Rank-74499 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

$$X_1^2X_2 + X_1^2X_3 + X_0X_3^2 + X_0X_1X_2 = 0$$

(0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(16) is 286331157

General information

Number of lines	7
Number of points	305
Number of singular points	2
Number of Eckardt points	1
Number of double points	5
Number of single points	102
Number of points off lines	196
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^7
Type of lines on points	4, 3, 2^5, 1^{102}, 0^{196}

Singular Points

The surface has 2 singular points:

$0: \ P_0 = \mathbf{P}(1,0,0,0) = \mathbf{P}(1,0,0,0)$
$1: \ P_2 = \mathbf{P}(0,0,1,0) = \mathbf{P}(0,0,1,0)$

The 7 Lines

The lines and their Pluecker coordinates are:

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

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{256} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{256} = \mathbf{Pl}(0,0,1,0,0,0)_2$$

$$\ell_2 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{529} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{529} = \mathbf{Pl}(0,0,1,0,0,1)_{4656}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{17} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{17} = \mathbf{Pl}(1,0,1,0,1,0)_{321}$$

$$\ell_4 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{69889} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{69889} = \mathbf{Pl}(0,0,0,1,0,1)_{5121}$$

$$\ell_5 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70160} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70160} = \mathbf{Pl}(0,1,0,0,0,0)_1$$

$$\ell_6 = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{4897} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{4897} = \mathbf{Pl}(0,1,1,0,0,1)_{4672}$$

Rank of lines: (0, 256, 529, 17, 69889, 70160, 4897)
Rank of points on Klein quadric: (0, 2, 4656, 321, 5121, 1, 4672)

Eckardt Points

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

Double Points

The surface has 5 Double points:
The double points on the surface are:

$P_5 = (1,1,0,0) = \ell_0 \cap \ell_2$
$P_1 = (0,1,0,0) = \ell_0 \cap \ell_4$
$P_{546} = (0,1,1,1) = \ell_3 \cap \ell_4$
$P_4 = (1,1,1,1) = \ell_3 \cap \ell_6$
$P_{530} = (0,0,1,1) = \ell_4 \cap \ell_5$

Single Points

The surface has 102 single points:
The single points on the surface are:

$0 : P_3 = (0,0,0,1)$ lies on line ℓ_5
$1 : P_6 = (2,1,0,0)$ lies on line ℓ_0
$2 : P_7 = (3,1,0,0)$ lies on line ℓ_0
$3 : P_8 = (4,1,0,0)$ lies on line ℓ_0
$4 : P_9 = (5,1,0,0)$ lies on line ℓ_0
$5 : P_{10} = (6,1,0,0)$ lies on line ℓ_0
$6 : P_{11} = (7,1,0,0)$ lies on line ℓ_0
$7 : P_{12} = (8,1,0,0)$ lies on line ℓ_0
$8 : P_{13} = (9,1,0,0)$ lies on line ℓ_0
$9 : P_{14} = (10,1,0,0)$ lies on line ℓ_0
$10 : P_{15} = (11,1,0,0)$ lies on line ℓ_0
$11 : P_{16} = (12,1,0,0)$ lies on line ℓ_0
$12 : P_{17} = (13,1,0,0)$ lies on line ℓ_0
$13 : P_{18} = (14,1,0,0)$ lies on line ℓ_0
$14 : P_{19} = (15,1,0,0)$ lies on line ℓ_0
$15 : P_{20} = (1,0,1,0)$ lies on line ℓ_1
$16 : P_{21} = (2,0,1,0)$ lies on line ℓ_1
$17 : P_{22} = (3,0,1,0)$ lies on line ℓ_1
$18 : P_{23} = (4,0,1,0)$ lies on line ℓ_1
$19 : P_{24} = (5,0,1,0)$ lies on line ℓ_1
$20 : P_{25} = (6,0,1,0)$ lies on line ℓ_1
$21 : P_{26} = (7,0,1,0)$ lies on line ℓ_1
$22 : P_{27} = (8,0,1,0)$ lies on line ℓ_1
$23 : P_{28} = (9,0,1,0)$ lies on line ℓ_1
$24 : P_{29} = (10,0,1,0)$ lies on line ℓ_1
$25 : P_{30} = (11,0,1,0)$ lies on line ℓ_1

