Rank-65548 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^3 + X_3^3 + X_0X_1X_2 = 0$$

(1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(16) is 286335254

General information

Number of lines	7
Number of points	305
Number of singular points	2
Number of Eckardt points	0
Number of double points	3
Number of single points	105
Number of points off lines	195
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^7
Type of lines on points	4^2, 2^3, 1^{105}, 0^{195}

Singular Points

The surface has 2 singular points:

$0:\ P_1 = \mathbf{P}(0,1,0,0) = \mathbf{P}(0,1,0,0)$
$1:\ P_2 = \mathbf{P}(0,0,1,0) = \mathbf{P}(0,0,1,0)$

The 7 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right]_{69888} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right]_{69888} = \mathbf{Pl}(0,0,0,0,0,1)_{4625}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{4368} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{4368} = \mathbf{Pl}(1,0,0,1,0,0)_{34}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 0 & \delta^5 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{48048} = \begin{bmatrix} 1 & 0 & 0 & 11 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{48048} = \mathbf{Pl}(10,0,0,1,0,0)_{43}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 0 & \delta^{10} \\ 0 & 1 & 0 & 0 \end{bmatrix}_{43680} = \begin{bmatrix} 1 & 0 & 0 & 10 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{43680} = \mathbf{Pl}(11,0,0,1,0,0)_{44}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{4624} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{4624} = \mathbf{Pl}(0,1,1,0,0,0)_{18}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & 0 & \delta^5 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{48304} = \begin{bmatrix} 1 & 0 & 0 & 11 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{48304} = \mathbf{Pl}(0,11,1,0,0,0)_{28}$$

$$\ell_6 = \begin{bmatrix} 1 & 0 & 0 & \delta^{10} \\ 0 & 0 & 1 & 0 \end{bmatrix}_{43936} = \begin{bmatrix} 1 & 0 & 0 & 10 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{43936} = \mathbf{Pl}(0,10,1,0,0,0)_{27}$$

Rank of lines: (69888, 4368, 48048, 43680, 4624, 48304, 43936)
Rank of points on Klein quadric: (4625, 34, 43, 44, 18, 28, 27)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

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

$P_{275} = (1,0,0,1) = \ell_1 \cap \ell_4$
$P_{284} = (10,0,0,1) = \ell_2 \cap \ell_5$
$P_{285} = (11,0,0,1) = \ell_3 \cap \ell_6$

Single Points

The surface has 105 single points:
The single points on the surface are:

0 : $P_{35} = (0,1,1,0)$ lies on line ℓ_0
1 : $P_{51} = (0,2,1,0)$ lies on line ℓ_0
2 : $P_{67} = (0,3,1,0)$ lies on line ℓ_0
3 : $P_{83} = (0,4,1,0)$ lies on line ℓ_0
4 : $P_{99} = (0,5,1,0)$ lies on line ℓ_0
5 : $P_{115} = (0,6,1,0)$ lies on line ℓ_0
6 : $P_{131} = (0,7,1,0)$ lies on line ℓ_0
7 : $P_{147} = (0,8,1,0)$ lies on line ℓ_0
8 : $P_{163} = (0,9,1,0)$ lies on line ℓ_0
9 : $P_{179} = (0,10,1,0)$ lies on line ℓ_0
10 : $P_{195} = (0,11,1,0)$ lies on line ℓ_0
11 : $P_{211} = (0,12,1,0)$ lies on line ℓ_0
12 : $P_{227} = (0,13,1,0)$ lies on line ℓ_0
13 : $P_{243} = (0,14,1,0)$ lies on line ℓ_0
14 : $P_{259} = (0,15,1,0)$ lies on line ℓ_0
15 : $P_{291} = (1,1,0,1)$ lies on line ℓ_1
16 : $P_{300} = (10,1,0,1)$ lies on line ℓ_2
17 : $P_{301} = (11,1,0,1)$ lies on line ℓ_3
18 : $P_{307} = (1,2,0,1)$ lies on line ℓ_1
19 : $P_{316} = (10,2,0,1)$ lies on line ℓ_2
20 : $P_{317} = (11,2,0,1)$ lies on line ℓ_3
21 : $P_{323} = (1,3,0,1)$ lies on line ℓ_1
22 : $P_{332} = (10,3,0,1)$ lies on line ℓ_2
23 : $P_{333} = (11,3,0,1)$ lies on line ℓ_3
24 : $P_{339} = (1,4,0,1)$ lies on line ℓ_1
25 : $P_{348} = (10,4,0,1)$ lies on line ℓ_2
26 : $P_{349} = (11,4,0,1)$ lies on line ℓ_3
27 : $P_{355} = (1,5,0,1)$ lies on line ℓ_1
28 : $P_{364} = (10,5,0,1)$ lies on line ℓ_2
29 : $P_{365} = (11,5,0,1)$ lies on line ℓ_3

