Rank-43 over GF(64)

January 15, 2021

The equation

The equation of the surface is:

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

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:

$$0:\,P_1=\mathbf{P}(0,1,0,0)=\mathbf{P}(0,1,0,0)$$

The 6 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{4097} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{4097} = \mathbf{Pl}(0, 0, 1, 0, 1, 0)_{4352}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{21} \end{bmatrix}_{4153} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 57 \end{bmatrix}_{4153} = \mathbf{Pl}(0, 0, 56, 0, 1, 0)_{11337}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{42} \end{bmatrix}_{4152} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 56 \end{bmatrix}_{4152} = \mathbf{Pl}(0, 0, 57, 0, 1, 0)_{11464}$$

$$\ell_3 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{17043457} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{17043457} = \mathbf{Pl}(0, 0, 0, 1, 0, 1)_{278529}$$

$$\ell_4 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{21} \end{bmatrix}_{17043513} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 57 \end{bmatrix}_{17043513} = \mathbf{Pl}(0, 0, 0, 57, 0, 1)_{285641}$$

$$\ell_5 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{42} \end{bmatrix}_{17043512} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 56 \end{bmatrix}_{17043512} = \mathbf{Pl}(0, 0, 0, 56, 0, 1)_{285514}$$

Rank of lines: (4097, 4153, 4152, 17043457, 17043513, 17043512) Rank of points on Klein quadric: (4352, 11337, 11464, 278529, 285641, 285514)

Eckardt Points

The surface has 2 Eckardt points: $0: P_0 = \mathbf{P}(1, 0, 0, 0) = \mathbf{P}(1, 0, 0, 0),$ $1: P_1 = \mathbf{P}(0, 1, 0, 0) = \mathbf{P}(0, 1, 0, 0).$