26 : $P_{31} = (12, 0, 1, 0)$ lies on line ℓ_1
27 : $P_{32} = (13, 0, 1, 0)$ lies on line ℓ_1
28 : $P_{33} = (14, 0, 1, 0)$ lies on line ℓ_1
29 : $P_{34} = (15, 0, 1, 0)$ lies on line ℓ_1
30 : $P_{36} = (1, 1, 1, 0)$ lies on line ℓ_2
31 : $P_{53} = (2, 2, 1, 0)$ lies on line ℓ_2
32 : $P_{70} = (3, 3, 1, 0)$ lies on line ℓ_2
33 : $P_{87} = (4, 4, 1, 0)$ lies on line ℓ_2
34 : $P_{104} = (5, 5, 1, 0)$ lies on line ℓ_2
35 : $P_{121} = (6, 6, 1, 0)$ lies on line ℓ_2
36 : $P_{138} = (7, 7, 1, 0)$ lies on line ℓ_2
37 : $P_{155} = (8, 8, 1, 0)$ lies on line ℓ_2
38 : $P_{172} = (9, 9, 1, 0)$ lies on line ℓ_2
39 : $P_{189} = (10, 10, 1, 0)$ lies on line ℓ_2
40 : $P_{206} = (11, 11, 1, 0)$ lies on line ℓ_2
41 : $P_{223} = (12, 12, 1, 0)$ lies on line ℓ_2
42 : $P_{240} = (13, 13, 1, 0)$ lies on line ℓ_2
43 : $P_{257} = (14, 14, 1, 0)$ lies on line ℓ_2
44 : $P_{274} = (15, 15, 1, 0)$ lies on line ℓ_2
45 : $P_{291} = (1, 1, 0, 1)$ lies on line ℓ_6
46 : $P_{547} = (2, 1, 1, 1)$ lies on line ℓ_3
47 : $P_{548} = (3, 1, 1, 1)$ lies on line ℓ_3
48 : $P_{549} = (4, 1, 1, 1)$ lies on line ℓ_3
49 : $P_{550} = (5, 1, 1, 1)$ lies on line ℓ_3
50 : $P_{551} = (6, 1, 1, 1)$ lies on line ℓ_3
51 : $P_{552} = (7, 1, 1, 1)$ lies on line ℓ_3
52 : $P_{553} = (8, 1, 1, 1)$ lies on line ℓ_3
53 : $P_{554} = (9, 1, 1, 1)$ lies on line ℓ_3
54 : $P_{555} = (10, 1, 1, 1)$ lies on line ℓ_3
55 : $P_{556} = (11, 1, 1, 1)$ lies on line ℓ_3
56 : $P_{557} = (12, 1, 1, 1)$ lies on line ℓ_3
57 : $P_{558} = (13, 1, 1, 1)$ lies on line ℓ_3
58 : $P_{559} = (14, 1, 1, 1)$ lies on line ℓ_3
59 : $P_{560} = (15, 1, 1, 1)$ lies on line ℓ_3
60 : $P_{561} = (0, 2, 1, 1)$ lies on line ℓ_4
61 : $P_{577} = (0, 3, 1, 1)$ lies on line ℓ_4
62 : $P_{593} = (0, 4, 1, 1)$ lies on line ℓ_4
63 : $P_{609} = (0, 5, 1, 1)$ lies on line ℓ_4
64 : $P_{625} = (0, 6, 1, 1)$ lies on line ℓ_4
65 : $P_{641} = (0, 7, 1, 1)$ lies on line ℓ_4
66 : $P_{657} = (0, 8, 1, 1)$ lies on line ℓ_4
67 : $P_{673} = (0, 9, 1, 1)$ lies on line ℓ_4
68 : $P_{689} = (0, 10, 1, 1)$ lies on line ℓ_4
69 : $P_{705} = (0, 11, 1, 1)$ lies on line ℓ_4
70 : $P_{721} = (0, 12, 1, 1)$ lies on line ℓ_4
71 : $P_{737} = (0, 13, 1, 1)$ lies on line ℓ_4
72 : $P_{753} = (0, 14, 1, 1)$ lies on line ℓ_4
73 : $P_{769} = (0, 15, 1, 1)$ lies on line ℓ_4
74 : $P_{785} = (0, 0, 2, 1)$ lies on line ℓ_5
75 : $P_{802} = (1, 1, 2, 1)$ lies on line ℓ_6
76 : $P_{1041} = (0, 0, 3, 1)$ lies on line ℓ_5
77 : $P_{1058} = (1, 1, 3, 1)$ lies on line ℓ_6
78 : $P_{1297} = (0, 0, 4, 1)$ lies on line ℓ_5
79 : $P_{1314} = (1, 1, 4, 1)$ lies on line ℓ_6
80 : $P_{1553} = (0, 0, 5, 1)$ lies on line ℓ_5
81 : $P_{1570} = (1, 1, 5, 1)$ lies on line ℓ_6
82 : $P_{1809} = (0, 0, 6, 1)$ lies on line ℓ_5
83 : $P_{1826} = (1, 1, 6, 1)$ lies on line ℓ_6
84 : $P_{2065} = (0, 0, 7, 1)$ lies on line ℓ_5
85 : $P_{2082} = (1, 1, 7, 1)$ lies on line ℓ_6
86 : $P_{2321} = (0, 0, 8, 1)$ lies on line ℓ_5
87 : $P_{2338} = (1, 1, 8, 1)$ lies on line ℓ_6
88 : $P_{2577} = (0, 0, 9, 1)$ lies on line ℓ_5
89 : $P_{2594} = (1, 1, 9, 1)$ lies on line ℓ_6
90 : $P_{2833} = (0, 0, 10, 1)$ lies on line ℓ_5
91 : $P_{2850} = (1, 1, 10, 1)$ lies on line ℓ_6
92 : $P_{3089} = (0, 0, 11, 1)$ lies on line ℓ_5
93 : $P_{3106} = (1, 1, 11, 1)$ lies on line ℓ_6
94 : $P_{3345} = (0, 0, 12, 1)$ lies on line ℓ_5
95 : $P_{3362} = (1, 1, 12, 1)$ lies on line ℓ_6
96 : $P_{3601} = (0, 0, 13, 1)$ lies on line ℓ_5
97 : $P_{3618} = (1, 1, 13, 1)$ lies on line ℓ_6
98 : $P_{3857} = (0, 0, 14, 1)$ lies on line ℓ_5
99 : $P_{3874} = (1, 1, 14, 1)$ lies on line ℓ_6
100 : $P_{4113} = (0, 0, 15, 1)$ lies on line ℓ_5
101 : $P_{4130} = (1, 1, 15, 1)$ lies on line ℓ_6