30 : $P_{371} = (1, 6, 0, 1)$ lies on line ℓ_1
31 : $P_{380} = (10, 6, 0, 1)$ lies on line ℓ_2
32 : $P_{381} = (11, 6, 0, 1)$ lies on line ℓ_3
33 : $P_{387} = (1, 7, 0, 1)$ lies on line ℓ_1
34 : $P_{396} = (10, 7, 0, 1)$ lies on line ℓ_2
35 : $P_{397} = (11, 7, 0, 1)$ lies on line ℓ_3
36 : $P_{403} = (1, 8, 0, 1)$ lies on line ℓ_1
37 : $P_{412} = (10, 8, 0, 1)$ lies on line ℓ_2
38 : $P_{413} = (11, 8, 0, 1)$ lies on line ℓ_3
39 : $P_{419} = (1, 9, 0, 1)$ lies on line ℓ_1
40 : $P_{428} = (10, 9, 0, 1)$ lies on line ℓ_2
41 : $P_{429} = (11, 9, 0, 1)$ lies on line ℓ_3
42 : $P_{435} = (1, 10, 0, 1)$ lies on line ℓ_1
43 : $P_{444} = (10, 10, 0, 1)$ lies on line ℓ_2
44 : $P_{445} = (11, 10, 0, 1)$ lies on line ℓ_3
45 : $P_{451} = (1, 11, 0, 1)$ lies on line ℓ_1
46 : $P_{460} = (10, 11, 0, 1)$ lies on line ℓ_2
47 : $P_{461} = (11, 11, 0, 1)$ lies on line ℓ_3
48 : $P_{467} = (1, 12, 0, 1)$ lies on line ℓ_1
49 : $P_{476} = (10, 12, 0, 1)$ lies on line ℓ_2
50 : $P_{477} = (11, 12, 0, 1)$ lies on line ℓ_3
51 : $P_{483} = (1, 13, 0, 1)$ lies on line ℓ_1
52 : $P_{492} = (10, 13, 0, 1)$ lies on line ℓ_2
53 : $P_{493} = (11, 13, 0, 1)$ lies on line ℓ_3
54 : $P_{499} = (1, 14, 0, 1)$ lies on line ℓ_1
55 : $P_{508} = (10, 14, 0, 1)$ lies on line ℓ_2
56 : $P_{509} = (11, 14, 0, 1)$ lies on line ℓ_3
57 : $P_{515} = (1, 15, 0, 1)$ lies on line ℓ_1
58 : $P_{524} = (10, 15, 0, 1)$ lies on line ℓ_2
59 : $P_{525} = (11, 15, 0, 1)$ lies on line ℓ_3
60 : $P_{531} = (1, 0, 1, 1)$ lies on line ℓ_4
61 : $P_{540} = (10, 0, 1, 1)$ lies on line ℓ_5
62 : $P_{541} = (11, 0, 1, 1)$ lies on line ℓ_6
63 : $P_{786} = (1, 0, 2, 1)$ lies on line ℓ_4
64 : $P_{795} = (10, 0, 2, 1)$ lies on line ℓ_5
65 : $P_{796} = (11, 0, 2, 1)$ lies on line ℓ_6
66 : $P_{1042} = (1, 0, 3, 1)$ lies on line ℓ_4
67 : $P_{1051} = (10, 0, 3, 1)$ lies on line ℓ_5
68 : $P_{1052} = (11, 0, 3, 1)$ lies on line ℓ_6
69 : $P_{1298} = (1, 0, 4, 1)$ lies on line ℓ_4
70 : $P_{1307} = (10, 0, 4, 1)$ lies on line ℓ_5
71 : $P_{1308} = (11, 0, 4, 1)$ lies on line ℓ_6
72 : $P_{1554} = (1, 0, 5, 1)$ lies on line ℓ_4
73 : $P_{1563} = (10, 0, 5, 1)$ lies on line ℓ_5
74 : $P_{1564} = (11, 0, 5, 1)$ lies on line ℓ_6
75 : $P_{1810} = (1, 0, 6, 1)$ lies on line ℓ_4
76 : $P_{1819} = (10, 0, 6, 1)$ lies on line ℓ_5
77 : $P_{1820} = (11, 0, 6, 1)$ lies on line ℓ_6
78 : $P_{2066} = (1, 0, 7, 1)$ lies on line ℓ_4
79 : $P_{2075} = (10, 0, 7, 1)$ lies on line ℓ_5
80 : $P_{2076} = (11, 0, 7, 1)$ lies on line ℓ_6
81 : $P_{2322} = (1, 0, 8, 1)$ lies on line ℓ_4
82 : $P_{2331} = (10, 0, 8, 1)$ lies on line ℓ_5
83 : $P_{2332} = (11, 0, 8, 1)$ lies on line ℓ_6
84 : $P_{2578} = (1, 0, 9, 1)$ lies on line ℓ_4
85 : $P_{2587} = (10, 0, 9, 1)$ lies on line ℓ_5
86 : $P_{2588} = (11, 0, 9, 1)$ lies on line ℓ_6
87 : $P_{2834} = (1, 0, 10, 1)$ lies on line ℓ_4
88 : $P_{2843} = (10, 0, 10, 1)$ lies on line ℓ_5
89 : $P_{2844} = (11, 0, 10, 1)$ lies on line ℓ_6
90 : $P_{3090} = (1, 0, 11, 1)$ lies on line ℓ_4
91 : $P_{3099} = (10, 0, 11, 1)$ lies on line ℓ_5
92 : $P_{3100} = (11, 0, 11, 1)$ lies on line ℓ_6
93 : $P_{3346} = (1, 0, 12, 1)$ lies on line ℓ_4
94 : $P_{3355} = (10, 0, 12, 1)$ lies on line ℓ_5
95 : $P_{3356} = (11, 0, 12, 1)$ lies on line ℓ_6
96 : $P_{3602} = (1, 0, 13, 1)$ lies on line ℓ_4
97 : $P_{3611} = (10, 0, 13, 1)$ lies on line ℓ_5
98 : $P_{3612} = (11, 0, 13, 1)$ lies on line ℓ_6
99 : $P_{3858} = (1, 0, 14, 1)$ lies on line ℓ_4
100 : $P_{3867} = (10, 0, 14, 1)$ lies on line ℓ_5
101 : $P_{3868} = (11, 0, 14, 1)$ lies on line ℓ_6
102 : $P_{4114} = (1, 0, 15, 1)$ lies on line ℓ_4
103 : $P_{4123} = (10, 0, 15, 1)$ lies on line ℓ_5
104 : $P_{4124} = (11, 0, 15, 1)$ lies on line ℓ_6