Double Points

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

$$P_{8258} = (0, 0, 1, 1) = \ell_0 \cap \ell_3$$

$$P_{233537} = (0, 0, 56, 1) = \ell_1 \cap \ell_4$$

 $P_{237633} = (0, 0, 57, 1) = \ell_2 \cap \ell_5$

Single Points

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

$0: P_{8259} = (1,0,1,1)$ lies on line ℓ_0	18: $P_{8277} = (19, 0, 1, 1)$ lies on line ℓ_0
1: $P_{8260} = (2,0,1,1)$ lies on line ℓ_0	19: $P_{8278} = (20, 0, 1, 1)$ lies on line ℓ_0
2: $P_{8261} = (3,0,1,1)$ lies on line ℓ_0	$20: P_{8279} = (21, 0, 1, 1)$ lies on line ℓ_0
$3: P_{8262} = (4,0,1,1)$ lies on line ℓ_0	$21: P_{8280} = (22, 0, 1, 1)$ lies on line ℓ_0
4: $P_{8263} = (5, 0, 1, 1)$ lies on line ℓ_0	$22: P_{8281} = (23, 0, 1, 1)$ lies on line ℓ_0
5: $P_{8264} = (6,0,1,1)$ lies on line ℓ_0	23: $P_{8282} = (24, 0, 1, 1)$ lies on line ℓ_0
6: $P_{8265} = (7,0,1,1)$ lies on line ℓ_0	$24: P_{8283} = (25, 0, 1, 1)$ lies on line ℓ_0
7: $P_{8266} = (8, 0, 1, 1)$ lies on line ℓ_0	25: $P_{8284} = (26, 0, 1, 1)$ lies on line ℓ_0
8: $P_{8267} = (9,0,1,1)$ lies on line ℓ_0	26: $P_{8285} = (27, 0, 1, 1)$ lies on line ℓ_0
9: $P_{8268} = (10, 0, 1, 1)$ lies on line ℓ_0	$27: P_{8286} = (28, 0, 1, 1)$ lies on line ℓ_0
10: $P_{8269} = (11, 0, 1, 1)$ lies on line ℓ_0	$28: P_{8287} = (29, 0, 1, 1)$ lies on line ℓ_0
11: $P_{8270} = (12, 0, 1, 1)$ lies on line ℓ_0	29: $P_{8288} = (30, 0, 1, 1)$ lies on line ℓ_0
12: $P_{8271} = (13, 0, 1, 1)$ lies on line ℓ_0	$30: P_{8289} = (31, 0, 1, 1)$ lies on line ℓ_0
13: $P_{8272} = (14, 0, 1, 1)$ lies on line ℓ_0	$31: P_{8290} = (32, 0, 1, 1)$ lies on line ℓ_0
14: $P_{8273} = (15, 0, 1, 1)$ lies on line ℓ_0	$32: P_{8291} = (33, 0, 1, 1)$ lies on line ℓ_0
15: $P_{8274} = (16, 0, 1, 1)$ lies on line ℓ_0	33: $P_{8292} = (34, 0, 1, 1)$ lies on line ℓ_0
16: $P_{8275} = (17, 0, 1, 1)$ lies on line ℓ_0	$34: P_{8293} = (35, 0, 1, 1)$ lies on line ℓ_0
17: $P_{8276} = (18, 0, 1, 1)$ lies on line ℓ_0	$35: P_{8294} = (36, 0, 1, 1)$ lies on line ℓ_0

```
36: P_{8295} = (37, 0, 1, 1) lies on line \ell_0
                                                                     90: P_{10049} = (0, 28, 1, 1) lies on line \ell_3
                                                                     91: P_{10113} = (0, 29, 1, 1) lies on line \ell_3
37: P_{8296} = (38, 0, 1, 1) lies on line \ell_0
38: P_{8297} = (39, 0, 1, 1) lies on line \ell_0
                                                                     92: P_{10177} = (0, 30, 1, 1) lies on line \ell_3
39: P_{8298} = (40, 0, 1, 1) lies on line \ell_0
                                                                     93: P_{10241} = (0, 31, 1, 1) lies on line \ell_3
40: P_{8299} = (41, 0, 1, 1) lies on line \ell_0
                                                                     94: P_{10305} = (0, 32, 1, 1) lies on line \ell_3
                                                                     95: P_{10369} = (0, 33, 1, 1) lies on line \ell_3
41: P_{8300} = (42, 0, 1, 1) lies on line \ell_0
42: P_{8301} = (43, 0, 1, 1) lies on line \ell_0
                                                                     96: P_{10433} = (0, 34, 1, 1) lies on line \ell_3
43: P_{8302} = (44, 0, 1, 1) lies on line \ell_0
                                                                     97: P_{10497} = (0, 35, 1, 1) lies on line \ell_3
44: P_{8303} = (45, 0, 1, 1) lies on line \ell_0
                                                                     98: P_{10561} = (0, 36, 1, 1) lies on line \ell_3
45: P_{8304} = (46, 0, 1, 1) lies on line \ell_0
                                                                     99: P_{10625} = (0, 37, 1, 1) lies on line \ell_3
46: P_{8305} = (47, 0, 1, 1) lies on line \ell_0
                                                                     100: P_{10689} = (0, 38, 1, 1) lies on line \ell_3
47: P_{8306} = (48, 0, 1, 1) lies on line \ell_0
                                                                     101: P_{10753} = (0, 39, 1, 1) lies on line \ell_3
48: P_{8307} = (49, 0, 1, 1) lies on line \ell_0
                                                                     102: P_{10817} = (0, 40, 1, 1) lies on line \ell_3
49: P_{8308} = (50, 0, 1, 1) lies on line \ell_0
                                                                     103: P_{10881} = (0, 41, 1, 1) lies on line \ell_3
                                                                     104 : P_{10945} = (0, 42, 1, 1) lies on line \ell_3
50: P_{8309} = (51, 0, 1, 1) lies on line \ell_0
51: P_{8310} = (52, 0, 1, 1) lies on line \ell_0