The single points on the surface are:

Points on surface but on no line

The surface has 196 points not on any line:
The points on the surface but not on lines are:

0 : $P_{310} = (4, 2, 0, 1)$
1 : $P_{327} = (5, 3, 0, 1)$
2 : $P_{347} = (9, 4, 0, 1)$
3 : $P_{362} = (8, 5, 0, 1)$
4 : $P_{383} = (13, 6, 0, 1)$
5 : $P_{398} = (12, 7, 0, 1)$
6 : $P_{417} = (15, 8, 0, 1)$
7 : $P_{432} = (14, 9, 0, 1)$
8 : $P_{445} = (11, 10, 0, 1)$
9 : $P_{460} = (10, 11, 0, 1)$

$10: P_{472} = (6, 12, 0, 1)$
$11: P_{489} = (7, 13, 0, 1)$
$12: P_{500} = (2, 14, 0, 1)$
$13: P_{517} = (3, 15, 0, 1)$
$14: P_{828} = (11, 2, 2, 1)$
$15: P_{845} = (12, 3, 2, 1)$
$16: P_{852} = (3, 4, 2, 1)$
$17: P_{875} = (10, 5, 2, 1)$
$18: P_{884} = (3, 6, 2, 1)$
$19: P_{908} = (11, 7, 2, 1)$
$20: P_{914} = (1, 8, 2, 1)$
$21: P_{939} = (10, 9, 2, 1)$
$22: P_{953} = (8, 10, 2, 1)$
$23: P_{973} = (12, 11, 2, 1)$
$24: P_{1001} = (8, 13, 2, 1)$
$25: P_{1022} = (13, 14, 2, 1)$
$26: P_{1038} = (13, 15, 2, 1)$
$27: P_{1086} = (13, 2, 3, 1)$
$28: P_{1103} = (14, 3, 3, 1)$
$29: P_{1110} = (5, 4, 3, 1)$
$30: P_{1134} = (13, 5, 3, 1)$
$31: P_{1144} = (7, 6, 3, 1)$
$32: P_{1156} = (3, 7, 3, 1)$
$33: P_{1188} = (3, 9, 3, 1)$
$34: P_{1215} = (14, 10, 3, 1)$
$35: P_{1221} = (4, 11, 3, 1)$
$36: P_{1234} = (1, 12, 3, 1)$
$37: P_{1253} = (4, 13, 3, 1)$
$38: P_{1272} = (7, 14, 3, 1)$
$39: P_{1286} = (5, 15, 3, 1)$
$40: P_{1336} = (7, 2, 4, 1)$
$41: P_{1352} = (7, 3, 4, 1)$
$42: P_{1371} = (10, 4, 4, 1)$
$43: P_{1383} = (6, 5, 4, 1)$
$44: P_{1424} = (15, 7, 4, 1)$
$45: P_{1436} = (11, 8, 4, 1)$
$46: P_{1446} = (5, 9, 4, 1)$
$47: P_{1463} = (6, 10, 4, 1)$
$48: P_{1488} = (15, 11, 4, 1)$
$49: P_{1499} = (10, 12, 4, 1)$
$50: P_{1510} = (5, 13, 4, 1)$
$51: P_{1532} = (11, 14, 4, 1)$
$52: P_{1538} = (1, 15, 4, 1)$
$53: P_{1597} = (12, 2, 5, 1)$
$54: P_{1609} = (8, 3, 5, 1)$
$55: P_{1624} = (7, 4, 5, 1)$
$56: P_{1635} = (2, 5, 5, 1)$
$57: P_{1650} = (1, 6, 5, 1)$
$58: P_{1674} = (9, 7, 5, 1)$
$59: P_{1688} = (7, 8, 5, 1)$
$60: P_{1705} = (8, 9, 5, 1)$
$61: P_{1722} = (9, 10, 5, 1)$
$62: P_{1731} = (2, 11, 5, 1)$
$63: P_{1750} = (5, 12, 5, 1)$
$64: P_{1773} = (12, 13, 5, 1)$
$65: P_{1782} = (5, 14, 5, 1)$
$66: P_{1847} = (6, 2, 6, 1)$
$67: P_{1870} = (13, 3, 6, 1)$
$68: P_{1892} = (3, 5, 6, 1)$
$69: P_{1914} = (9, 6, 6, 1)$
$70: P_{1934} = (13, 7, 6, 1)$
$71: P_{1939} = (2, 8, 6, 1)$
$72: P_{1968} = (15, 9, 6, 1)$
$73: P_{1984} = (15, 10, 6, 1)$
$74: P_{1991} = (6, 11, 6, 1)$
$75: P_{2010} = (9, 12, 6, 1)$
$76: P_{2020} = (3, 13, 6, 1)$
$77: P_{2034} = (1, 14, 6, 1)$
$78: P_{2051} = (2, 15, 6, 1)$
$79: P_{2102} = (5, 2, 7, 1)$
$80: P_{2122} = (9, 3, 7, 1)$
$81: P_{2130} = (1, 4, 7, 1)$
$82: P_{2154} = (9, 5, 7, 1)$
$83: P_{2173} = (12, 6, 7, 1)$
$84: P_{2179} = (2, 7, 7, 1)$
$85: P_{2205} = (12, 8, 7, 1)$
$86: P_{2216} = (7, 9, 7, 1)$
$87: P_{2230} = (5, 10, 7, 1)$
$88: P_{2248} = (7, 11, 7, 1)$
$89: P_{2265} = (8, 12, 7, 1)$
$90: P_{2275} = (2, 13, 7, 1)$
$91: P_{2313} = (8, 15, 7, 1)$
$92: P_{2361} = (8, 2, 8, 1)$
$93: P_{2391} = (6, 4, 8, 1)$
$94: P_{2416} = (15, 5, 8, 1)$
$95: P_{2425} = (8, 6, 8, 1)$
$96: P_{2439} = (6, 7, 8, 1)$
$97: P_{2453} = (4, 8, 8, 1)$
$98: P_{2477} = (12, 9, 8, 1)$
$99: P_{2485} = (4, 10, 8, 1)$
$100: P_{2511} = (14, 11, 8, 1)$
$101: P_{2527} = (14, 12, 8, 1)$
$102: P_{2530} = (1, 13, 8, 1)$
$103: P_{2560} = (15, 14, 8, 1)$
$104: P_{2573} = (12, 15, 8, 1)$
$105: P_{2619} = (10, 2, 9, 1)$
$106: P_{2626} = (1, 3, 9, 1)$
$107: P_{2653} = (12, 4, 9, 1)$
$108: P_{2669} = (12, 5, 9, 1)$
$109: P_{2684} = (11, 6, 9, 1)$
$110: P_{2697} = (8, 7, 9, 1)$
$111: P_{2718} = (13, 8, 9, 1)$
$112: P_{2732} = (11, 9, 9, 1)$
$113: P_{2740} = (3, 10, 9, 1)$
$114: P_{2766} = (13, 11, 9, 1)$
$115: P_{2772} = (3, 12, 9, 1)$
$116: P_{2809} = (8, 14, 9, 1)$
$117: P_{2827} = (10, 15, 9, 1)$

