# Rank-65921 over GF(16)

January 15, 2021

## The equation

The equation of the surface is :

$$X_1^3 + X_2^3 + X_3^3 + X_0^2X_1 + X_0^2X_2 + X_0^2X_3 + X_1^2X_2 + X_0X_1X_2 = 0$$

( 0, 1, 1, 1, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0 )
The point rank of the equation over GF(16) is 304226853

## General information

| | |
|---|---|
| Number of lines | 6 |
| Number of points | 305 |
| Number of singular points | 1 |
| Number of Eckardt points | 1 |
| Number of double points | 6 |
| Number of single points | 87 |
| Number of points off lines | 211 |
| Number of Hesse planes | 0 |
| Number of axes | 0 |
| Type of points on lines | $17^6$ |
| Type of lines on points | 3, $2^6$, $1^{87}$, $0^{211}$ |

### Singular Points

The surface has 1 singular points:

$0: \ P_{531} = \mathbf{P}(1,0,1,1) = \mathbf{P}(1,0,1,1)$

## The 6 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{16} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{16} = \mathbf{Pl}(1,0,0,0,1,0)_{290}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{257} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{257} = \mathbf{Pl}(0,0,1,0,1,0)_{320}$$

$$\ell_2 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{530} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{530} = \mathbf{Pl}(0,0,1,1,1,1)_{9426}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4658} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4658} = \mathbf{Pl}(1,0,1,1,1,1)_{9427}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4385} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{4385} = \mathbf{Pl}(1,1,1,1,1,0)_{1250}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{4657} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{4657} = \mathbf{Pl}(1,1,0,1,1,1)_{9201}$$

Rank of lines: ( 16, 257, 530, 4658, 4385, 4657 )
Rank of points on Klein quadric: ( 290, 320, 9426, 9427, 1250, 9201 )

### Eckardt Points

The surface has 1 Eckardt points:
$0 : P_{531} = \mathbf{P}(1,0,1,1) = \mathbf{P}(1,0,1,1)$.

### Double Points

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

$P_0 = (1,0,0,0) = \ell_0 \cap \ell_1$
$P_{290} = (0,1,0,1) = \ell_0 \cap \ell_5$
$P_{530} = (0,0,1,1) = \ell_1 \cap \ell_2$
$P_5 = (1,1,0,0) = \ell_2 \cap \ell_3$
$P_{546} = (0,1,1,1) = \ell_3 \cap \ell_4$
$P_{36} = (1,1,1,0) = \ell_4 \cap \ell_5$

### Single Points

The surface has 87 single points:
The single points on the surface are:

$0 : P_4 = (1,1,1,1)$ lies on line $\ell_2$
$1 : P_{275} = (1,0,0,1)$ lies on line $\ell_4$
$2 : P_{291} = (1,1,0,1)$ lies on line $\ell_0$
$3 : P_{292} = (2,1,0,1)$ lies on line $\ell_0$
$4 : P_{293} = (3,1,0,1)$ lies on line $\ell_0$
$5 : P_{294} = (4,1,0,1)$ lies on line $\ell_0$
$6 : P_{295} = (5,1,0,1)$ lies on line $\ell_0$
$7 : P_{296} = (6,1,0,1)$ lies on line $\ell_0$
$8 : P_{297} = (7,1,0,1)$ lies on line $\ell_0$
$9 : P_{298} = (8,1,0,1)$ lies on line $\ell_0$
$10 : P_{299} = (9,1,0,1)$ lies on line $\ell_0$
$11 : P_{300} = (10,1,0,1)$ lies on line $\ell_0$
$12 : P_{301} = (11,1,0,1)$ lies on line $\ell_0$
$13 : P_{302} = (12,1,0,1)$ lies on line $\ell_0$
$14 : P_{303} = (13,1,0,1)$ lies on line $\ell_0$
$15 : P_{304} = (14,1,0,1)$ lies on line $\ell_0$
$16 : P_{305} = (15,1,0,1)$ lies on line $\ell_0$
$17 : P_{532} = (2,0,1,1)$ lies on line $\ell_1$
$18 : P_{533} = (3,0,1,1)$ lies on line $\ell_1$
$19 : P_{534} = (4,0,1,1)$ lies on line $\ell_1$
$20 : P_{535} = (5,0,1,1)$ lies on line $\ell_1$
$21 : P_{536} = (6,0,1,1)$ lies on line $\ell_1$
$22 : P_{537} = (7,0,1,1)$ lies on line $\ell_1$
$23 : P_{538} = (8,0,1,1)$ lies on line $\ell_1$
$24 : P_{539} = (9,0,1,1)$ lies on line $\ell_1$
$25 : P_{540} = (10,0,1,1)$ lies on line $\ell_1$
$26 : P_{541} = (11,0,1,1)$ lies on line $\ell_1$
$27 : P_{542} = (12,0,1,1)$ lies on line $\ell_1$
$28 : P_{543} = (13,0,1,1)$ lies on line $\ell_1$
$29 : P_{544} = (14,0,1,1)$ lies on line $\ell_1$