                                                                     105: P_{11009} = (0, 43, 1, 1) lies on line \ell_3
                                                                     106: P_{11073} = (0, 44, 1, 1) lies on line \ell_3
52: P_{8311} = (53, 0, 1, 1) lies on line \ell_0
53: P_{8312} = (54, 0, 1, 1) lies on line \ell_0
                                                                     107: P_{11137} = (0, 45, 1, 1) lies on line \ell_3
                                                                     108: P_{11201} = (0, 46, 1, 1) lies on line \ell_3
54: P_{8313} = (55, 0, 1, 1) lies on line \ell_0
55: P_{8314} = (56, 0, 1, 1) lies on line \ell_0
                                                                     109: P_{11265} = (0, 47, 1, 1) lies on line \ell_3
56: P_{8315} = (57, 0, 1, 1) lies on line \ell_0
                                                                     110: P_{11329} = (0, 48, 1, 1) lies on line \ell_3
                                                                     111: P_{11393} = (0, 49, 1, 1) lies on line \ell_3
57: P_{8316} = (58, 0, 1, 1) lies on line \ell_0
                                                                     112: P_{11457} = (0, 50, 1, 1) lies on line \ell_3
58: P_{8317} = (59, 0, 1, 1) lies on line \ell_0
                                                                     113 : P_{11521} = (0, 51, 1, 1) lies on line \ell_3
59: P_{8318} = (60, 0, 1, 1) lies on line \ell_0
60: P_{8319} = (61, 0, 1, 1) lies on line \ell_0
                                                                     114: P_{11585} = (0, 52, 1, 1) lies on line \ell_3
61: P_{8320} = (62, 0, 1, 1) lies on line \ell_0
                                                                     115: P_{11649} = (0, 53, 1, 1) lies on line \ell_3
62: P_{8321} = (63, 0, 1, 1) lies on line \ell_0
                                                                     116: P_{11713} = (0, 54, 1, 1) lies on line \ell_3
63: P_{8322} = (0, 1, 1, 1) lies on line \ell_3
                                                                     117: P_{11777} = (0, 55, 1, 1) lies on line \ell_3
64: P_{8385} = (0, 2, 1, 1) lies on line \ell_3
                                                                     118: P_{11841} = (0, 56, 1, 1) lies on line \ell_3
65: P_{8449} = (0, 3, 1, 1) lies on line \ell_3
                                                                     119: P_{11905} = (0, 57, 1, 1) lies on line \ell_3
66: P_{8513} = (0, 4, 1, 1) lies on line \ell_3
                                                                     120: P_{11969} = (0, 58, 1, 1) lies on line \ell_3
67: P_{8577} = (0, 5, 1, 1) lies on line \ell_3
                                                                     121: P_{12033} = (0, 59, 1, 1) lies on line \ell_3
68: P_{8641} = (0, 6, 1, 1) lies on line \ell_3
                                                                     122: P_{12097} = (0, 60, 1, 1) lies on line \ell_3
69: P_{8705} = (0,7,1,1) lies on line \ell_3
                                                                     123: P_{12161} = (0, 61, 1, 1) lies on line \ell_3
70: P_{8769} = (0, 8, 1, 1) lies on line \ell_3
                                                                     124: P_{12225} = (0, 62, 1, 1) lies on line \ell_3
71: P_{8833} = (0, 9, 1, 1) lies on line \ell_3
                                                                     125: P_{12289} = (0, 63, 1, 1) lies on line \ell_3
72: P_{8897} = (0, 10, 1, 1) lies on line \ell_3
                                                                     126: P_{233538} = (1, 0, 56, 1) lies on line \ell_1
73: P_{8961} = (0, 11, 1, 1) lies on line \ell_3
                                                                      127: P_{233539} = (2, 0, 56, 1) lies on line \ell_1
74: P_{9025} = (0, 12, 1, 1) lies on line \ell_3
                                                                     128: P_{233540} = (3, 0, 56, 1) lies on line \ell_1
75: P_{9089} = (0, 13, 1, 1) lies on line \ell_3
                                                                     129: P_{233541} = (4, 0, 56, 1) lies on line \ell_1
76: P_{9153} = (0, 14, 1, 1) lies on line \ell_3
                                                                      130: P_{233542} = (5, 0, 56, 1) lies on line \ell_1
77: P_{9217} = (0, 15, 1, 1) lies on line \ell_3
                                                                     131: P_{233543} = (6, 0, 56, 1) lies on line \ell_1
                                                                     132 : P_{233544} = (7, 0, 56, 1) lies on line \ell_1
