ_1
95 : $P_{4256} = (30, 1, 0, 1)$ lies on line ℓ_1
96 : $P_{4257} = (31, 1, 0, 1)$ lies on line ℓ_1
97 : $P_{4258} = (32, 1, 0, 1)$ lies on line ℓ_1
98 : $P_{4259} = (33, 1, 0, 1)$ lies on line ℓ_1
99 : $P_{4260} = (34, 1, 0, 1)$ lies on line ℓ_1
100 : $P_{4261} = (35, 1, 0, 1)$ lies on line ℓ_1
101 : $P_{4262} = (36, 1, 0, 1)$ lies on line ℓ_1
102 : $P_{4263} = (37, 1, 0, 1)$ lies on line ℓ_1
103 : $P_{4264} = (38, 1, 0, 1)$ lies on line ℓ_1
104 : $P_{4265} = (39, 1, 0, 1)$ lies on line ℓ_1
105 : $P_{4266} = (40, 1, 0, 1)$ lies on line ℓ_1
106 : $P_{4267} = (41, 1, 0, 1)$ lies on line ℓ_1
107 : $P_{4268} = (42, 1, 0, 1)$ lies on line ℓ_1
108 : $P_{4269} = (43, 1, 0, 1)$ lies on line ℓ_1
109 : $P_{4270} = (44, 1, 0, 1)$ lies on line ℓ_1
110 : $P_{4271} = (45, 1, 0, 1)$ lies on line ℓ_1
111 : $P_{4272} = (46, 1, 0, 1)$ lies on line ℓ_1
112 : $P_{4273} = (47, 1, 0, 1)$ lies on line ℓ_1
113 : $P_{4274} = (48, 1, 0, 1)$ lies on line ℓ_1
114 : $P_{4275} = (49, 1, 0, 1)$ lies on line ℓ_1
115 : $P_{4276} = (50, 1, 0, 1)$ lies on line ℓ_1
116 : $P_{4277} = (51, 1, 0, 1)$ lies on line ℓ_1
117 : $P_{4278} = (52, 1, 0, 1)$ lies on line ℓ_1
118 : $P_{4279} = (53, 1, 0, 1)$ lies on line ℓ_1
119 : $P_{4280} = (54, 1, 0, 1)$ lies on line ℓ_1
120 : $P_{4281} = (55, 1, 0, 1)$ lies on line ℓ_1
121 : $P_{4282} = (56, 1, 0, 1)$ lies on line ℓ_1
122 : $P_{4283} = (57, 1, 0, 1)$ lies on line ℓ_1
123 : $P_{4284} = (58, 1, 0, 1)$ lies on line ℓ_1
124 : $P_{4285} = (59, 1, 0, 1)$ lies on line ℓ_1
125 : $P_{4286} = (60, 1, 0, 1)$ lies on line ℓ_1
126 : $P_{4287} = (61, 1, 0, 1)$ lies on line ℓ_1
127 : $P_{4288} = (62, 1, 0, 1)$ lies on line ℓ_1
128 : $P_{4289} = (63, 1, 0, 1)$ lies on line ℓ_1
129 : $P_{8259} = (1, 0, 1, 1)$ lies on line ℓ_2
130 : $P_{8260} = (2, 0, 1, 1)$ lies on line ℓ_2
131 : $P_{8261} = (3, 0, 1, 1)$ lies on line ℓ_2
132 : $P_{8262} = (4, 0, 1, 1)$ lies on line ℓ_2
133 : $P_{8263} = (5, 0, 1, 1)$ lies on line ℓ_2
134 : $P_{8264} = (6, 0, 1, 1)$ lies on line ℓ_2
135 : $P_{8265} = (7, 0, 1, 1)$ lies on line ℓ_2
136 : $P_{8266} = (8, 0, 1, 1)$ lies on line ℓ_2
137 : $P_{8267} = (9, 0, 1, 1)$ lies on line ℓ_2
138 : $P_{8268} = (10, 0, 1, 1)$ lies on line ℓ_2
139 : $P_{8269} = (11, 0, 1, 1)$ lies on line ℓ_2