The single points on the surface are:

Points on surface but on no line

The surface has 195 points not on any line:
The points on the surface but not on lines are:

0 : $P_{36} = (1, 1, 1, 0)$
1 : $P_{65} = (14, 2, 1, 0)$
2 : $P_{82} = (15, 3, 1, 0)$
3 : $P_{85} = (2, 4, 1, 0)$
4 : $P_{102} = (3, 5, 1, 0)$
5 : $P_{127} = (12, 6, 1, 0)$
6 : $P_{144} = (13, 7, 1, 0)$
7 : $P_{152} = (5, 8, 1, 0)$
8 : $P_{167} = (4, 9, 1, 0)$
9 : $P_{190} = (11, 10, 1, 0)$
10 : $P_{205} = (10, 11, 1, 0)$
11 : $P_{218} = (7, 12, 1, 0)$

$12: P_{233} = (6, 13, 1, 0)$
$13: P_{252} = (9, 14, 1, 0)$
$14: P_{267} = (8, 15, 1, 0)$
$15: P_{568} = (7, 2, 1, 1)$
$16: P_{586} = (9, 3, 1, 1)$
$17: P_{605} = (12, 4, 1, 1)$
$18: P_{623} = (14, 5, 1, 1)$
$19: P_{640} = (15, 6, 1, 1)$
$20: P_{646} = (5, 7, 1, 1)$
$21: P_{659} = (2, 8, 1, 1)$
$22: P_{679} = (6, 9, 1, 1)$
$23: P_{729} = (8, 12, 1, 1)$
$24: P_{740} = (3, 13, 1, 1)$
$25: P_{766} = (13, 14, 1, 1)$
$26: P_{773} = (4, 15, 1, 1)$
$27: P_{808} = (7, 1, 2, 1)$
$28: P_{829} = (12, 2, 2, 1)$
$29: P_{848} = (15, 3, 2, 1)$
$30: P_{851} = (2, 4, 2, 1)$
$31: P_{889} = (8, 6, 2, 1)$
$32: P_{910} = (13, 7, 2, 1)$
$33: P_{919} = (6, 8, 2, 1)$
$34: P_{948} = (3, 10, 2, 1)$
$35: P_{965} = (4, 11, 2, 1)$
$36: P_{1002} = (9, 13, 2, 1)$
$37: P_{1023} = (14, 14, 2, 1)$
$38: P_{1030} = (5, 15, 2, 1)$
$39: P_{1066} = (9, 1, 3, 1)$
$40: P_{1088} = (15, 2, 3, 1)$
$41: P_{1103} = (14, 3, 3, 1)$
$42: P_{1113} = (8, 4, 3, 1)$
$43: P_{1125} = (4, 5, 3, 1)$
$44: P_{1159} = (6, 7, 3, 1)$
$45: P_{1192} = (7, 9, 3, 1)$
$46: P_{1206} = (5, 10, 3, 1)$
$47: P_{1229} = (12, 11, 3, 1)$
$48: P_{1236} = (3, 12, 3, 1)$
$49: P_{1262} = (13, 13, 3, 1)$
$50: P_{1283} = (2, 15, 3, 1)$
$51: P_{1325} = (12, 1, 4, 1)$
$52: P_{1331} = (2, 2, 4, 1)$
$53: P_{1353} = (8, 3, 4, 1)$
$54: P_{1367} = (6, 4, 4, 1)$
$55: P_{1380} = (3, 5, 4, 1)$
$56: P_{1423} = (14, 7, 4, 1)$
$57: P_{1445} = (4, 9, 4, 1)$
$58: P_{1466} = (9, 10, 4, 1)$
$59: P_{1478} = (5, 11, 4, 1)$
$60: P_{1496} = (7, 12, 4, 1)$
$61: P_{1520} = (15, 13, 4, 1)$
$62: P_{1550} = (13, 15, 4, 1)$
$63: P_{1583} = (14, 1, 5, 1)$
$64: P_{1605} = (4, 3, 5, 1)$
$65: P_{1620} = (3, 4, 5, 1)$
$66: P_{1635} = (2, 5, 5, 1)$
$67: P_{1654} = (5, 6, 5, 1)$
$68: P_{1672} = (7, 7, 5, 1)$
$69: P_{1690} = (9, 8, 5, 1)$
$70: P_{1712} = (15, 9, 5, 1)$
$71: P_{1719} = (6, 10, 5, 1)$
$72: P_{1737} = (8, 11, 5, 1)$
$73: P_{1758} = (13, 12, 5, 1)$
$74: P_{1789} = (12, 14, 5, 1)$
$75: P_{1840} = (15, 1, 6, 1)$
$76: P_{1849} = (8, 2, 6, 1)$
$77: P_{1894} = (5, 5, 6, 1)$
$78: P_{1908} = (3, 6, 6, 1)$
$79: P_{1944} = (7, 8, 6, 1)$
$80: P_{1965} = (12, 9, 6, 1)$
$81: P_{1982} = (13, 10, 6, 1)$
$82: P_{1987} = (2, 11, 6, 1)$
$83: P_{2010} = (9, 12, 6, 1)$
$84: P_{2031} = (14, 13, 6, 1)$
$85: P_{2037} = (4, 14, 6, 1)$
$86: P_{2055} = (6, 15, 6, 1)$
$87: P_{2086} = (5, 1, 7, 1)$
$88: P_{2110} = (13, 2, 7, 1)$
$89: P_{2119} = (6, 3, 7, 1)$
$90: P_{2143} = (14, 4, 7, 1)$
$91: P_{2152} = (7, 5, 7, 1)$
$92: P_{2185} = (8, 7, 7, 1)$
$93: P_{2212} = (3, 9, 7, 1)$
$94: P_{2237} = (12, 10, 7, 1)$
$95: P_{2250} = (9, 11, 7, 1)$
$96: P_{2261} = (4, 12, 7, 1)$
$97: P_{2275} = (2, 13, 7, 1)$
$98: P_{2320} = (15, 15, 7, 1)$
$99: P_{2339} = (2, 1, 8, 1)$
$100: P_{2359} = (6, 2, 8, 1)$
$101: P_{2410} = (9, 5, 8, 1)$
$102: P_{2424} = (7, 6, 8, 1)$
$103: P_{2453} = (4, 8, 8, 1)$
$104: P_{2470} = (5, 9, 8, 1)$
$105: P_{2496} = (15, 10, 8, 1)$
$106: P_{2510} = (13, 11, 8, 1)$
$107: P_{2525} = (12, 12, 8, 1)$
$108: P_{2537} = (8, 13, 8, 1)$
$109: P_{2548} = (3, 14, 8, 1)$
$110: P_{2575} = (14, 15, 8, 1)$
$111: P_{2599} = (6, 1, 9, 1)$
$112: P_{2632} = (7, 3, 9, 1)$
$113: P_{2645} = (4, 4, 9, 1)$
$114: P_{2672} = (15, 5, 9, 1)$
$115: P_{2685} = (12, 6, 9, 1)$
$116: P_{2692} = (3, 7, 9, 1)$
$117: P_{2710} = (5, 8, 9, 1)$
$118: P_{2734} = (13, 9, 9, 1)$
$119: P_{2745} = (8, 10, 9, 1)$