118 : $P_{2879} = (14, 2, 10, 1)$
119 : $P_{2883} = (2, 3, 10, 1)$
120 : $P_{2911} = (14, 4, 10, 1)$
121 : $P_{2924} = (11, 5, 10, 1)$
122 : $P_{2939} = (10, 6, 10, 1)$
123 : $P_{2955} = (10, 7, 10, 1)$
124 : $P_{2970} = (9, 8, 10, 1)$
125 : $P_{2981} = (4, 9, 10, 1)$
126 : $P_{2994} = (1, 10, 10, 1)$
127 : $P_{3027} = (2, 12, 10, 1)$
128 : $P_{3050} = (9, 13, 10, 1)$
129 : $P_{3061} = (4, 14, 10, 1)$
130 : $P_{3084} = (11, 15, 10, 1)$
131 : $P_{3130} = (9, 2, 11, 1)$
132 : $P_{3147} = (10, 3, 11, 1)$
133 : $P_{3155} = (2, 4, 11, 1)$
134 : $P_{3173} = (4, 5, 11, 1)$
135 : $P_{3189} = (4, 6, 11, 1)$
136 : $P_{3215} = (14, 7, 11, 1)$
137 : $P_{3227} = (10, 8, 11, 1)$
138 : $P_{3235} = (2, 9, 11, 1)$
139 : $P_{3266} = (1, 11, 11, 1)$
140 : $P_{3292} = (11, 12, 11, 1)$
141 : $P_{3308} = (11, 13, 11, 1)$
142 : $P_{3322} = (9, 14, 11, 1)$
143 : $P_{3343} = (14, 15, 11, 1)$
144 : $P_{3408} = (15, 3, 12, 1)$
145 : $P_{3417} = (8, 4, 12, 1)$
146 : $P_{3439} = (14, 5, 12, 1)$
147 : $P_{3456} = (15, 6, 12, 1)$
148 : $P_{3461} = (4, 7, 12, 1)$
149 : $P_{3487} = (14, 8, 12, 1)$
150 : $P_{3490} = (1, 9, 12, 1)$
151 : $P_{3517} = (12, 10, 12, 1)$
152 : $P_{3529} = (8, 11, 12, 1)$
153 : $P_{3541} = (4, 12, 12, 1)$
154 : $P_{3559} = (6, 13, 12, 1)$
155 : $P_{3581} = (12, 14, 12, 1)$
156 : $P_{3591} = (6, 15, 12, 1)$
157 : $P_{3634} = (1, 2, 13, 1)$
158 : $P_{3653} = (4, 3, 13, 1)$
159 : $P_{3678} = (13, 4, 13, 1)$
160 : $P_{3688} = (7, 5, 13, 1)$
161 : $P_{3711} = (14, 6, 13, 1)$
162 : $P_{3718} = (5, 7, 13, 1)$
163 : $P_{3734} = (5, 8, 13, 1)$
164 : $P_{3774} = (13, 10, 13, 1)$
165 : $P_{3780} = (3, 11, 13, 1)$
166 : $P_{3800} = (7, 12, 13, 1)$
167 : $P_{3823} = (14, 13, 13, 1)$
168 : $P_{3828} = (3, 14, 13, 1)$
169 : $P_{3845} = (4, 15, 13, 1)$
170 : $P_{3904} = (15, 2, 14, 1)$
171 : $P_{3916} = (11, 3, 14, 1)$
172 : $P_{3932} = (11, 4, 14, 1)$
173 : $P_{3938} = (1, 5, 14, 1)$
174 : $P_{3958} = (5, 6, 14, 1)$
175 : $P_{3991} = (6, 8, 14, 1)$
176 : $P_{4007} = (6, 9, 14, 1)$
177 : $P_{4024} = (7, 10, 14, 1)$
178 : $P_{4038} = (5, 11, 14, 1)$
179 : $P_{4064} = (15, 12, 14, 1)$
180 : $P_{4075} = (10, 13, 14, 1)$
181 : $P_{4091} = (10, 14, 14, 1)$
182 : $P_{4104} = (7, 15, 14, 1)$
183 : $P_{4148} = (3, 2, 15, 1)$
184 : $P_{4167} = (6, 3, 15, 1)$
185 : $P_{4192} = (15, 4, 15, 1)$
186 : $P_{4211} = (2, 6, 15, 1)$
187 : $P_{4226} = (1, 7, 15, 1)$
188 : $P_{4244} = (3, 8, 15, 1)$
189 : $P_{4270} = (13, 9, 15, 1)$
190 : $P_{4275} = (2, 10, 15, 1)$
191 : $P_{4298} = (9, 11, 15, 1)$
192 : $P_{4318} = (13, 12, 15, 1)$
193 : $P_{4336} = (15, 13, 15, 1)$
194 : $P_{4343} = (6, 14, 15, 1)$
195 : $P_{4362} = (9, 15, 15, 1)$