140 : $P_{8270} = (12, 0, 1, 1)$ lies on line ℓ_2
141 : $P_{8271} = (13, 0, 1, 1)$ lies on line ℓ_2
142 : $P_{8272} = (14, 0, 1, 1)$ lies on line ℓ_2
143 : $P_{8273} = (15, 0, 1, 1)$ lies on line ℓ_2
144 : $P_{8274} = (16, 0, 1, 1)$ lies on line ℓ_2
145 : $P_{8275} = (17, 0, 1, 1)$ lies on line ℓ_2
146 : $P_{8276} = (18, 0, 1, 1)$ lies on line ℓ_2
147 : $P_{8277} = (19, 0, 1, 1)$ lies on line ℓ_2
148 : $P_{8278} = (20, 0, 1, 1)$ lies on line ℓ_2
149 : $P_{8279} = (21, 0, 1, 1)$ lies on line ℓ_2
150 : $P_{8280} = (22, 0, 1, 1)$ lies on line ℓ_2
151 : $P_{8281} = (23, 0, 1, 1)$ lies on line ℓ_2
152 : $P_{8282} = (24, 0, 1, 1)$ lies on line ℓ_2
153 : $P_{8283} = (25, 0, 1, 1)$ lies on line ℓ_2
154 : $P_{8284} = (26, 0, 1, 1)$ lies on line ℓ_2
155 : $P_{8285} = (27, 0, 1, 1)$ lies on line ℓ_2
156 : $P_{8286} = (28, 0, 1, 1)$ lies on line ℓ_2
157 : $P_{8287} = (29, 0, 1, 1)$ lies on line ℓ_2
158 : $P_{8288} = (30, 0, 1, 1)$ lies on line ℓ_2
159 : $P_{8289} = (31, 0, 1, 1)$ lies on line ℓ_2
160 : $P_{8290} = (32, 0, 1, 1)$ lies on line ℓ_2
161 : $P_{8291} = (33, 0, 1, 1)$ lies on line ℓ_2
162 : $P_{8292} = (34, 0, 1, 1)$ lies on line ℓ_2
163 : $P_{8293} = (35, 0, 1, 1)$ lies on line ℓ_2
164 : $P_{8294} = (36, 0, 1, 1)$ lies on line ℓ_2
165 : $P_{8295} = (37, 0, 1, 1)$ lies on line ℓ_2
166 : $P_{8296} = (38, 0, 1, 1)$ lies on line ℓ_2
167 : $P_{8297} = (39, 0, 1, 1)$ lies on line ℓ_2
168 : $P_{8298} = (40, 0, 1, 1)$ lies on line ℓ_2
169 : $P_{8299} = (41, 0, 1, 1)$ lies on line ℓ_2
170 : $P_{8300} = (42, 0, 1, 1)$ lies on line ℓ_2
171 : $P_{8301} = (43, 0, 1, 1)$ lies on line ℓ_2
172 : $P_{8302} = (44, 0, 1, 1)$ lies on line ℓ_2
173 : $P_{8303} = (45, 0, 1, 1)$ lies on line ℓ_2
174 : $P_{8304} = (46, 0, 1, 1)$ lies on line ℓ_2
175 : $P_{8305} = (47, 0, 1, 1)$ lies on line ℓ_2
176 : $P_{8306} = (48, 0, 1, 1)$ lies on line ℓ_2
177 : $P_{8307} = (49, 0, 1, 1)$ lies on line ℓ_2
178 : $P_{8308} = (50, 0, 1, 1)$ lies on line ℓ_2
179 : $P_{8309} = (51, 0, 1, 1)$ lies on line ℓ_2
180 : $P_{8310} = (52, 0, 1, 1)$ lies on line ℓ_2
181 : $P_{8311} = (53, 0, 1, 1)$ lies on line ℓ_2
182 : $P_{8312} = (54, 0, 1, 1)$ lies on line ℓ_2
183 : $P_{8313} = (55, 0, 1, 1)$ lies on line ℓ_2
184 : $P_{8314} = (56, 0, 1, 1)$ lies on line ℓ_2
185 : $P_{8315} = (57, 0, 1, 1)$ lies on line ℓ_2
186 : $P_{8316} = (58, 0, 1, 1)$ lies on line ℓ_2
187 : $P_{8317} = (59, 0, 1, 1)$ lies on line ℓ_2
188 : $P_{8318} = (60, 0, 1, 1)$ lies on line ℓ_2
189 : $P_{8319} = (61, 0, 1, 1)$ lies on line ℓ_2
190 : $P_{8320} = (62, 0, 1, 1)$ lies on line ℓ_2
191 : $P_{8321} = (63, 0, 1, 1)$ lies on line ℓ_2
192 : $P_{8387} = (2, 2, 1, 1)$ lies on line ℓ_3
193 : $P_{8452} = (3, 3, 1, 1)$ lies on line ℓ_3
194 : $P_{8517} = (4, 4, 1, 1)$ lies on line ℓ_3