30 : $P_{545} = (15, 0, 1, 1)$ lies on line $\ell_1$
31 : $P_{563} = (2, 2, 1, 1)$ lies on line $\ell_2$
32 : $P_{564} = (3, 2, 1, 1)$ lies on line $\ell_3$
33 : $P_{579} = (2, 3, 1, 1)$ lies on line $\ell_3$
34 : $P_{580} = (3, 3, 1, 1)$ lies on line $\ell_2$
35 : $P_{597} = (4, 4, 1, 1)$ lies on line $\ell_2$
36 : $P_{598} = (5, 4, 1, 1)$ lies on line $\ell_3$
37 : $P_{613} = (4, 5, 1, 1)$ lies on line $\ell_3$
38 : $P_{614} = (5, 5, 1, 1)$ lies on line $\ell_2$
39 : $P_{631} = (6, 6, 1, 1)$ lies on line $\ell_2$
40 : $P_{632} = (7, 6, 1, 1)$ lies on line $\ell_3$
41 : $P_{647} = (6, 7, 1, 1)$ lies on line $\ell_3$
42 : $P_{648} = (7, 7, 1, 1)$ lies on line $\ell_2$
43 : $P_{665} = (8, 8, 1, 1)$ lies on line $\ell_2$
44 : $P_{666} = (9, 8, 1, 1)$ lies on line $\ell_3$
45 : $P_{681} = (8, 9, 1, 1)$ lies on line $\ell_3$
46 : $P_{682} = (9, 9, 1, 1)$ lies on line $\ell_2$
47 : $P_{699} = (10, 10, 1, 1)$ lies on line $\ell_2$
48 : $P_{700} = (11, 10, 1, 1)$ lies on line $\ell_3$
49 : $P_{715} = (10, 11, 1, 1)$ lies on line $\ell_3$
50 : $P_{716} = (11, 11, 1, 1)$ lies on line $\ell_2$
51 : $P_{733} = (12, 12, 1, 1)$ lies on line $\ell_2$
52 : $P_{734} = (13, 12, 1, 1)$ lies on line $\ell_3$
53 : $P_{749} = (12, 13, 1, 1)$ lies on line $\ell_3$
54 : $P_{750} = (13, 13, 1, 1)$ lies on line $\ell_2$
55 : $P_{767} = (14, 14, 1, 1)$ lies on line $\ell_2$
56 : $P_{768} = (15, 14, 1, 1)$ lies on line $\ell_3$
57 : $P_{783} = (14, 15, 1, 1)$ lies on line $\ell_3$
58 : $P_{784} = (15, 15, 1, 1)$ lies on line $\ell_2$
59 : $P_{820} = (3, 2, 2, 1)$ lies on line $\ell_4$
60 : $P_{835} = (2, 3, 2, 1)$ lies on line $\ell_5$
61 : $P_{1076} = (3, 2, 3, 1)$ lies on line $\ell_5$
62 : $P_{1091} = (2, 3, 3, 1)$ lies on line $\ell_4$
63 : $P_{1366} = (5, 4, 4, 1)$ lies on line $\ell_4$
64 : $P_{1381} = (4, 5, 4, 1)$ lies on line $\ell_5$
65 : $P_{1622} = (5, 4, 5, 1)$ lies on line $\ell_5$
66 : $P_{1637} = (4, 5, 5, 1)$ lies on line $\ell_4$
67 : $P_{1912} = (7, 6, 6, 1)$ lies on line $\ell_4$
68 : $P_{1927} = (6, 7, 6, 1)$ lies on line $\ell_5$
69 : $P_{2168} = (7, 6, 7, 1)$ lies on line $\ell_5$
70 : $P_{2183} = (6, 7, 7, 1)$ lies on line $\ell_4$
71 : $P_{2458} = (9, 8, 8, 1)$ lies on line $\ell_4$
72 : $P_{2473} = (8, 9, 8, 1)$ lies on line $\ell_5$
73 : $P_{2714} = (9, 8, 9, 1)$ lies on line $\ell_5$
74 : $P_{2729} = (8, 9, 9, 1)$ lies on line $\ell_4$
75 : $P_{3004} = (11, 10, 10, 1)$ lies on line $\ell_4$
76 : $P_{3019} = (10, 11, 10, 1)$ lies on line $\ell_5$
77 : $P_{3260} = (11, 10, 11, 1)$ lies on line $\ell_5$
78 : $P_{3275} = (10, 11, 11, 1)$ lies on line $\ell_4$
79 : $P_{3550} = (13, 12, 12, 1)$ lies on line $\ell_4$
80 : $P_{3565} = (12, 13, 12, 1)$ lies on line $\ell_5$
81 : $P_{3806} = (13, 12, 13, 1)$ lies on line $\ell_5$
82 : $P_{3821} = (12, 13, 13, 1)$ lies on line $\ell_4$
83 : $P_{4096} = (15, 14, 14, 1)$ lies on line $\ell_4$
84 : $P_{4111} = (14, 15, 14, 1)$ lies on line $\ell_5$
85 : $P_{4352} = (15, 14, 15, 1)$ lies on line $\ell_5$
86 : $P_{4367} = (14, 15, 15, 1)$ lies on line $\ell_4$