120 : $P_{2767} = (14, 11, 9, 1)$
121 : $P_{2771} = (2, 12, 9, 1)$
122 : $P_{2810} = (9, 14, 9, 1)$
123 : $P_{2868} = (3, 2, 10, 1)$
124 : $P_{2886} = (5, 3, 10, 1)$
125 : $P_{2906} = (9, 4, 10, 1)$
126 : $P_{2919} = (6, 5, 10, 1)$
127 : $P_{2942} = (13, 6, 10, 1)$
128 : $P_{2957} = (12, 7, 10, 1)$
129 : $P_{2976} = (15, 8, 10, 1)$
130 : $P_{2985} = (8, 9, 10, 1)$
131 : $P_{3039} = (14, 12, 10, 1)$
132 : $P_{3045} = (4, 13, 10, 1)$
133 : $P_{3059} = (2, 14, 10, 1)$
134 : $P_{3080} = (7, 15, 10, 1)$
135 : $P_{3125} = (4, 2, 11, 1)$
136 : $P_{3149} = (12, 3, 11, 1)$
137 : $P_{3158} = (5, 4, 11, 1)$
138 : $P_{3177} = (8, 5, 11, 1)$
139 : $P_{3187} = (2, 6, 11, 1)$
140 : $P_{3210} = (9, 7, 11, 1)$
141 : $P_{3230} = (13, 8, 11, 1)$
142 : $P_{3247} = (14, 9, 11, 1)$
143 : $P_{3287} = (6, 12, 11, 1)$
144 : $P_{3304} = (7, 13, 11, 1)$
145 : $P_{3328} = (15, 14, 11, 1)$
146 : $P_{3332} = (3, 15, 11, 1)$
147 : $P_{3369} = (8, 1, 12, 1)$
148 : $P_{3396} = (3, 3, 12, 1)$
149 : $P_{3416} = (7, 4, 12, 1)$
150 : $P_{3438} = (13, 5, 12, 1)$
151 : $P_{3450} = (9, 6, 12, 1)$
152 : $P_{3461} = (4, 7, 12, 1)$
153 : $P_{3485} = (12, 8, 12, 1)$
154 : $P_{3491} = (2, 9, 12, 1)$
155 : $P_{3519} = (14, 10, 12, 1)$
156 : $P_{3527} = (6, 11, 12, 1)$
157 : $P_{3552} = (15, 12, 12, 1)$
158 : $P_{3574} = (5, 14, 12, 1)$
159 : $P_{3620} = (3, 1, 13, 1)$
160 : $P_{3642} = (9, 2, 13, 1)$
161 : $P_{3662} = (13, 3, 13, 1)$
162 : $P_{3680} = (15, 4, 13, 1)$
163 : $P_{3711} = (14, 6, 13, 1)$
164 : $P_{3715} = (2, 7, 13, 1)$
165 : $P_{3737} = (8, 8, 13, 1)$
166 : $P_{3765} = (4, 10, 13, 1)$
167 : $P_{3784} = (7, 11, 13, 1)$
168 : $P_{3814} = (5, 13, 13, 1)$
169 : $P_{3831} = (6, 14, 13, 1)$
170 : $P_{3853} = (12, 15, 13, 1)$
171 : $P_{3886} = (13, 1, 14, 1)$
172 : $P_{3903} = (14, 2, 14, 1)$
173 : $P_{3949} = (12, 5, 14, 1)$
174 : $P_{3957} = (4, 6, 14, 1)$
175 : $P_{3988} = (3, 8, 14, 1)$
176 : $P_{4010} = (9, 9, 14, 1)$
177 : $P_{4019} = (2, 10, 14, 1)$
178 : $P_{4048} = (15, 11, 14, 1)$
179 : $P_{4054} = (5, 12, 14, 1)$
180 : $P_{4071} = (6, 13, 14, 1)$
181 : $P_{4088} = (7, 14, 14, 1)$
182 : $P_{4105} = (8, 15, 14, 1)$
183 : $P_{4133} = (4, 1, 15, 1)$
184 : $P_{4150} = (5, 2, 15, 1)$
185 : $P_{4163} = (2, 3, 15, 1)$
186 : $P_{4190} = (13, 4, 15, 1)$
187 : $P_{4215} = (6, 6, 15, 1)$
188 : $P_{4240} = (15, 7, 15, 1)$
189 : $P_{4255} = (14, 8, 15, 1)$
190 : $P_{4280} = (7, 10, 15, 1)$
191 : $P_{4292} = (3, 11, 15, 1)$
192 : $P_{4333} = (12, 13, 15, 1)$
193 : $P_{4345} = (8, 14, 15, 1)$
194 : $P_{4362} = (9, 15, 15, 1)$