195 : $P_{8582} = (5, 5, 1, 1)$ lies on line ℓ_3
196 : $P_{8647} = (6, 6, 1, 1)$ lies on line ℓ_3
197 : $P_{8712} = (7, 7, 1, 1)$ lies on line ℓ_3
198 : $P_{8777} = (8, 8, 1, 1)$ lies on line ℓ_3
199 : $P_{8842} = (9, 9, 1, 1)$ lies on line ℓ_3
200 : $P_{8907} = (10, 10, 1, 1)$ lies on line ℓ_3
201 : $P_{8972} = (11, 11, 1, 1)$ lies on line ℓ_3
202 : $P_{9037} = (12, 12, 1, 1)$ lies on line ℓ_3
203 : $P_{9102} = (13, 13, 1, 1)$ lies on line ℓ_3
204 : $P_{9167} = (14, 14, 1, 1)$ lies on line ℓ_3
205 : $P_{9232} = (15, 15, 1, 1)$ lies on line ℓ_3
206 : $P_{9297} = (16, 16, 1, 1)$ lies on line ℓ_3
207 : $P_{9362} = (17, 17, 1, 1)$ lies on line ℓ_3
208 : $P_{9427} = (18, 18, 1, 1)$ lies on line ℓ_3
209 : $P_{9492} = (19, 19, 1, 1)$ lies on line ℓ_3
210 : $P_{9557} = (20, 20, 1, 1)$ lies on line ℓ_3
211 : $P_{9622} = (21, 21, 1, 1)$ lies on line ℓ_3
212 : $P_{9687} = (22, 22, 1, 1)$ lies on line ℓ_3
213 : $P_{9752} = (23, 23, 1, 1)$ lies on line ℓ_3
214 : $P_{9817} = (24, 24, 1, 1)$ lies on line ℓ_3
215 : $P_{9882} = (25, 25, 1, 1)$ lies on line ℓ_3
216 : $P_{9947} = (26, 26, 1, 1)$ lies on line ℓ_3
217 : $P_{10012} = (27, 27, 1, 1)$ lies on line ℓ_3
218 : $P_{10077} = (28, 28, 1, 1)$ lies on line ℓ_3
219 : $P_{10142} = (29, 29, 1, 1)$ lies on line ℓ_3
220 : $P_{10207} = (30, 30, 1, 1)$ lies on line ℓ_3
221 : $P_{10272} = (31, 31, 1, 1)$ lies on line ℓ_3
222 : $P_{10337} = (32, 32, 1, 1)$ lies on line ℓ_3
223 : $P_{10402} = (33, 33, 1, 1)$ lies on line ℓ_3
224 : $P_{10467} = (34, 34, 1, 1)$ lies on line ℓ_3
225 : $P_{10532} = (35, 35, 1, 1)$ lies on line ℓ_3
226 : $P_{10597} = (36, 36, 1, 1)$ lies on line ℓ_3
227 : $P_{10662} = (37, 37, 1, 1)$ lies on line ℓ_3
228 : $P_{10727} = (38, 38, 1, 1)$ lies on line ℓ_3
229 : $P_{10792} = (39, 39, 1, 1)$ lies on line ℓ_3
230 : $P_{10857} = (40, 40, 1, 1)$ lies on line ℓ_3
231 : $P_{10922} = (41, 41, 1, 1)$ lies on line ℓ_3
232 : $P_{10987} = (42, 42, 1, 1)$ lies on line ℓ_3
233 : $P_{11052} = (43, 43, 1, 1)$ lies on line ℓ_3
234 : $P_{11117} = (44, 44, 1, 1)$ lies on line ℓ_3
235 : $P_{11182} = (45, 45, 1, 1)$ lies on line ℓ_3
236 : $P_{11247} = (46, 46, 1, 1)$ lies on line ℓ_3
237 : $P_{11312} = (47, 47, 1, 1)$ lies on line ℓ_3
238 : $P_{11377} = (48, 48, 1, 1)$ lies on line ℓ_3
239 : $P_{11442} = (49, 49, 1, 1)$ lies on line ℓ_3
240 : $P_{11507} = (50, 50, 1, 1)$ lies on line ℓ_3
241 : $P_{11572} = (51, 51, 1, 1)$ lies on line ℓ_3
242 : $P_{11637} = (52, 52, 1, 1)$ lies on line ℓ_3
243 : $P_{11702} = (53, 53, 1, 1)$ lies on line ℓ_3
244 : $P_{11767} = (54, 54, 1, 1)$ lies on line ℓ_3
245 : $P_{11832} = (55, 55, 1, 1)$ lies on line ℓ_3
246 : $P_{11897} = (56, 56, 1, 1)$ lies on line ℓ_3
247 : $P_{11962} = (57, 57, 1, 1)$ lies on line ℓ_3