The single points on the surface are:

**Points on surface but on no line**

The surface has 211 points not on any line:
The points on the surface but not on lines are:

0 : $P_{20} = (1, 0, 1, 0)$
1 : $P_{117} = (2, 6, 1, 0)$
2 : $P_{128} = (13, 6, 1, 0)$
3 : $P_{140} = (9, 7, 1, 0)$
4 : $P_{143} = (12, 7, 1, 0)$
5 : $P_{182} = (3, 10, 1, 0)$
6 : $P_{187} = (8, 10, 1, 0)$
7 : $P_{200} = (5, 11, 1, 0)$
8 : $P_{210} = (15, 11, 1, 0)$
9 : $P_{217} = (6, 12, 1, 0)$
10 : $P_{225} = (14, 12, 1, 0)$
11 : $P_{231} = (4, 13, 1, 0)$
12 : $P_{234} = (7, 13, 1, 0)$
13 : $P_{319} = (13, 2, 0, 1)$
14 : $P_{335} = (13, 3, 0, 1)$
15 : $P_{345} = (7, 4, 0, 1)$
16 : $P_{361} = (7, 5, 0, 1)$
17 : $P_{381} = (11, 6, 0, 1)$
18 : $P_{397} = (11, 7, 0, 1)$
19 : $P_{414} = (12, 8, 0, 1)$
20 : $P_{430} = (12, 9, 0, 1)$
21 : $P_{434} = (0, 10, 0, 1)$
22 : $P_{450} = (0, 11, 0, 1)$
23 : $P_{476} = (10, 12, 0, 1)$
24 : $P_{492} = (10, 13, 0, 1)$
25 : $P_{504} = (6, 14, 0, 1)$
26 : $P_{520} = (6, 15, 0, 1)$
27 : $P_{798} = (13, 0, 2, 1)$
28 : $P_{824} = (7, 2, 2, 1)$
29 : $P_{874} = (9, 5, 2, 1)$