78: P_{9281} = (0, 16, 1, 1) lies on line \ell_3
79: P_{9345} = (0, 17, 1, 1) lies on line \ell_3
                                                                     133: P_{233545} = (8, 0, 56, 1) lies on line \ell_1
80: P_{9409} = (0, 18, 1, 1) lies on line \ell_3
                                                                     134: P_{233546} = (9, 0, 56, 1) lies on line \ell_1
                                                                     135 : P_{233547} = (10, 0, 56, 1) lies on line \ell_1
81: P_{9473} = (0, 19, 1, 1) lies on line \ell_3
82: P_{9537} = (0, 20, 1, 1) lies on line \ell_3
                                                                     136: P_{233548} = (11, 0, 56, 1) lies on line \ell_1
83: P_{9601} = (0, 21, 1, 1) lies on line \ell_3
                                                                     137: P_{233549} = (12, 0, 56, 1) lies on line \ell_1
84: P_{9665} = (0, 22, 1, 1) lies on line \ell_3
                                                                     138: P_{233550} = (13, 0, 56, 1) lies on line \ell_1
85: P_{9729} = (0, 23, 1, 1) lies on line \ell_3
                                                                     139: P_{233551} = (14, 0, 56, 1) lies on line \ell_1
                                                                     140: P_{233552} = (15, 0, 56, 1) lies on line \ell_1
86: P_{9793} = (0, 24, 1, 1) lies on line \ell_3
87: P_{9857} = (0, 25, 1, 1) lies on line \ell_3
                                                                     141: P_{233553} = (16, 0, 56, 1) lies on line \ell_1
88: P_{9921} = (0, 26, 1, 1) lies on line \ell_3
                                                                     142: P_{233554} = (17, 0, 56, 1) lies on line \ell_1
89: P_{9985} = (0, 27, 1, 1) lies on line \ell_3
                                                                     143: P_{233555} = (18, 0, 56, 1) lies on line \ell_1
```

```
144: P_{233556} = (19, 0, 56, 1) lies on line \ell_1
                                                                    198: P_{234177} = (0, 10, 56, 1) lies on line \ell_4
145: P_{233557} = (20, 0, 56, 1) lies on line \ell_1
                                                                     199: P_{234241} = (0, 11, 56, 1) lies on line \ell_4
                                                                     200: P_{234305} = (0, 12, 56, 1) lies on line \ell_4
146: P_{233558} = (21, 0, 56, 1) lies on line \ell_1
147: P_{233559} = (22, 0, 56, 1) lies on line \ell_1
                                                                     201: P_{234369} = (0, 13, 56, 1) lies on line \ell_4
                                                                    202 : P_{234433} = (0, 14, 56, 1) lies on line \ell_4
148: P_{233560} = (23, 0, 56, 1) lies on line \ell_1
149: P_{233561} = (24, 0, 56, 1) lies on line \ell_1
                                                                    203: P_{234497} = (0, 15, 56, 1) lies on line \ell_4
150: P_{233562} = (25, 0, 56, 1) lies on line \ell_1
                                                                    204: P_{234561} = (0, 16, 56, 1) lies on line \ell_4
151: P_{233563} = (26, 0, 56, 1) lies on line \ell_1
                                                                    205: P_{234625} = (0, 17, 56, 1) lies on line \ell_4
152: P_{233564} = (27, 0, 56, 1) lies on line \ell_1
                                                                    206: P_{234689} = (0, 18, 56, 1) lies on line \ell_4
153: P_{233565} = (28, 0, 56, 1) lies on line \ell_1
                                                                    207: P_{234753} = (0, 19, 56, 1) lies on line \ell_4
154: P_{233566} = (29, 0, 56, 1) lies on line \ell_1
                                                                    208: P_{234817} = (0, 20, 56, 1) lies on line \ell_4
155: P_{233567} = (30, 0, 56, 1) lies on line \ell_1
                                                                    209: P_{234881} = (0, 21, 56, 1) lies on line \ell_4
156: P_{233568} = (31, 0, 56, 1) lies on line \ell_1
                                                                    210: P_{234945} = (0, 22, 56, 1) lies on line \ell_4
157: P_{233569} = (32, 0, 56, 1) lies on line \ell_1
                                                                    211: P_{235009} = (0, 23, 56, 1) lies on line \ell_4
158: P_{233570} = (33, 0, 56, 1) lies on line \ell_1
                                                                    212: P_{235073} = (0, 24, 56, 1) lies on line \ell_4