248 : $P_{12027} = (58, 58, 1, 1)$ lies on line ℓ_3
249 : $P_{12092} = (59, 59, 1, 1)$ lies on line ℓ_3
250 : $P_{12157} = (60, 60, 1, 1)$ lies on line ℓ_3
251 : $P_{12222} = (61, 61, 1, 1)$ lies on line ℓ_3
252 : $P_{12287} = (62, 62, 1, 1)$ lies on line ℓ_3
253 : $P_{12352} = (63, 63, 1, 1)$ lies on line ℓ_3
254 : $P_{12419} = (2, 1, 2, 1)$ lies on line ℓ_4
255 : $P_{12482} = (1, 2, 2, 1)$ lies on line ℓ_5
256 : $P_{16516} = (3, 1, 3, 1)$ lies on line ℓ_4
257 : $P_{16642} = (1, 3, 3, 1)$ lies on line ℓ_5
258 : $P_{20613} = (4, 1, 4, 1)$ lies on line ℓ_4
259 : $P_{20802} = (1, 4, 4, 1)$ lies on line ℓ_5
260 : $P_{24710} = (5, 1, 5, 1)$ lies on line ℓ_4
261 : $P_{24962} = (1, 5, 5, 1)$ lies on line ℓ_5
262 : $P_{28807} = (6, 1, 6, 1)$ lies on line ℓ_4
263 : $P_{29122} = (1, 6, 6, 1)$ lies on line ℓ_5
264 : $P_{32904} = (7, 1, 7, 1)$ lies on line ℓ_4
265 : $P_{33282} = (1, 7, 7, 1)$ lies on line ℓ_5
266 : $P_{37001} = (8, 1, 8, 1)$ lies on line ℓ_4
267 : $P_{37442} = (1, 8, 8, 1)$ lies on line ℓ_5
268 : $P_{41098} = (9, 1, 9, 1)$ lies on line ℓ_4
269 : $P_{41602} = (1, 9, 9, 1)$ lies on line ℓ_5
270 : $P_{45195} = (10, 1, 10, 1)$ lies on line ℓ_4
271 : $P_{45762} = (1, 10, 10, 1)$ lies on line ℓ_5
272 : $P_{49292} = (11, 1, 11, 1)$ lies on line ℓ_4
273 : $P_{49922} = (1, 11, 11, 1)$ lies on line ℓ_5
274 : $P_{53389} = (12, 1, 12, 1)$ lies on line ℓ_4
275 : $P_{54082} = (1, 12, 12, 1)$ lies on line ℓ_5
276 : $P_{57486} = (13, 1, 13, 1)$ lies on line ℓ_4
277 : $P_{58242} = (1, 13, 13, 1)$ lies on line ℓ_5
278 : $P_{61583} = (14, 1, 14, 1)$ lies on line ℓ_4
279 : $P_{62402} = (1, 14, 14, 1)$ lies on line ℓ_5
280 : $P_{65680} = (15, 1, 15, 1)$ lies on line ℓ_4
281 : $P_{66562} = (1, 15, 15, 1)$ lies on line ℓ_5
282 : $P_{69777} = (16, 1, 16, 1)$ lies on line ℓ_4
283 : $P_{70722} = (1, 16, 16, 1)$ lies on line ℓ_5
284 : $P_{73874} = (17, 1, 17, 1)$ lies on line ℓ_4
285 : $P_{74882} = (1, 17, 17, 1)$ lies on line ℓ_5
286 : $P_{77971} = (18, 1, 18, 1)$ lies on line ℓ_4
287 : $P_{79042} = (1, 18, 18, 1)$ lies on line ℓ_5
288 : $P_{82068} = (19, 1, 19, 1)$ lies on line ℓ_4
289 : $P_{83202} = (1, 19, 19, 1)$ lies on line ℓ_5
290 : $P_{86165} = (20, 1, 20, 1)$ lies on line ℓ_4
291 : $P_{87362} = (1, 20, 20, 1)$ lies on line ℓ_5
292 : $P_{90262} = (21, 1, 21, 1)$ lies on line ℓ_4
293 : $P_{91522} = (1, 21, 21, 1)$ lies on line ℓ_5
294 : $P_{94359} = (22, 1, 22, 1)$ lies on line ℓ_4
295 : $P_{95682} = (1, 22, 22, 1)$ lies on line ℓ_5
296 : $P_{98456} = (23, 1, 23, 1)$ lies on line ℓ_4
297 : $P_{99842} = (1, 23, 23, 1)$ lies on line ℓ_5
298 : $P_{102553} = (24, 1, 24, 1)$ lies on line ℓ_4
299 : $P_{104002} = (1, 24, 24, 1)$ lies on line ℓ_5
300 : $P_{106650} = (25, 1, 25, 1)$ lies on line ℓ_4
301 : $P_{108162} = (1, 25, 25, 1)$ lies on line ℓ_5
302 : $P_{110747} = (26, 1, 26, 1)$ lies on line ℓ_4