30 : $P_{875} = (10, 5, 2, 1)$
31 : $P_{967} = (6, 11, 2, 1)$
32 : $P_{975} = (14, 11, 2, 1)$
33 : $P_{997} = (4, 13, 2, 1)$
34 : $P_{1006} = (13, 13, 2, 1)$
35 : $P_{1010} = (1, 14, 2, 1)$
36 : $P_{1016} = (7, 14, 2, 1)$
37 : $P_{1028} = (3, 15, 2, 1)$
38 : $P_{1038} = (13, 15, 2, 1)$
39 : $P_{1054} = (13, 0, 3, 1)$
40 : $P_{1096} = (7, 3, 3, 1)$
41 : $P_{1154} = (1, 7, 3, 1)$
42 : $P_{1164} = (11, 7, 3, 1)$
43 : $P_{1174} = (5, 8, 3, 1)$
44 : $P_{1183} = (14, 8, 3, 1)$
45 : $P_{1258} = (9, 13, 3, 1)$
46 : $P_{1262} = (13, 13, 3, 1)$
47 : $P_{1267} = (2, 14, 3, 1)$
48 : $P_{1278} = (13, 14, 3, 1)$
49 : $P_{1304} = (7, 0, 4, 1)$
50 : $P_{1330} = (1, 2, 4, 1)$
51 : $P_{1341} = (12, 2, 4, 1)$
52 : $P_{1350} = (5, 3, 4, 1)$
53 : $P_{1352} = (7, 3, 4, 1)$
54 : $P_{1373} = (12, 4, 4, 1)$
55 : $P_{1416} = (7, 7, 4, 1)$
56 : $P_{1418} = (9, 7, 4, 1)$
57 : $P_{1436} = (11, 8, 4, 1)$
58 : $P_{1439} = (14, 8, 4, 1)$
59 : $P_{1459} = (2, 10, 4, 1)$
60 : $P_{1470} = (13, 10, 4, 1)$
61 : $P_{1560} = (7, 0, 5, 1)$
62 : $P_{1589} = (4, 2, 5, 1)$
63 : $P_{1592} = (7, 2, 5, 1)$
64 : $P_{1645} = (12, 5, 5, 1)$
65 : $P_{1672} = (7, 7, 5, 1)$
66 : $P_{1679} = (14, 7, 5, 1)$
67 : $P_{1746} = (1, 12, 5, 1)$
68 : $P_{1755} = (10, 12, 5, 1)$
69 : $P_{1795} = (2, 15, 5, 1)$
70 : $P_{1801} = (8, 15, 5, 1)$
71 : $P_{1820} = (11, 0, 6, 1)$
72 : $P_{1839} = (14, 1, 6, 1)$
73 : $P_{1840} = (15, 1, 6, 1)$
74 : $P_{1846} = (5, 2, 6, 1)$
75 : $P_{1855} = (14, 2, 6, 1)$
76 : $P_{1861} = (4, 3, 6, 1)$
77 : $P_{1867} = (10, 3, 6, 1)$
78 : $P_{1890} = (1, 5, 6, 1)$
79 : $P_{1903} = (14, 5, 6, 1)$
80 : $P_{1915} = (10, 6, 6, 1)$
81 : $P_{1943} = (6, 8, 6, 1)$
82 : $P_{1949} = (12, 8, 6, 1)$
83 : $P_{1956} = (3, 9, 6, 1)$
84 : $P_{1959} = (6, 9, 6, 1)$
85 : $P_{1987} = (2, 11, 6, 1)$
86 : $P_{1996} = (11, 11, 6, 1)$
87 : $P_{2024} = (7, 13, 6, 1)$
88 : $P_{2028} = (11, 13, 6, 1)$
89 : $P_{2076} = (11, 0, 7, 1)$
90 : $P_{2085} = (4, 1, 7, 1)$
91 : $P_{2086} = (5, 1, 7, 1)$
92 : $P_{2104} = (7, 2, 7, 1)$
93 : $P_{2105} = (8, 2, 7, 1)$
94 : $P_{2120} = (7, 3, 7, 1)$
95 : $P_{2126} = (13, 3, 7, 1)$
96 : $P_{2187} = (10, 7, 7, 1)$
97 : $P_{2203} = (10, 8, 7, 1)$
98 : $P_{2207} = (14, 8, 7, 1)$
99 : $P_{2213} = (4, 9, 7, 1)$
100 : $P_{2224} = (15, 9, 7, 1)$
101 : $P_{2250} = (9, 11, 7, 1)$
102 : $P_{2252} = (11, 11, 7, 1)$
103 : $P_{2263} = (6, 12, 7, 1)$
104 : $P_{2268} = (11, 12, 7, 1)$
105 : $P_{2306} = (1, 15, 7, 1)$
106 : $P_{2309} = (4, 15, 7, 1)$
107 : $P_{2333} = (12, 0, 8, 1)$
108 : $P_{2373} = (4, 3, 8, 1)$
109 : $P_{2384} = (15, 3, 8, 1)$
110 : $P_{2394} = (9, 4, 8, 1)$
111 : $P_{2397} = (12, 4, 8, 1)$
112 : $P_{2418} = (1, 6, 8, 1)$
113 : $P_{2428} = (11, 6, 8, 1)$
114 : $P_{2455} = (6, 8, 8, 1)$
115 : $P_{2515} = (2, 12, 8, 1)$
116 : $P_{2525} = (12, 12, 8, 1)$
117 : $P_{2589} = (12, 0, 9, 1)$
118 : $P_{2642} = (1, 4, 9, 1)$
119 : $P_{2647} = (6, 4, 9, 1)$
120 : $P_{2665} = (8, 5, 9, 1)$
121 : $P_{2669} = (12, 5, 9, 1)$
122 : $P_{2727} = (6, 9, 9, 1)$
123 : $P_{2757} = (4, 11, 9, 1)$
124 : $P_{2760} = (7, 11, 9, 1)$
125 : $P_{2781} = (12, 12, 9, 1)$
126 : $P_{2783} = (14, 12, 9, 1)$
127 : $P_{2819} = (2, 15, 9, 1)$
128 : $P_{2827} = (10, 15, 9, 1)$
129 : $P_{2833} = (0, 0, 10, 1)$
130 : $P_{2861} = (12, 1, 10, 1)$
131 : $P_{2862} = (13, 1, 10, 1)$
132 : $P_{2938} = (9, 6, 10, 1)$
133 : $P_{2939} = (10, 6, 10, 1)$
134 : $P_{2947} = (2, 7, 10, 1)$
135 : $P_{2955} = (10, 7, 10, 1)$
136 : $P_{2993} = (0, 10, 10, 1)$
137 : $P_{3028} = (3, 12, 10, 1)$