Line Intersection Graph

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

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6
in point	P_1	P_1	P_1	P_2	P_2	P_2

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4
in point	P_1	P_1	P_1	P_{275}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_5
in point	P_1	P_1	P_1	P_{284}

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_6
in point	P_1	P_1	P_1	P_{285}

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_5	ℓ_6
in point	P_2	P_{275}	P_2	P_2

Line 5 intersects

Line	ℓ_0	ℓ_2	ℓ_4	ℓ_6
in point	P_2	P_{284}	P_2	P_2

Line 6 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_5
in point	P_2	P_{285}	P_2	P_2

The surface has 305 points:
The points on the surface are:

$0: P_1 = (0,1,0,0)$
$1: P_2 = (0,0,1,0)$
$2: P_{35} = (0,1,1,0)$
$3: P_{36} = (1,1,1,0)$
$4: P_{51} = (0,2,1,0)$
$5: P_{65} = (14,2,1,0)$
$6: P_{67} = (0,3,1,0)$
$7: P_{82} = (15,3,1,0)$
$8: P_{83} = (0,4,1,0)$
$9: P_{85} = (2,4,1,0)$
$10: P_{99} = (0,5,1,0)$
$11: P_{102} = (3,5,1,0)$
$12: P_{115} = (0,6,1,0)$
$13: P_{127} = (12,6,1,0)$
$14: P_{131} = (0,7,1,0)$
$15: P_{144} = (13,7,1,0)$
$16: P_{147} = (0,8,1,0)$
$17: P_{152} = (5,8,1,0)$
$18: P_{163} = (0,9,1,0)$
$19: P_{167} = (4,9,1,0)$
$20: P_{179} = (0,10,1,0)$
$21: P_{190} = (11,10,1,0)$
$22: P_{195} = (0,11,1,0)$
$23: P_{205} = (10,11,1,0)$
$24: P_{211} = (0,12,1,0)$
$25: P_{218} = (7,12,1,0)$
$26: P_{227} = (0,13,1,0)$
$27: P_{233} = (6,13,1,0)$
$28: P_{243} = (0,14,1,0)$
$29: P_{252} = (9,14,1,0)$
$30: P_{259} = (0,15,1,0)$
$31: P_{267} = (8,15,1,0)$
$32: P_{275} = (1,0,0,1)$
$33: P_{284} = (10,0,0,1)$
$34: P_{285} = (11,0,0,1)$
$35: P_{291} = (1,1,0,1)$
$36: P_{300} = (10,1,0,1)$
$37: P_{301} = (11,1,0,1)$
$38: P_{307} = (1,2,0,1)$
$39: P_{316} = (10,2,0,1)$
$40: P_{317} = (11,2,0,1)$
$41: P_{323} = (1,3,0,1)$
$42: P_{332} = (10,3,0,1)$
$43: P_{333} = (11,3,0,1)$
$44: P_{339} = (1,4,0,1)$
$45: P_{348} = (10,4,0,1)$
$46: P_{349} = (11,4,0,1)$
$47: P_{355} = (1,5,0,1)$
$48: P_{364} = (10,5,0,1)$
$49: P_{365} = (11,5,0,1)$
$50: P_{371} = (1,6,0,1)$
$51: P_{380} = (10,6,0,1)$
$52: P_{381} = (11,6,0,1)$
$53: P_{387} = (1,7,0,1)$
$54: P_{396} = (10,7,0,1)$
$55: P_{397} = (11,7,0,1)$
$56: P_{403} = (1,8,0,1)$
$57: P_{412} = (10,8,0,1)$
$58: P_{413} = (11,8,0,1)$
$59: P_{419} = (1,9,0,1)$
$60: P_{428} = (10,9,0,1)$
$61: P_{429} = (11,9,0,1)$
$62: P_{435} = (1,10,0,1)$
$63: P_{444} = (10,10,0,1)$
$64: P_{445} = (11,10,0,1)$
$65: P_{451} = (1,11,0,1)$
$66: P_{460} = (10,11,0,1)$
$67: P_{461} = (11,11,0,1)$
$68: P_{467} = (1,12,0,1)$
$69: P_{476} = (10,12,0,1)$
$70: P_{477} = (11,12,0,1)$
$71: P_{483} = (1,13,0,1)$
$72: P_{492} = (10,13,0,1)$
$73: P_{493} = (11,13,0,1)$
$74: P_{499} = (1,14,0,1)$
$75: P_{508} = (10,14,0,1)$
$76: P_{509} = (11,14,0,1)$
$77: P_{515} = (1,15,0,1)$
$78: P_{524} = (10,15,0,1)$
$79: P_{525} = (11,15,0,1)$
$80: P_{531} = (1,0,1,1)$
$81: P_{540} = (10,0,1,1)$
$82: P_{541} = (11,0,1,1)$
$83: P_{568} = (7,2,1,1)$
$84: P_{586} = (9,3,1,1)$
$85: P_{605} = (12,4,1,1)$
$86: P_{623} = (14,5,1,1)$
$87: P_{640} = (15,6,1,1)$
$88: P_{646} = (5,7,1,1)$
$89: P_{659} = (2,8,1,1)$