159: P_{233571} = (34, 0, 56, 1) lies on line \ell_1
                                                                    213: P_{235137} = (0, 25, 56, 1) lies on line \ell_4
160: P_{233572} = (35, 0, 56, 1) lies on line \ell_1
                                                                    214: P_{235201} = (0, 26, 56, 1) lies on line \ell_4
161: P_{233573} = (36, 0, 56, 1) lies on line \ell_1
                                                                    215: P_{235265} = (0, 27, 56, 1) lies on line \ell_4
162: P_{233574} = (37, 0, 56, 1) lies on line \ell_1
                                                                    216: P_{235329} = (0, 28, 56, 1) lies on line \ell_4
163: P_{233575} = (38, 0, 56, 1) lies on line \ell_1
                                                                    217: P_{235393} = (0, 29, 56, 1) lies on line \ell_4
164: P_{233576} = (39, 0, 56, 1) lies on line \ell_1
                                                                    218: P_{235457} = (0, 30, 56, 1) lies on line \ell_4
165: P_{233577} = (40, 0, 56, 1) lies on line \ell_1
                                                                    219: P_{235521} = (0, 31, 56, 1) lies on line \ell_4
166: P_{233578} = (41, 0, 56, 1) lies on line \ell_1
                                                                     220: P_{235585} = (0, 32, 56, 1) lies on line \ell_4
                                                                    221: P_{235649} = (0, 33, 56, 1) lies on line \ell_4
167: P_{233579} = (42, 0, 56, 1) lies on line \ell_1
168: P_{233580} = (43, 0, 56, 1) lies on line \ell_1
                                                                    222: P_{235713} = (0, 34, 56, 1) lies on line \ell_4
169: P_{233581} = (44, 0, 56, 1) lies on line \ell_1
                                                                    223: P_{235777} = (0, 35, 56, 1) lies on line \ell_4
170: P_{233582} = (45, 0, 56, 1) lies on line \ell_1
                                                                    224: P_{235841} = (0, 36, 56, 1) lies on line \ell_4
171: P_{233583} = (46, 0, 56, 1) lies on line \ell_1
                                                                    225: P_{235905} = (0, 37, 56, 1) lies on line \ell_4
172: P_{233584} = (47, 0, 56, 1) lies on line \ell_1
                                                                    226: P_{235969} = (0, 38, 56, 1) lies on line \ell_4
173: P_{233585} = (48, 0, 56, 1) lies on line \ell_1
                                                                    227: P_{236033} = (0, 39, 56, 1) lies on line \ell_4
174: P_{233586} = (49, 0, 56, 1) lies on line \ell_1
                                                                    228: P_{236097} = (0, 40, 56, 1) lies on line \ell_4
175: P_{233587} = (50, 0, 56, 1) lies on line \ell_1
                                                                    229: P_{236161} = (0, 41, 56, 1) lies on line \ell_4
176: P_{233588} = (51, 0, 56, 1) lies on line \ell_1
                                                                    230: P_{236225} = (0, 42, 56, 1) lies on line \ell_4
177 : P_{233589} = (52, 0, 56, 1) lies on line \ell_1
                                                                    231: P_{236289} = (0, 43, 56, 1) lies on line \ell_4
                                                                    232 : P_{236353} = (0, 44, 56, 1) lies on line \ell_4
178: P_{233590} = (53, 0, 56, 1) lies on line \ell_1
179: P_{233591} = (54, 0, 56, 1) lies on line \ell_1
                                                                    233: P_{236417} = (0, 45, 56, 1) lies on line \ell_4
180: P_{233592} = (55, 0, 56, 1) lies on line \ell_1
                                                                    234: P_{236481} = (0, 46, 56, 1) lies on line \ell_4
181: P_{233593} = (56, 0, 56, 1) lies on line \ell_1
                                                                     235: P_{236545} = (0, 47, 56, 1) lies on line \ell_4
                                                                    236: P_{236609} = (0, 48, 56, 1) lies on line \ell_4
182: P_{233594} = (57, 0, 56, 1) lies on line \ell_1
183 : P_{233595} = (58, 0, 56, 1) lies on line \ell_1
                                                                    237: P_{236673} = (0, 49, 56, 1) lies on line \ell_4
184: P_{233596} = (59, 0, 56, 1) lies on line \ell_1
                                                                    238: P_{236737} = (0, 50, 56, 1) lies on line \ell_4
185: P_{233597} = (60, 0, 56, 1) lies on line \ell_1