138 : $P_{3032} = (7, 12, 10, 1)$
139 : $P_{3047} = (6, 13, 10, 1)$
140 : $P_{3049} = (8, 13, 10, 1)$
141 : $P_{3089} = (0, 0, 11, 1)$
142 : $P_{3111} = (6, 1, 11, 1)$
143 : $P_{3112} = (7, 1, 11, 1)$
144 : $P_{3190} = (5, 6, 11, 1)$
145 : $P_{3197} = (12, 6, 11, 1)$
146 : $P_{3214} = (13, 7, 11, 1)$
147 : $P_{3216} = (15, 7, 11, 1)$
148 : $P_{3265} = (0, 11, 11, 1)$
149 : $P_{3285} = (4, 12, 11, 1)$
150 : $P_{3292} = (11, 12, 11, 1)$
151 : $P_{3308} = (11, 13, 11, 1)$
152 : $P_{3311} = (14, 13, 11, 1)$
153 : $P_{3355} = (10, 0, 12, 1)$
154 : $P_{3369} = (8, 1, 12, 1)$
155 : $P_{3370} = (9, 1, 12, 1)$
156 : $P_{3394} = (1, 3, 12, 1)$
157 : $P_{3402} = (9, 3, 12, 1)$
158 : $P_{3421} = (12, 4, 12, 1)$
159 : $P_{3424} = (15, 4, 12, 1)$
160 : $P_{3432} = (7, 5, 12, 1)$
161 : $P_{3437} = (12, 5, 12, 1)$
162 : $P_{3451} = (10, 6, 12, 1)$
163 : $P_{3454} = (13, 6, 12, 1)$
164 : $P_{3515} = (10, 10, 12, 1)$
165 : $P_{3519} = (14, 10, 12, 1)$
166 : $P_{3548} = (11, 12, 12, 1)$
167 : $P_{3572} = (3, 14, 12, 1)$
168 : $P_{3578} = (9, 14, 12, 1)$
169 : $P_{3587} = (2, 15, 12, 1)$
170 : $P_{3596} = (11, 15, 12, 1)$
171 : $P_{3611} = (10, 0, 13, 1)$
172 : $P_{3619} = (2, 1, 13, 1)$
173 : $P_{3620} = (3, 1, 13, 1)$
174 : $P_{3667} = (2, 4, 13, 1)$
175 : $P_{3673} = (8, 4, 13, 1)$
176 : $P_{3690} = (9, 5, 13, 1)$
177 : $P_{3692} = (11, 5, 13, 1)$
178 : $P_{3723} = (10, 7, 13, 1)$
179 : $P_{3725} = (12, 7, 13, 1)$
180 : $P_{3730} = (1, 8, 13, 1)$
181 : $P_{3731} = (2, 8, 13, 1)$
182 : $P_{3765} = (4, 10, 13, 1)$
183 : $P_{3771} = (10, 10, 13, 1)$
184 : $P_{3820} = (11, 13, 13, 1)$
185 : $P_{3830} = (5, 14, 13, 1)$
186 : $P_{3838} = (13, 14, 13, 1)$
187 : $P_{3847} = (6, 15, 13, 1)$
188 : $P_{3854} = (13, 15, 13, 1)$
189 : $P_{3863} = (6, 0, 14, 1)$
190 : $P_{3909} = (4, 3, 14, 1)$
191 : $P_{3916} = (11, 3, 14, 1)$
192 : $P_{3955} = (2, 6, 14, 1)$
193 : $P_{3959} = (6, 6, 14, 1)$
194 : $P_{3991} = (6, 8, 14, 1)$
195 : $P_{4000} = (15, 8, 14, 1)$
196 : $P_{4002} = (1, 9, 14, 1)$
197 : $P_{4014} = (13, 9, 14, 1)$
198 : $P_{4026} = (9, 10, 14, 1)$
199 : $P_{4029} = (12, 10, 14, 1)$
200 : $P_{4094} = (13, 14, 14, 1)$
201 : $P_{4119} = (6, 0, 15, 1)$
202 : $P_{4196} = (3, 5, 15, 1)$
203 : $P_{4202} = (9, 5, 15, 1)$
204 : $P_{4213} = (4, 6, 15, 1)$
205 : $P_{4215} = (6, 6, 15, 1)$
206 : $P_{4263} = (6, 9, 15, 1)$
207 : $P_{4271} = (14, 9, 15, 1)$
208 : $P_{4322} = (1, 13, 15, 1)$
209 : $P_{4331} = (10, 13, 15, 1)$
210 : $P_{4366} = (13, 15, 15, 1)$