Line Intersection Graph

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

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4
in point	P_0	P_5	P_0	P_1

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_5	ℓ_6
in point	P_0	P_2	P_0	P_2	P_2

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_5	ℓ_6
in point	P_5	P_2	P_2	P_2

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_4	ℓ_6
in point	P_0	P_0	P_{546}	P_4

Line 4 intersects

Line	ℓ_0	ℓ_3	ℓ_5
in point	P_1	P_{546}	P_{530}

Line 5 intersects

Line	ℓ_1	ℓ_2	ℓ_4	ℓ_6
in point	P_2	P_2	P_{530}	P_2

Line 6 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_5
in point	P_2	P_2	P_4	P_2

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

$0: P_0 = (1,0,0,0)$
$1: P_1 = (0,1,0,0)$
$2: P_2 = (0,0,1,0)$
$3: P_3 = (0,0,0,1)$
$4: P_4 = (1,1,1,1)$
$5: P_5 = (1,1,0,0)$
$6: P_6 = (2,1,0,0)$
$7: P_7 = (3,1,0,0)$
$8: P_8 = (4,1,0,0)$
$9: P_9 = (5,1,0,0)$
$10: P_{10} = (6,1,0,0)$
$11: P_{11} = (7,1,0,0)$
$12: P_{12} = (8,1,0,0)$
$13: P_{13} = (9,1,0,0)$
$14: P_{14} = (10,1,0,0)$
$15: P_{15} = (11,1,0,0)$
$16: P_{16} = (12,1,0,0)$
$17: P_{17} = (13,1,0,0)$
$18: P_{18} = (14,1,0,0)$
$19: P_{19} = (15,1,0,0)$
$20: P_{20} = (1,0,1,0)$
$21: P_{21} = (2,0,1,0)$
$22: P_{22} = (3,0,1,0)$
$23: P_{23} = (4,0,1,0)$
$24: P_{24} = (5,0,1,0)$
$25: P_{25} = (6,0,1,0)$
$26: P_{26} = (7,0,1,0)$
$27: P_{27} = (8,0,1,0)$
$28: P_{28} = (9,0,1,0)$
$29: P_{29} = (10,0,1,0)$
$30: P_{30} = (11,0,1,0)$
$31: P_{31} = (12,0,1,0)$
$32: P_{32} = (13,0,1,0)$
$33: P_{33} = (14,0,1,0)$
$34: P_{34} = (15,0,1,0)$
$35: P_{36} = (1,1,1,0)$
$36: P_{53} = (2,2,1,0)$
$37: P_{70} = (3,3,1,0)$
$38: P_{87} = (4,4,1,0)$
$39: P_{104} = (5,5,1,0)$
$40: P_{121} = (6,6,1,0)$
$41: P_{138} = (7,7,1,0)$
$42: P_{155} = (8,8,1,0)$
$43: P_{172} = (9,9,1,0)$
$44: P_{189} = (10,10,1,0)$
$45: P_{206} = (11,11,1,0)$
$46: P_{223} = (12,12,1,0)$
$47: P_{240} = (13,13,1,0)$
$48: P_{257} = (14,14,1,0)$
$49: P_{274} = (15,15,1,0)$
$50: P_{291} = (1,1,0,1)$
$51: P_{310} = (4,2,0,1)$
$52: P_{327} = (5,3,0,1)$
$53: P_{347} = (9,4,0,1)$
$54: P_{362} = (8,5,0,1)$
$55: P_{383} = (13,6,0,1)$
$56: P_{398} = (12,7,0,1)$
$57: P_{417} = (15,8,0,1)$
$58: P_{432} = (14,9,0,1)$
$59: P_{445} = (11,10,0,1)$
$60: P_{460} = (10,11,0,1)$
$61: P_{472} = (6,12,0,1)$
$62: P_{489} = (7,13,0,1)$
$63: P_{500} = (2,14,0,1)$
$64: P_{517} = (3,15,0,1)$
$65: P_{530} = (0,0,1,1)$
$66: P_{546} = (0,1,1,1)$
$67: P_{547} = (2,1,1,1)$
$68: P_{548} = (3,1,1,1)$
$69: P_{549} = (4,1,1,1)$
$70: P_{550} = (5,1,1,1)$
$71: P_{551} = (6,1,1,1)$
$72: P_{552} = (7,1,1,1)$
$73: P_{553} = (8,1,1,1)$
$74: P_{554} = (9,1,1,1)$