                                                                    239: P_{236801} = (0, 51, 56, 1) lies on line \ell_4
186 : P_{233598} = (61, 0, 56, 1) lies on line \ell_1
                                                                    240: P_{236865} = (0, 52, 56, 1) lies on line \ell_4
187: P_{233599} = (62, 0, 56, 1) lies on line \ell_1
                                                                    241: P_{236929} = (0, 53, 56, 1) lies on line \ell_4
188: P_{233600} = (63, 0, 56, 1) lies on line \ell_1
                                                                    242: P_{236993} = (0, 54, 56, 1) lies on line \ell_4
189: P_{233601} = (0, 1, 56, 1) lies on line \ell_4
                                                                    243: P_{237057} = (0, 55, 56, 1) lies on line \ell_4
190: P_{233665} = (0, 2, 56, 1) lies on line \ell_4
                                                                    244: P_{237121} = (0, 56, 56, 1) lies on line \ell_4
191: P_{233729} = (0, 3, 56, 1) lies on line \ell_4
                                                                    245: P_{237185} = (0, 57, 56, 1) lies on line \ell_4
192: P_{233793} = (0, 4, 56, 1) lies on line \ell_4
                                                                    246: P_{237249} = (0, 58, 56, 1) lies on line \ell_4
193: P_{233857} = (0, 5, 56, 1) lies on line \ell_4
                                                                    247: P_{237313} = (0, 59, 56, 1) lies on line \ell_4
194 : P_{233921} = (0, 6, 56, 1) lies on line \ell_4
                                                                    248: P_{237377} = (0, 60, 56, 1) lies on line \ell_4
195: P_{233985} = (0, 7, 56, 1) lies on line \ell_4
                                                                    249: P_{237441} = (0, 61, 56, 1) lies on line \ell_4
196: P_{234049} = (0, 8, 56, 1) lies on line \ell_4
                                                                    250: P_{237505} = (0, 62, 56, 1) lies on line \ell_4
197: P_{234113} = (0, 9, 56, 1) lies on line \ell_4
                                                                     251: P_{237569} = (0, 63, 56, 1) lies on line \ell_4
```

```
306: P_{237688} = (55, 0, 57, 1) lies on line \ell_2
252: P_{237634} = (1, 0, 57, 1) lies on line \ell_2
253: P_{237635} = (2, 0, 57, 1) lies on line \ell_2
                                                                    307: P_{237689} = (56, 0, 57, 1) lies on line \ell_2
                                                                    308 : P_{237690} = (57, 0, 57, 1) lies on line \ell_2
254: P_{237636} = (3, 0, 57, 1) lies on line \ell_2
255: P_{237637} = (4, 0, 57, 1) lies on line \ell_2
                                                                    309: P_{237691} = (58, 0, 57, 1) lies on line \ell_2
256: P_{237638} = (5, 0, 57, 1) lies on line \ell_2
                                                                    310: P_{237692} = (59, 0, 57, 1) lies on line \ell_2
257: P_{237639} = (6, 0, 57, 1) lies on line \ell_2
                                                                    311 : P_{237693} = (60, 0, 57, 1) lies on line \ell_2
258: P_{237640} = (7, 0, 57, 1) lies on line \ell_2
                                                                    312: P_{237694} = (61, 0, 57, 1) lies on line \ell_2
259: P_{237641} = (8, 0, 57, 1) lies on line \ell_2
                                                                    313: P_{237695} = (62, 0, 57, 1) lies on line \ell_2
260: P_{237642} = (9, 0, 57, 1) lies on line \ell_2
                                                                    314: P_{237696} = (63, 0, 57, 1) lies on line \ell_2
261: P_{237643} = (10, 0, 57, 1) lies on line \ell_2
                                                                    315: P_{237697} = (0, 1, 57, 1) lies on line \ell_5
262: P_{237644} = (11, 0, 57, 1) lies on line \ell_2
                                                                    316: P_{237761} = (0, 2, 57, 1) lies on line \ell_5
                                                                    317: P_{237825} = (0, 3, 57, 1) lies on line \ell_5
263: P_{237645} = (12, 0, 57, 1) lies on line \ell_2
264: P_{237646} = (13, 0, 57, 1) lies on line \ell_2
                                                                    318: P_{237889} = (0, 4, 57, 1) lies on line \ell_5
265: P_{237647} = (14, 0, 57, 1) lies on line \ell_2
                                                                    319: P_{237953} = (0, 5, 57, 1) lies on line \ell_5