## Line Intersection Graph

| | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 2 | 0 | 1 | 0 | 1 | 0 | 0 |
| 3 | 0 | 1 | 1 | 0 | 1 | 1 |
| 4 | 0 | 0 | 0 | 1 | 0 | 1 |
| 5 | 1 | 1 | 0 | 1 | 1 | 0 |

Neighbor sets in the line intersection graph:
Line 0 intersects

| Line | $\ell_1$ | $\ell_5$ |
|---|---|---|
| in point | $P_0$ | $P_{290}$ |

Line 1 intersects

| Line | $\ell_0$ | $\ell_2$ | $\ell_3$ | $\ell_5$ |
|---|---|---|---|---|
| in point | $P_0$ | $P_{530}$ | $P_{531}$ | $P_{531}$ |

Line 2 intersects

| Line | $\ell_1$ | $\ell_3$ |
|---|---|---|
| in point | $P_{530}$ | $P_5$ |

Line 3 intersects

| Line | $\ell_1$ | $\ell_2$ | $\ell_4$ | $\ell_5$ |
|---|---|---|---|---|
| in point | $P_{531}$ | $P_5$ | $P_{546}$ | $P_{531}$ |

Line 4 intersects

| Line | $\ell_3$ | $\ell_5$ |
|---|---|---|
| in point | $P_{546}$ | $P_{36}$ |

Line 5 intersects

| Line | $\ell_0$ | $\ell_1$ | $\ell_3$ | $\ell_4$ |
|---|---|---|---|---|
| in point | $P_{290}$ | $P_{531}$ | $P_{531}$ | $P_{36}$ |