90 : $P_{679} = (6, 9, 1, 1)$
91 : $P_{729} = (8, 12, 1, 1)$
92 : $P_{740} = (3, 13, 1, 1)$
93 : $P_{766} = (13, 14, 1, 1)$
94 : $P_{773} = (4, 15, 1, 1)$
95 : $P_{786} = (1, 0, 2, 1)$
96 : $P_{795} = (10, 0, 2, 1)$
97 : $P_{796} = (11, 0, 2, 1)$
98 : $P_{808} = (7, 1, 2, 1)$
99 : $P_{829} = (12, 2, 2, 1)$
100 : $P_{848} = (15, 3, 2, 1)$
101 : $P_{851} = (2, 4, 2, 1)$
102 : $P_{889} = (8, 6, 2, 1)$
103 : $P_{910} = (13, 7, 2, 1)$
104 : $P_{919} = (6, 8, 2, 1)$
105 : $P_{948} = (3, 10, 2, 1)$
106 : $P_{965} = (4, 11, 2, 1)$
107 : $P_{1002} = (9, 13, 2, 1)$
108 : $P_{1023} = (14, 14, 2, 1)$
109 : $P_{1030} = (5, 15, 2, 1)$
110 : $P_{1042} = (1, 0, 3, 1)$
111 : $P_{1051} = (10, 0, 3, 1)$
112 : $P_{1052} = (11, 0, 3, 1)$
113 : $P_{1066} = (9, 1, 3, 1)$
114 : $P_{1088} = (15, 2, 3, 1)$
115 : $P_{1103} = (14, 3, 3, 1)$
116 : $P_{1113} = (8, 4, 3, 1)$
117 : $P_{1125} = (4, 5, 3, 1)$
118 : $P_{1159} = (6, 7, 3, 1)$
119 : $P_{1192} = (7, 9, 3, 1)$
120 : $P_{1206} = (5, 10, 3, 1)$
121 : $P_{1229} = (12, 11, 3, 1)$
122 : $P_{1236} = (3, 12, 3, 1)$
123 : $P_{1262} = (13, 13, 3, 1)$
124 : $P_{1283} = (2, 15, 3, 1)$
125 : $P_{1298} = (1, 0, 4, 1)$
126 : $P_{1307} = (10, 0, 4, 1)$
127 : $P_{1308} = (11, 0, 4, 1)$
128 : $P_{1325} = (12, 1, 4, 1)$
129 : $P_{1331} = (2, 2, 4, 1)$
130 : $P_{1353} = (8, 3, 4, 1)$
131 : $P_{1367} = (6, 4, 4, 1)$
132 : $P_{1380} = (3, 5, 4, 1)$
133 : $P_{1423} = (14, 7, 4, 1)$
134 : $P_{1445} = (4, 9, 4, 1)$
135 : $P_{1466} = (9, 10, 4, 1)$
136 : $P_{1478} = (5, 11, 4, 1)$
137 : $P_{1496} = (7, 12, 4, 1)$
138 : $P_{1520} = (15, 13, 4, 1)$
139 : $P_{1550} = (13, 15, 4, 1)$
140 : $P_{1554} = (1, 0, 5, 1)$
141 : $P_{1563} = (10, 0, 5, 1)$
142 : $P_{1564} = (11, 0, 5, 1)$
143 : $P_{1583} = (14, 1, 5, 1)$
144 : $P_{1605} = (4, 3, 5, 1)$
145 : $P_{1620} = (3, 4, 5, 1)$
146 : $P_{1635} = (2, 5, 5, 1)$
147 : $P_{1654} = (5, 6, 5, 1)$
148 : $P_{1672} = (7, 7, 5, 1)$
149 : $P_{1690} = (9, 8, 5, 1)$
150 : $P_{1712} = (15, 9, 5, 1)$
151 : $P_{1719} = (6, 10, 5, 1)$
152 : $P_{1737} = (8, 11, 5, 1)$
153 : $P_{1758} = (13, 12, 5, 1)$
154 : $P_{1789} = (12, 14, 5, 1)$
155 : $P_{1810} = (1, 0, 6, 1)$
156 : $P_{1819} = (10, 0, 6, 1)$
157 : $P_{1820} = (11, 0, 6, 1)$
158 : $P_{1840} = (15, 1, 6, 1)$
159 : $P_{1849} = (8, 2, 6, 1)$
160 : $P_{1894} = (5, 5, 6, 1)$
161 : $P_{1908} = (3, 6, 6, 1)$
162 : $P_{1944} = (7, 8, 6, 1)$
163 : $P_{1965} = (12, 9, 6, 1)$
164 : $P_{1982} = (13, 10, 6, 1)$
165 : $P_{1987} = (2, 11, 6, 1)$
166 : $P_{2010} = (9, 12, 6, 1)$
167 : $P_{2031} = (14, 13, 6, 1)$
168 : $P_{2037} = (4, 14, 6, 1)$
169 : $P_{2055} = (6, 15, 6, 1)$
170 : $P_{2066} = (1, 0, 7, 1)$
171 : $P_{2075} = (10, 0, 7, 1)$