266 : P_{237648} = (15, 0, 57, 1) lies on line \ell_2
                                                                    320: P_{238017} = (0, 6, 57, 1) lies on line \ell_5
267: P_{237649} = (16, 0, 57, 1) lies on line \ell_2
                                                                    321: P_{238081} = (0, 7, 57, 1) lies on line \ell_5
268 : P_{237650} = (17, 0, 57, 1) lies on line \ell_2
                                                                    322: P_{238145} = (0, 8, 57, 1) lies on line \ell_5
269 : P_{237651} = (18, 0, 57, 1) lies on line \ell_2
                                                                    323: P_{238209} = (0, 9, 57, 1) lies on line \ell_5
270: P_{237652} = (19, 0, 57, 1) lies on line \ell_2
                                                                    324: P_{238273} = (0, 10, 57, 1) lies on line \ell_5
                                                                    325 : P_{238337} = (0, 11, 57, 1) lies on line \ell_5
271: P_{237653} = (20, 0, 57, 1) lies on line \ell_2
272: P_{237654} = (21, 0, 57, 1) lies on line \ell_2
                                                                    326: P_{238401} = (0, 12, 57, 1) lies on line \ell_5
273: P_{237655} = (22, 0, 57, 1) lies on line \ell_2
                                                                    327: P_{238465} = (0, 13, 57, 1) lies on line \ell_5
274: P_{237656} = (23, 0, 57, 1) lies on line \ell_2
                                                                    328: P_{238529} = (0, 14, 57, 1) lies on line \ell_5
                                                                    329 : P_{238593} = (0, 15, 57, 1) lies on line \ell_5
275: P_{237657} = (24, 0, 57, 1) lies on line \ell_2
276: P_{237658} = (25, 0, 57, 1) lies on line \ell_2
                                                                    330: P_{238657} = (0, 16, 57, 1) lies on line \ell_5
277: P_{237659} = (26, 0, 57, 1) lies on line \ell_2
                                                                    331 : P_{238721} = (0, 17, 57, 1) lies on line \ell_5
278: P_{237660} = (27, 0, 57, 1) lies on line \ell_2
                                                                    332: P_{238785} = (0, 18, 57, 1) lies on line \ell_5
279 : P_{237661} = (28, 0, 57, 1) lies on line \ell_2
                                                                    333: P_{238849} = (0, 19, 57, 1) lies on line \ell_5
280: P_{237662} = (29, 0, 57, 1) lies on line \ell_2
                                                                    334: P_{238913} = (0, 20, 57, 1) lies on line \ell_5
281: P_{237663} = (30, 0, 57, 1) lies on line \ell_2
                                                                    335: P_{238977} = (0, 21, 57, 1) lies on line \ell_5
282: P_{237664} = (31, 0, 57, 1) lies on line \ell_2
                                                                    336: P_{239041} = (0, 22, 57, 1) lies on line \ell_5
283: P_{237665} = (32, 0, 57, 1) lies on line \ell_2
                                                                    337: P_{239105} = (0, 23, 57, 1) lies on line \ell_5
284: P_{237666} = (33, 0, 57, 1) lies on line \ell_2
                                                                    338: P_{239169} = (0, 24, 57, 1) lies on line \ell_5
285 : P_{237667} = (34, 0, 57, 1) lies on line \ell_2
                                                                    339 : P_{239233} = (0, 25, 57, 1) lies on line \ell_5
286: P_{237668} = (35, 0, 57, 1) lies on line \ell_2
                                                                    340: P_{239297} = (0, 26, 57, 1) lies on line \ell_5
                                                                    341 : P_{239361} = (0, 27, 57, 1) lies on line \ell_5
287: P_{237669} = (36, 0, 57, 1) lies on line \ell_2
288: P_{237670} = (37, 0, 57, 1) lies on line \ell_2
                                                                    342: P_{239425} = (0, 28, 57, 1) lies on line \ell_5
289: P_{237671} = (38, 0, 57, 1) lies on line \ell_2
                                                                    343: P_{239489} = (0, 29, 57, 1) lies on line \ell_5
                                                                    344: P_{239553} = (0, 30, 57, 1) lies on line \ell_5
290: P_{237672} = (39, 0, 57, 1) lies on line \ell_2
                                                                    345 : P_{239617} = (0, 31, 57, 1) lies on line \ell_5
291: P_{237673} = (40, 0, 57, 1) lies on line \ell_2
292: P_{237674} = (41, 0, 57, 1) lies on line \ell_2