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

0 : $P_0 = (1,0,0,0)$
1 : $P_4 = (1,1,1,1)$
2 : $P_5 = (1,1,0,0)$
3 : $P_{20} = (1,0,1,0)$
4 : $P_{36} = (1,1,1,0)$
5 : $P_{117} = (2,6,1,0)$
6 : $P_{128} = (13,6,1,0)$
7 : $P_{140} = (9,7,1,0)$
8 : $P_{143} = (12,7,1,0)$
9 : $P_{182} = (3,10,1,0)$
10 : $P_{187} = (8,10,1,0)$
11 : $P_{200} = (5,11,1,0)$
12 : $P_{210} = (15,11,1,0)$
13 : $P_{217} = (6,12,1,0)$
14 : $P_{225} = (14,12,1,0)$
15 : $P_{231} = (4,13,1,0)$
16 : $P_{234} = (7,13,1,0)$
17 : $P_{275} = (1,0,0,1)$
18 : $P_{290} = (0,1,0,1)$
19 : $P_{291} = (1,1,0,1)$
20 : $P_{292} = (2,1,0,1)$
21 : $P_{293} = (3,1,0,1)$
22 : $P_{294} = (4,1,0,1)$
23 : $P_{295} = (5,1,0,1)$
24 : $P_{296} = (6,1,0,1)$
25 : $P_{297} = (7,1,0,1)$
26 : $P_{298} = (8,1,0,1)$
27 : $P_{299} = (9,1,0,1)$
28 : $P_{300} = (10,1,0,1)$
29 : $P_{301} = (11,1,0,1)$
30 : $P_{302} = (12,1,0,1)$
31 : $P_{303} = (13,1,0,1)$
32 : $P_{304} = (14,1,0,1)$
33 : $P_{305} = (15,1,0,1)$
34 : $P_{319} = (13,2,0,1)$
35 : $P_{335} = (13,3,0,1)$
36 : $P_{345} = (7,4,0,1)$
37 : $P_{361} = (7,5,0,1)$
38 : $P_{381} = (11,6,0,1)$
39 : $P_{397} = (11,7,0,1)$
40 : $P_{414} = (12,8,0,1)$
41 : $P_{430} = (12,9,0,1)$
42 : $P_{434} = (0,10,0,1)$
43 : $P_{450} = (0,11,0,1)$
44 : $P_{476} = (10,12,0,1)$
45 : $P_{492} = (10,13,0,1)$
46 : $P_{504} = (6,14,0,1)$
47 : $P_{520} = (6,15,0,1)$
48 : $P_{530} = (0,0,1,1)$
49 : $P_{531} = (1,0,1,1)$
50 : $P_{532} = (2,0,1,1)$
51 : $P_{533} = (3,0,1,1)$
52 : $P_{534} = (4,0,1,1)$
53 : $P_{535} = (5,0,1,1)$
54 : $P_{536} = (6,0,1,1)$
55 : $P_{537} = (7,0,1,1)$
56 : $P_{538} = (8,0,1,1)$
57 : $P_{539} = (9,0,1,1)$
58 : $P_{540} = (10,0,1,1)$
59 : $P_{541} = (11,0,1,1)$
60 : $P_{542} = (12,0,1,1)$
61 : $P_{543} = (13,0,1,1)$
62 : $P_{544} = (14,0,1,1)$
63 : $P_{545} = (15,0,1,1)$
64 : $P_{546} = (0,1,1,1)$
65 : $P_{563} = (2,2,1,1)$
66 : $P_{564} = (3,2,1,1)$
67 : $P_{579} = (2,3,1,1)$
68 : $P_{580} = (3,3,1,1)$
69 : $P_{597} = (4,4,1,1)$
70 : $P_{598} = (5,4,1,1)$
71 : $P_{613} = (4,5,1,1)$
72 : $P_{614} = (5,5,1,1)$
73 : $P_{631} = (6,6,1,1)$
74 : $P_{632} = (7,6,1,1)$
75 : $P_{647} = (6,7,1,1)$
76 : $P_{648} = (7,7,1,1)$
77 : $P_{665} = (8,8,1,1)$
78 : $P_{666} = (9,8,1,1)$
79 : $P_{681} = (8,9,1,1)$
80 : $P_{682} = (9,9,1,1)$
81 : $P_{699} = (10,10,1,1)$
82 : $P_{700} = (11,10,1,1)$
83 : $P_{715} = (10,11,1,1)$
84 : $P_{716} = (11,11,1,1)$
85 : $P_{733} = (12,12,1,1)$
86 : $P_{734} = (13,12,1,1)$
87 : $P_{749} = (12,13,1,1)$
88 : $P_{750} = (13,13,1,1)$
89 : $P_{767} = (14,14,1,1)$
90 : $P_{768} = (15,14,1,1)$
91 : $P_{783} = (14,15,1,1)$
92 : $P_{784} = (15,15,1,1)$
93 : $P_{798} = (13,0,2,1)$
94 : $P_{820} = (3,2,2,1)$
95 : $P_{824} = (7,2,2,1)$
96 : $P_{835} = (2,3,2,1)$
97 : $P_{874} = (9,5,2,1)$
98 : $P_{875} = (10,5,2,1)$
99 : $P_{967} = (6,11,2,1)$
100 : $P_{975} = (14,11,2,1)$
101 : $P_{997} = (4,13,2,1)$
102 : $P_{1006} = (13,13,2,1)$
103 : $P_{1010} = (1,14,2,1)$
104 : $P_{1016} = (7,14,2,1)$
105 : $P_{1028} = (3,15,2,1)$
106 : $P_{1038} = (13,15,2,1)$
107 : $P_{1054} = (13,0,3,1)$
108 : $P_{1076} = (3,2,3,1)$
109 : $P_{1091} = (2,3,3,1)$
110 : $P_{1096} = (7,3,3,1)$