$75: P_{555} = (10, 1, 1, 1)$
$76: P_{556} = (11, 1, 1, 1)$
$77: P_{557} = (12, 1, 1, 1)$
$78: P_{558} = (13, 1, 1, 1)$
$79: P_{559} = (14, 1, 1, 1)$
$80: P_{560} = (15, 1, 1, 1)$
$81: P_{561} = (0, 2, 1, 1)$
$82: P_{577} = (0, 3, 1, 1)$
$83: P_{593} = (0, 4, 1, 1)$
$84: P_{609} = (0, 5, 1, 1)$
$85: P_{625} = (0, 6, 1, 1)$
$86: P_{641} = (0, 7, 1, 1)$
$87: P_{657} = (0, 8, 1, 1)$
$88: P_{673} = (0, 9, 1, 1)$
$89: P_{689} = (0, 10, 1, 1)$
$90: P_{705} = (0, 11, 1, 1)$
$91: P_{721} = (0, 12, 1, 1)$
$92: P_{737} = (0, 13, 1, 1)$
$93: P_{753} = (0, 14, 1, 1)$
$94: P_{769} = (0, 15, 1, 1)$
$95: P_{785} = (0, 0, 2, 1)$
$96: P_{802} = (1, 1, 2, 1)$
$97: P_{828} = (11, 2, 2, 1)$
$98: P_{845} = (12, 3, 2, 1)$
$99: P_{852} = (3, 4, 2, 1)$
$100: P_{875} = (10, 5, 2, 1)$
$101: P_{884} = (3, 6, 2, 1)$
$102: P_{908} = (11, 7, 2, 1)$
$103: P_{914} = (1, 8, 2, 1)$
$104: P_{939} = (10, 9, 2, 1)$
$105: P_{953} = (8, 10, 2, 1)$
$106: P_{973} = (12, 11, 2, 1)$
$107: P_{1001} = (8, 13, 2, 1)$
$108: P_{1022} = (13, 14, 2, 1)$
$109: P_{1038} = (13, 15, 2, 1)$
$110: P_{1041} = (0, 0, 3, 1)$
$111: P_{1058} = (1, 1, 3, 1)$
$112: P_{1086} = (13, 2, 3, 1)$
$113: P_{1103} = (14, 3, 3, 1)$
$114: P_{1110} = (5, 4, 3, 1)$
$115: P_{1134} = (13, 5, 3, 1)$
$116: P_{1144} = (7, 6, 3, 1)$
$117: P_{1156} = (3, 7, 3, 1)$
$118: P_{1188} = (3, 9, 3, 1)$
$119: P_{1215} = (14, 10, 3, 1)$
$120: P_{1221} = (4, 11, 3, 1)$
$121: P_{1234} = (1, 12, 3, 1)$
$122: P_{1253} = (4, 13, 3, 1)$
$123: P_{1272} = (7, 14, 3, 1)$
$124: P_{1286} = (5, 15, 3, 1)$
$125: P_{1297} = (0, 0, 4, 1)$
$126: P_{1314} = (1, 1, 4, 1)$
$127: P_{1336} = (7, 2, 4, 1)$
$128: P_{1352} = (7, 3, 4, 1)$
$129: P_{1371} = (10, 4, 4, 1)$
$130: P_{1383} = (6, 5, 4, 1)$
$131: P_{1424} = (15, 7, 4, 1)$
$132: P_{1436} = (11, 8, 4, 1)$
$133: P_{1446} = (5, 9, 4, 1)$
$134: P_{1463} = (6, 10, 4, 1)$
$135: P_{1488} = (15, 11, 4, 1)$
$136: P_{1499} = (10, 12, 4, 1)$
$137: P_{1510} = (5, 13, 4, 1)$
$138: P_{1532} = (11, 14, 4, 1)$
$139: P_{1538} = (1, 15, 4, 1)$
$140: P_{1553} = (0, 0, 5, 1)$
$141: P_{1570} = (1, 1, 5, 1)$
$142: P_{1597} = (12, 2, 5, 1)$
$143: P_{1609} = (8, 3, 5, 1)$
$144: P_{1624} = (7, 4, 5, 1)$
$145: P_{1635} = (2, 5, 5, 1)$
$146: P_{1650} = (1, 6, 5, 1)$
$147: P_{1674} = (9, 7, 5, 1)$
$148: P_{1688} = (7, 8, 5, 1)$
$149: P_{1705} = (8, 9, 5, 1)$
$150: P_{1722} = (9, 10, 5, 1)$
$151: P_{1731} = (2, 11, 5, 1)$
$152: P_{1750} = (5, 12, 5, 1)$
$153: P_{1773} = (12, 13, 5, 1)$
$154: P_{1782} = (5, 14, 5, 1)$
$155: P_{1809} = (0, 0, 6, 1)$
$156: P_{1826} = (1, 1, 6, 1)$