                                                                    346: P_{239681} = (0, 32, 57, 1) lies on line \ell_5
293: P_{237675} = (42, 0, 57, 1) lies on line \ell_2
                                                                    347: P_{239745} = (0, 33, 57, 1) lies on line \ell_5
294 : P_{237676} = (43, 0, 57, 1) lies on line \ell_2
                                                                    348: P_{239809} = (0, 34, 57, 1) lies on line \ell_5
295: P_{237677} = (44, 0, 57, 1) lies on line \ell_2
                                                                    349: P_{239873} = (0, 35, 57, 1) lies on line \ell_5
296: P_{237678} = (45, 0, 57, 1) lies on line \ell_2
                                                                    350: P_{239937} = (0, 36, 57, 1) lies on line \ell_5
297: P_{237679} = (46, 0, 57, 1) lies on line \ell_2
                                                                    351: P_{240001} = (0, 37, 57, 1) lies on line \ell_5
298: P_{237680} = (47, 0, 57, 1) lies on line \ell_2
                                                                    352: P_{240065} = (0, 38, 57, 1) lies on line \ell_5
299 : P_{237681} = (48, 0, 57, 1) lies on line \ell_2
                                                                    353: P_{240129} = (0, 39, 57, 1) lies on line \ell_5
300: P_{237682} = (49, 0, 57, 1) lies on line \ell_2
                                                                    354: P_{240193} = (0, 40, 57, 1) lies on line \ell_5
301: P_{237683} = (50, 0, 57, 1) lies on line \ell_2
                                                                    355: P_{240257} = (0, 41, 57, 1) lies on line \ell_5
302: P_{237684} = (51, 0, 57, 1) lies on line \ell_2
                                                                    356: P_{240321} = (0, 42, 57, 1) lies on line \ell_5
303: P_{237685} = (52, 0, 57, 1) lies on line \ell_2
                                                                    357: P_{240385} = (0, 43, 57, 1) lies on line \ell_5
304 : P_{237686} = (53, 0, 57, 1) lies on line \ell_2
                                                                     358: P_{240449} = (0, 44, 57, 1) lies on line \ell_5
305: P_{237687} = (54, 0, 57, 1) lies on line \ell_2
                                                                    359: P_{240513} = (0, 45, 57, 1) lies on line \ell_5
```

```
360: P_{240577} = (0, 46, 57, 1) lies on line \ell_5
                                                                    370: P_{241217} = (0, 56, 57, 1) lies on line \ell_5
361: P_{240641} = (0, 47, 57, 1) lies on line \ell_5
                                                                    371: P_{241281} = (0, 57, 57, 1) lies on line \ell_5
362: P_{240705} = (0, 48, 57, 1) lies on line \ell_5
                                                                    372: P_{241345} = (0, 58, 57, 1) lies on line \ell_5
363 : P_{240769} = (0, 49, 57, 1) lies on line \ell_5
                                                                    373: P_{241409} = (0, 59, 57, 1) lies on line \ell_5
364: P_{240833} = (0, 50, 57, 1) lies on line \ell_5
                                                                    374: P_{241473} = (0, 60, 57, 1) lies on line \ell_5
365: P_{240897} = (0, 51, 57, 1) lies on line \ell_5
                                                                    375: P_{241537} = (0, 61, 57, 1) lies on line \ell_5
366: P_{240961} = (0, 52, 57, 1) lies on line \ell_5
                                                                    376: P_{241601} = (0, 62, 57, 1) lies on line \ell_5
367: P_{241025} = (0, 53, 57, 1) lies on line \ell_5
                                                                    377: P_{241665} = (0, 63, 57, 1) lies on line \ell_5
368 : P_{241089} = (0, 54, 57, 1) lies on line \ell_5
369 : P_{241153} = (0, 55, 57, 1) lies on line \ell_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

$ \begin{array}{r} 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	0	1	2	3	4	5
0	0	1	1	1	0	0
1	1	0	1	0	1	0
2	1	1	0	0	0	1
3	1	0	0	0	1	1
4	0	1	0	1	0	1
5	0	0	1	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_0	P_{8258}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_4
in point	P_0	P_0	P_{233537}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_5
in point	P_0	P_0	P_{237633}

Line 3 intersects

Line	ℓ_0	ℓ_4	ℓ_5
in point	P_{8258}	P_1	P_1

Line 4 intersects

Line	ℓ_1	ℓ_3	ℓ_5
in point	P_{233537}	P_1	P_1

Line 5 intersects

Line	ℓ_2	ℓ_3	ℓ_4
in point	P_{237633}	P_1	P_1

The surface has 4289 points: Too many to print.