172 : $P_{2076} = (11, 0, 7, 1)$
173 : $P_{2086} = (5, 1, 7, 1)$
174 : $P_{2110} = (13, 2, 7, 1)$
175 : $P_{2119} = (6, 3, 7, 1)$
176 : $P_{2143} = (14, 4, 7, 1)$
177 : $P_{2152} = (7, 5, 7, 1)$
178 : $P_{2185} = (8, 7, 7, 1)$
179 : $P_{2212} = (3, 9, 7, 1)$
180 : $P_{2237} = (12, 10, 7, 1)$
181 : $P_{2250} = (9, 11, 7, 1)$
182 : $P_{2261} = (4, 12, 7, 1)$
183 : $P_{2275} = (2, 13, 7, 1)$
184 : $P_{2320} = (15, 15, 7, 1)$
185 : $P_{2322} = (1, 0, 8, 1)$
186 : $P_{2331} = (10, 0, 8, 1)$
187 : $P_{2332} = (11, 0, 8, 1)$
188 : $P_{2339} = (2, 1, 8, 1)$
189 : $P_{2359} = (6, 2, 8, 1)$
190 : $P_{2410} = (9, 5, 8, 1)$
191 : $P_{2424} = (7, 6, 8, 1)$
192 : $P_{2453} = (4, 8, 8, 1)$
193 : $P_{2470} = (5, 9, 8, 1)$
194 : $P_{2496} = (15, 10, 8, 1)$
195 : $P_{2510} = (13, 11, 8, 1)$
196 : $P_{2525} = (12, 12, 8, 1)$
197 : $P_{2537} = (8, 13, 8, 1)$
198 : $P_{2548} = (3, 14, 8, 1)$
199 : $P_{2575} = (14, 15, 8, 1)$
200 : $P_{2578} = (1, 0, 9, 1)$
201 : $P_{2587} = (10, 0, 9, 1)$
202 : $P_{2588} = (11, 0, 9, 1)$
203 : $P_{2599} = (6, 1, 9, 1)$
204 : $P_{2632} = (7, 3, 9, 1)$
205 : $P_{2645} = (4, 4, 9, 1)$
206 : $P_{2672} = (15, 5, 9, 1)$
207 : $P_{2685} = (12, 6, 9, 1)$
208 : $P_{2692} = (3, 7, 9, 1)$
209 : $P_{2710} = (5, 8, 9, 1)$
210 : $P_{2734} = (13, 9, 9, 1)$
211 : $P_{2745} = (8, 10, 9, 1)$
212 : $P_{2767} = (14, 11, 9, 1)$
213 : $P_{2771} = (2, 12, 9, 1)$
214 : $P_{2810} = (9, 14, 9, 1)$
215 : $P_{2834} = (1, 0, 10, 1)$
216 : $P_{2843} = (10, 0, 10, 1)$
217 : $P_{2844} = (11, 0, 10, 1)$
218 : $P_{2868} = (3, 2, 10, 1)$
219 : $P_{2886} = (5, 3, 10, 1)$
220 : $P_{2906} = (9, 4, 10, 1)$
221 : $P_{2919} = (6, 5, 10, 1)$
222 : $P_{2942} = (13, 6, 10, 1)$
223 : $P_{2957} = (12, 7, 10, 1)$
224 : $P_{2976} = (15, 8, 10, 1)$
225 : $P_{2985} = (8, 9, 10, 1)$
226 : $P_{3039} = (14, 12, 10, 1)$
227 : $P_{3045} = (4, 13, 10, 1)$
228 : $P_{3059} = (2, 14, 10, 1)$
229 : $P_{3080} = (7, 15, 10, 1)$
230 : $P_{3090} = (1, 0, 11, 1)$
231 : $P_{3099} = (10, 0, 11, 1)$
232 : $P_{3100} = (11, 0, 11, 1)$
233 : $P_{3125} = (4, 2, 11, 1)$
234 : $P_{3149} = (12, 3, 11, 1)$
235 : $P_{3158} = (5, 4, 11, 1)$
236 : $P_{3177} = (8, 5, 11, 1)$
237 : $P_{3187} = (2, 6, 11, 1)$
238 : $P_{3210} = (9, 7, 11, 1)$
239 : $P_{3230} = (13, 8, 11, 1)$
240 : $P_{3247} = (14, 9, 11, 1)$
241 : $P_{3287} = (6, 12, 11, 1)$
242 : $P_{3304} = (7, 13, 11, 1)$
243 : $P_{3328} = (15, 14, 11, 1)$
244 : $P_{3332} = (3, 15, 11, 1)$
245 : $P_{3346} = (1, 0, 12, 1)$
246 : $P_{3355} = (10, 0, 12, 1)$
247 : $P_{3356} = (11, 0, 12, 1)$
248 : $P_{3369} = (8, 1, 12, 1)$
249 : $P_{3396} = (3, 3, 12, 1)$
250 : $P_{3416} = (7, 4, 12, 1)$
251 : $P_{3438} = (13, 5, 12, 1)$