$157: P_{1847} = (6, 2, 6, 1)$
$158: P_{1870} = (13, 3, 6, 1)$
$159: P_{1892} = (3, 5, 6, 1)$
$160: P_{1914} = (9, 6, 6, 1)$
$161: P_{1934} = (13, 7, 6, 1)$
$162: P_{1939} = (2, 8, 6, 1)$
$163: P_{1968} = (15, 9, 6, 1)$
$164: P_{1984} = (15, 10, 6, 1)$
$165: P_{1991} = (6, 11, 6, 1)$
$166: P_{2010} = (9, 12, 6, 1)$
$167: P_{2020} = (3, 13, 6, 1)$
$168: P_{2034} = (1, 14, 6, 1)$
$169: P_{2051} = (2, 15, 6, 1)$
$170: P_{2065} = (0, 0, 7, 1)$
$171: P_{2082} = (1, 1, 7, 1)$
$172: P_{2102} = (5, 2, 7, 1)$
$173: P_{2122} = (9, 3, 7, 1)$
$174: P_{2130} = (1, 4, 7, 1)$
$175: P_{2154} = (9, 5, 7, 1)$
$176: P_{2173} = (12, 6, 7, 1)$
$177: P_{2179} = (2, 7, 7, 1)$
$178: P_{2205} = (12, 8, 7, 1)$
$179: P_{2216} = (7, 9, 7, 1)$
$180: P_{2230} = (5, 10, 7, 1)$
$181: P_{2248} = (7, 11, 7, 1)$
$182: P_{2265} = (8, 12, 7, 1)$
$183: P_{2275} = (2, 13, 7, 1)$
$184: P_{2313} = (8, 15, 7, 1)$
$185: P_{2321} = (0, 0, 8, 1)$
$186: P_{2338} = (1, 1, 8, 1)$
$187: P_{2361} = (8, 2, 8, 1)$
$188: P_{2391} = (6, 4, 8, 1)$
$189: P_{2416} = (15, 5, 8, 1)$
$190: P_{2425} = (8, 6, 8, 1)$
$191: P_{2439} = (6, 7, 8, 1)$
$192: P_{2453} = (4, 8, 8, 1)$
$193: P_{2477} = (12, 9, 8, 1)$
$194: P_{2485} = (4, 10, 8, 1)$
$195: P_{2511} = (14, 11, 8, 1)$
$196: P_{2527} = (14, 12, 8, 1)$
$197: P_{2530} = (1, 13, 8, 1)$
$198: P_{2560} = (15, 14, 8, 1)$
$199: P_{2573} = (12, 15, 8, 1)$
$200: P_{2577} = (0, 0, 9, 1)$
$201: P_{2594} = (1, 1, 9, 1)$
$202: P_{2619} = (10, 2, 9, 1)$
$203: P_{2626} = (1, 3, 9, 1)$
$204: P_{2653} = (12, 4, 9, 1)$
$205: P_{2669} = (12, 5, 9, 1)$
$206: P_{2684} = (11, 6, 9, 1)$
$207: P_{2697} = (8, 7, 9, 1)$
$208: P_{2718} = (13, 8, 9, 1)$
$209: P_{2732} = (11, 9, 9, 1)$
$210: P_{2740} = (3, 10, 9, 1)$
$211: P_{2766} = (13, 11, 9, 1)$
$212: P_{2772} = (3, 12, 9, 1)$
$213: P_{2809} = (8, 14, 9, 1)$
$214: P_{2827} = (10, 15, 9, 1)$
$215: P_{2833} = (0, 0, 10, 1)$
$216: P_{2850} = (1, 1, 10, 1)$
$217: P_{2879} = (14, 2, 10, 1)$
$218: P_{2883} = (2, 3, 10, 1)$
$219: P_{2911} = (14, 4, 10, 1)$
$220: P_{2924} = (11, 5, 10, 1)$
$221: P_{2939} = (10, 6, 10, 1)$
$222: P_{2955} = (10, 7, 10, 1)$
$223: P_{2970} = (9, 8, 10, 1)$
$224: P_{2981} = (4, 9, 10, 1)$
$225: P_{2994} = (1, 10, 10, 1)$
$226: P_{3027} = (2, 12, 10, 1)$
$227: P_{3050} = (9, 13, 10, 1)$
$228: P_{3061} = (4, 14, 10, 1)$
$229: P_{3084} = (11, 15, 10, 1)$
$230: P_{3089} = (0, 0, 11, 1)$
$231: P_{3106} = (1, 1, 11, 1)$
$232: P_{3130} = (9, 2, 11, 1)$
$233: P_{3147} = (10, 3, 11, 1)$
$234: P_{3155} = (2, 4, 11, 1)$
$235: P_{3173} = (4, 5, 11, 1)$
$236: P_{3189} = (4, 6, 11, 1)$