303 : $P_{112322} = (1, 26, 26, 1)$ lies on line ℓ_5
304 : $P_{114844} = (27, 1, 27, 1)$ lies on line ℓ_4
305 : $P_{116482} = (1, 27, 27, 1)$ lies on line ℓ_5
306 : $P_{118941} = (28, 1, 28, 1)$ lies on line ℓ_4
307 : $P_{120642} = (1, 28, 28, 1)$ lies on line ℓ_5
308 : $P_{123038} = (29, 1, 29, 1)$ lies on line ℓ_4
309 : $P_{124802} = (1, 29, 29, 1)$ lies on line ℓ_5
310 : $P_{127135} = (30, 1, 30, 1)$ lies on line ℓ_4
311 : $P_{128962} = (1, 30, 30, 1)$ lies on line ℓ_5
312 : $P_{131232} = (31, 1, 31, 1)$ lies on line ℓ_4
313 : $P_{133122} = (1, 31, 31, 1)$ lies on line ℓ_5
314 : $P_{135329} = (32, 1, 32, 1)$ lies on line ℓ_4
315 : $P_{137282} = (1, 32, 32, 1)$ lies on line ℓ_5
316 : $P_{139426} = (33, 1, 33, 1)$ lies on line ℓ_4
317 : $P_{141442} = (1, 33, 33, 1)$ lies on line ℓ_5
318 : $P_{143523} = (34, 1, 34, 1)$ lies on line ℓ_4
319 : $P_{145602} = (1, 34, 34, 1)$ lies on line ℓ_5
320 : $P_{147620} = (35, 1, 35, 1)$ lies on line ℓ_4
321 : $P_{149762} = (1, 35, 35, 1)$ lies on line ℓ_5
322 : $P_{151717} = (36, 1, 36, 1)$ lies on line ℓ_4
323 : $P_{153922} = (1, 36, 36, 1)$ lies on line ℓ_5
324 : $P_{155814} = (37, 1, 37, 1)$ lies on line ℓ_4
325 : $P_{158082} = (1, 37, 37, 1)$ lies on line ℓ_5
326 : $P_{159911} = (38, 1, 38, 1)$ lies on line ℓ_4
327 : $P_{162242} = (1, 38, 38, 1)$ lies on line ℓ_5
328 : $P_{164008} = (39, 1, 39, 1)$ lies on line ℓ_4
329 : $P_{166402} = (1, 39, 39, 1)$ lies on line ℓ_5
330 : $P_{168105} = (40, 1, 40, 1)$ lies on line ℓ_4
331 : $P_{170562} = (1, 40, 40, 1)$ lies on line ℓ_5
332 : $P_{172202} = (41, 1, 41, 1)$ lies on line ℓ_4
333 : $P_{174722} = (1, 41, 41, 1)$ lies on line ℓ_5
334 : $P_{176299} = (42, 1, 42, 1)$ lies on line ℓ_4
335 : $P_{178882} = (1, 42, 42, 1)$ lies on line ℓ_5
336 : $P_{180396} = (43, 1, 43, 1)$ lies on line ℓ_4
337 : $P_{183042} = (1, 43, 43, 1)$ lies on line ℓ_5
338 : $P_{184493} = (44, 1, 44, 1)$ lies on line ℓ_4
339 : $P_{187202} = (1, 44, 44, 1)$ lies on line ℓ_5
340 : $P_{188590} = (45, 1, 45, 1)$ lies on line ℓ_4
341 : $P_{191362} = (1, 45, 45, 1)$ lies on line ℓ_5
342 : $P_{192687} = (46, 1, 46, 1)$ lies on line ℓ_4
343 : $P_{195522} = (1, 46, 46, 1)$ lies on line ℓ_5
344 : $P_{196784} = (47, 1, 47, 1)$ lies on line ℓ_4
345 : $P_{199682} = (1, 47, 47, 1)$ lies on line ℓ_5
346 : $P_{200881} = (48, 1, 48, 1)$ lies on line ℓ_4
347 : $P_{203842} = (1, 48, 48, 1)$ lies on line ℓ_5
348 : $P_{204978} = (49, 1, 49, 1)$ lies on line ℓ_4
349 : $P_{208002} = (1, 49, 49, 1)$ lies on line ℓ_5
350 : $P_{209075} = (50, 1, 50, 1)$ lies on line ℓ_4
351 : $P_{212162} = (1, 50, 50, 1)$ lies on line ℓ_5
352 : $P_{213172} = (51, 1, 51, 1)$ lies on line ℓ_4
353 : $P_{216322} = (1, 51, 51, 1)$ lies on line ℓ_5
354 : $P_{217269} = (52, 1, 52, 1)$ lies on line ℓ_4
355 : $P_{220482} = (1, 52, 52, 1)$ lies on line ℓ_5