$252: P_{3450} = (9, 6, 12, 1)$
$253: P_{3461} = (4, 7, 12, 1)$
$254: P_{3485} = (12, 8, 12, 1)$
$255: P_{3491} = (2, 9, 12, 1)$
$256: P_{3519} = (14, 10, 12, 1)$
$257: P_{3527} = (6, 11, 12, 1)$
$258: P_{3552} = (15, 12, 12, 1)$
$259: P_{3574} = (5, 14, 12, 1)$
$260: P_{3602} = (1, 0, 13, 1)$
$261: P_{3611} = (10, 0, 13, 1)$
$262: P_{3612} = (11, 0, 13, 1)$
$263: P_{3620} = (3, 1, 13, 1)$
$264: P_{3642} = (9, 2, 13, 1)$
$265: P_{3662} = (13, 3, 13, 1)$
$266: P_{3680} = (15, 4, 13, 1)$
$267: P_{3711} = (14, 6, 13, 1)$
$268: P_{3715} = (2, 7, 13, 1)$
$269: P_{3737} = (8, 8, 13, 1)$
$270: P_{3765} = (4, 10, 13, 1)$
$271: P_{3784} = (7, 11, 13, 1)$
$272: P_{3814} = (5, 13, 13, 1)$
$273: P_{3831} = (6, 14, 13, 1)$
$274: P_{3853} = (12, 15, 13, 1)$
$275: P_{3858} = (1, 0, 14, 1)$
$276: P_{3867} = (10, 0, 14, 1)$
$277: P_{3868} = (11, 0, 14, 1)$
$278: P_{3886} = (13, 1, 14, 1)$
$279: P_{3903} = (14, 2, 14, 1)$
$280: P_{3949} = (12, 5, 14, 1)$
$281: P_{3957} = (4, 6, 14, 1)$
$282: P_{3988} = (3, 8, 14, 1)$
$283: P_{4010} = (9, 9, 14, 1)$
$284: P_{4019} = (2, 10, 14, 1)$
$285: P_{4048} = (15, 11, 14, 1)$
$286: P_{4054} = (5, 12, 14, 1)$
$287: P_{4071} = (6, 13, 14, 1)$
$288: P_{4088} = (7, 14, 14, 1)$
$289: P_{4105} = (8, 15, 14, 1)$
$290: P_{4114} = (1, 0, 15, 1)$
$291: P_{4123} = (10, 0, 15, 1)$
$292: P_{4124} = (11, 0, 15, 1)$
$293: P_{4133} = (4, 1, 15, 1)$
$294: P_{4150} = (5, 2, 15, 1)$
$295: P_{4163} = (2, 3, 15, 1)$
$296: P_{4190} = (13, 4, 15, 1)$
$297: P_{4215} = (6, 6, 15, 1)$
$298: P_{4240} = (15, 7, 15, 1)$
$299: P_{4255} = (14, 8, 15, 1)$
$300: P_{4280} = (7, 10, 15, 1)$
$301: P_{4292} = (3, 11, 15, 1)$
$302: P_{4333} = (12, 13, 15, 1)$
$303: P_{4345} = (8, 14, 15, 1)$
$304: P_{4362} = (9, 15, 15, 1)$