$237: P_{3215} = (14, 7, 11, 1)$
$238: P_{3227} = (10, 8, 11, 1)$
$239: P_{3235} = (2, 9, 11, 1)$
$240: P_{3266} = (1, 11, 11, 1)$
$241: P_{3292} = (11, 12, 11, 1)$
$242: P_{3308} = (11, 13, 11, 1)$
$243: P_{3322} = (9, 14, 11, 1)$
$244: P_{3343} = (14, 15, 11, 1)$
$245: P_{3345} = (0, 0, 12, 1)$
$246: P_{3362} = (1, 1, 12, 1)$
$247: P_{3408} = (15, 3, 12, 1)$
$248: P_{3417} = (8, 4, 12, 1)$
$249: P_{3439} = (14, 5, 12, 1)$
$250: P_{3456} = (15, 6, 12, 1)$
$251: P_{3461} = (4, 7, 12, 1)$
$252: P_{3487} = (14, 8, 12, 1)$
$253: P_{3490} = (1, 9, 12, 1)$
$254: P_{3517} = (12, 10, 12, 1)$
$255: P_{3529} = (8, 11, 12, 1)$
$256: P_{3541} = (4, 12, 12, 1)$
$257: P_{3559} = (6, 13, 12, 1)$
$258: P_{3581} = (12, 14, 12, 1)$
$259: P_{3591} = (6, 15, 12, 1)$
$260: P_{3601} = (0, 0, 13, 1)$
$261: P_{3618} = (1, 1, 13, 1)$
$262: P_{3634} = (1, 2, 13, 1)$
$263: P_{3653} = (4, 3, 13, 1)$
$264: P_{3678} = (13, 4, 13, 1)$
$265: P_{3688} = (7, 5, 13, 1)$
$266: P_{3711} = (14, 6, 13, 1)$
$267: P_{3718} = (5, 7, 13, 1)$
$268: P_{3734} = (5, 8, 13, 1)$
$269: P_{3774} = (13, 10, 13, 1)$
$270: P_{3780} = (3, 11, 13, 1)$
$271: P_{3800} = (7, 12, 13, 1)$
$272: P_{3823} = (14, 13, 13, 1)$
$273: P_{3828} = (3, 14, 13, 1)$
$274: P_{3845} = (4, 15, 13, 1)$
$275: P_{3857} = (0, 0, 14, 1)$
$276: P_{3874} = (1, 1, 14, 1)$
$277: P_{3904} = (15, 2, 14, 1)$
$278: P_{3916} = (11, 3, 14, 1)$
$279: P_{3932} = (11, 4, 14, 1)$
$280: P_{3938} = (1, 5, 14, 1)$
$281: P_{3958} = (5, 6, 14, 1)$
$282: P_{3991} = (6, 8, 14, 1)$
$283: P_{4007} = (6, 9, 14, 1)$
$284: P_{4024} = (7, 10, 14, 1)$
$285: P_{4038} = (5, 11, 14, 1)$
$286: P_{4064} = (15, 12, 14, 1)$
$287: P_{4075} = (10, 13, 14, 1)$
$288: P_{4091} = (10, 14, 14, 1)$
$289: P_{4104} = (7, 15, 14, 1)$
$290: P_{4113} = (0, 0, 15, 1)$
$291: P_{4130} = (1, 1, 15, 1)$
$292: P_{4148} = (3, 2, 15, 1)$
$293: P_{4167} = (6, 3, 15, 1)$
$294: P_{4192} = (15, 4, 15, 1)$
$295: P_{4211} = (2, 6, 15, 1)$
$296: P_{4226} = (1, 7, 15, 1)$
$297: P_{4244} = (3, 8, 15, 1)$
$298: P_{4270} = (13, 9, 15, 1)$
$299: P_{4275} = (2, 10, 15, 1)$
$300: P_{4298} = (9, 11, 15, 1)$
$301: P_{4318} = (13, 12, 15, 1)$
$302: P_{4336} = (15, 13, 15, 1)$
$303: P_{4343} = (6, 14, 15, 1)$
$304: P_{4362} = (9, 15, 15, 1)$