356 : $P_{221366} = (53, 1, 53, 1)$ lies on line ℓ_4
357 : $P_{224642} = (1, 53, 53, 1)$ lies on line ℓ_5
358 : $P_{225463} = (54, 1, 54, 1)$ lies on line ℓ_4
359 : $P_{228802} = (1, 54, 54, 1)$ lies on line ℓ_5
360 : $P_{229560} = (55, 1, 55, 1)$ lies on line ℓ_4
361 : $P_{232962} = (1, 55, 55, 1)$ lies on line ℓ_5
362 : $P_{233657} = (56, 1, 56, 1)$ lies on line ℓ_4
363 : $P_{237122} = (1, 56, 56, 1)$ lies on line ℓ_5
364 : $P_{237754} = (57, 1, 57, 1)$ lies on line ℓ_4
365 : $P_{241282} = (1, 57, 57, 1)$ lies on line ℓ_5
366 : $P_{241851} = (58, 1, 58, 1)$ lies on line ℓ_4
367 : $P_{245442} = (1, 58, 58, 1)$ lies on line ℓ_5
368 : $P_{245948} = (59, 1, 59, 1)$ lies on line ℓ_4
369 : $P_{249602} = (1, 59, 59, 1)$ lies on line ℓ_5
370 : $P_{250045} = (60, 1, 60, 1)$ lies on line ℓ_4
371 : $P_{253762} = (1, 60, 60, 1)$ lies on line ℓ_5
372 : $P_{254142} = (61, 1, 61, 1)$ lies on line ℓ_4
373 : $P_{257922} = (1, 61, 61, 1)$ lies on line ℓ_5
374 : $P_{258239} = (62, 1, 62, 1)$ lies on line ℓ_4
375 : $P_{262082} = (1, 62, 62, 1)$ lies on line ℓ_5
376 : $P_{262336} = (63, 1, 63, 1)$ lies on line ℓ_4
377 : $P_{266242} = (1, 63, 63, 1)$ lies on line ℓ_5

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 5
0	0 1 1 0 0 1
1	1 0 1 0 1 0
2	1 1 0 1 0 0
3	0 0 1 0 1 1
4	0 1 0 1 0 1
5	1 0 0 1 1 0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_5
in point	P_0	P_0	P_{131}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_4
in point	P_0	P_0	P_{4226}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3
in point	P_0	P_0	P_{8258}

Line 3 intersects

Line	ℓ_2	ℓ_4	ℓ_5
in point	P_{8258}	P_4	P_4

Line 4 intersects

Line	ℓ_1	ℓ_3	ℓ_5
in point	P_{4226}	P_4	P_4

Line 5 intersects

Line	ℓ_0	ℓ_3	ℓ_4
in point	P_{131}	P_4	P_4

The surface has 4289 points:
Too many to print.