111 : $P_{1154} = (1, 7, 3, 1)$
112 : $P_{1164} = (11, 7, 3, 1)$
113 : $P_{1174} = (5, 8, 3, 1)$
114 : $P_{1183} = (14, 8, 3, 1)$
115 : $P_{1258} = (9, 13, 3, 1)$
116 : $P_{1262} = (13, 13, 3, 1)$
117 : $P_{1267} = (2, 14, 3, 1)$
118 : $P_{1278} = (13, 14, 3, 1)$
119 : $P_{1304} = (7, 0, 4, 1)$
120 : $P_{1330} = (1, 2, 4, 1)$
121 : $P_{1341} = (12, 2, 4, 1)$
122 : $P_{1350} = (5, 3, 4, 1)$
123 : $P_{1352} = (7, 3, 4, 1)$
124 : $P_{1366} = (5, 4, 4, 1)$
125 : $P_{1373} = (12, 4, 4, 1)$
126 : $P_{1381} = (4, 5, 4, 1)$
127 : $P_{1416} = (7, 7, 4, 1)$
128 : $P_{1418} = (9, 7, 4, 1)$
129 : $P_{1436} = (11, 8, 4, 1)$
130 : $P_{1439} = (14, 8, 4, 1)$
131 : $P_{1459} = (2, 10, 4, 1)$
132 : $P_{1470} = (13, 10, 4, 1)$
133 : $P_{1560} = (7, 0, 5, 1)$
134 : $P_{1589} = (4, 2, 5, 1)$
135 : $P_{1592} = (7, 2, 5, 1)$
136 : $P_{1622} = (5, 4, 5, 1)$
137 : $P_{1637} = (4, 5, 5, 1)$
138 : $P_{1645} = (12, 5, 5, 1)$
139 : $P_{1672} = (7, 7, 5, 1)$
140 : $P_{1679} = (14, 7, 5, 1)$
141 : $P_{1746} = (1, 12, 5, 1)$
142 : $P_{1755} = (10, 12, 5, 1)$
143 : $P_{1795} = (2, 15, 5, 1)$
144 : $P_{1801} = (8, 15, 5, 1)$
145 : $P_{1820} = (11, 0, 6, 1)$
146 : $P_{1839} = (14, 1, 6, 1)$
147 : $P_{1840} = (15, 1, 6, 1)$
148 : $P_{1846} = (5, 2, 6, 1)$
149 : $P_{1855} = (14, 2, 6, 1)$
150 : $P_{1861} = (4, 3, 6, 1)$
151 : $P_{1867} = (10, 3, 6, 1)$
152 : $P_{1890} = (1, 5, 6, 1)$
153 : $P_{1903} = (14, 5, 6, 1)$
154 : $P_{1912} = (7, 6, 6, 1)$
155 : $P_{1915} = (10, 6, 6, 1)$
156 : $P_{1927} = (6, 7, 6, 1)$
157 : $P_{1943} = (6, 8, 6, 1)$
158 : $P_{1949} = (12, 8, 6, 1)$
159 : $P_{1956} = (3, 9, 6, 1)$
160 : $P_{1959} = (6, 9, 6, 1)$
161 : $P_{1987} = (2, 11, 6, 1)$
162 : $P_{1996} = (11, 11, 6, 1)$
163 : $P_{2024} = (7, 13, 6, 1)$
164 : $P_{2028} = (11, 13, 6, 1)$
165 : $P_{2076} = (11, 0, 7, 1)$
166 : $P_{2085} = (4, 1, 7, 1)$
167 : $P_{2086} = (5, 1, 7, 1)$
168 : $P_{2104} = (7, 2, 7, 1)$
169 : $P_{2105} = (8, 2, 7, 1)$
170 : $P_{2120} = (7, 3, 7, 1)$
171 : $P_{2126} = (13, 3, 7, 1)$
172 : $P_{2168} = (7, 6, 7, 1)$
173 : $P_{2183} = (6, 7, 7, 1)$
174 : $P_{2187} = (10, 7, 7, 1)$
175 : $P_{2203} = (10, 8, 7, 1)$
176 : $P_{2207} = (14, 8, 7, 1)$
177 : $P_{2213} = (4, 9, 7, 1)$
178 : $P_{2224} = (15, 9, 7, 1)$
179 : $P_{2250} = (9, 11, 7, 1)$
180 : $P_{2252} = (11, 11, 7, 1)$
181 : $P_{2263} = (6, 12, 7, 1)$
182 : $P_{2268} = (11, 12, 7, 1)$
183 : $P_{2306} = (1, 15, 7, 1)$
184 : $P_{2309} = (4, 15, 7, 1)$
185 : $P_{2333} = (12, 0, 8, 1)$
186 : $P_{2373} = (4, 3, 8, 1)$
187 : $P_{2384} = (15, 3, 8, 1)$
188 : $P_{2394} = (9, 4, 8, 1)$
189 : $P_{2397} = (12, 4, 8, 1)$
190 : $P_{2418} = (1, 6, 8, 1)$
191 : $P_{2428} = (11, 6, 8, 1)$
192 : $P_{2455} = (6, 8, 8, 1)$
193 : $P_{2458} = (9, 8, 8, 1)$
194 : $P_{2473} = (8, 9, 8, 1)$
195 : $P_{2515} = (2, 12, 8, 1)$
196 : $P_{2525} = (12, 12, 8, 1)$
197 : $P_{2589} = (12, 0, 9, 1)$
198 : $P_{2642} = (1, 4, 9, 1)$
199 : $P_{2647} = (6, 4, 9, 1)$
200 : $P_{2665} = (8, 5, 9, 1)$
201 : $P_{2669} = (12, 5, 9, 1)$
202 : $P_{2714} = (9, 8, 9, 1)$
203 : $P_{2727} = (6, 9, 9, 1)$
204 : $P_{2729} = (8, 9, 9, 1)$
205 : $P_{2757} = (4, 11, 9, 1)$
206 : $P_{2760} = (7, 11, 9, 1)$
207 : $P_{2781} = (12, 12, 9, 1)$
208 : $P_{2783} = (14, 12, 9, 1)$
209 : $P_{2819} = (2, 15, 9, 1)$
210 : $P_{2827} = (10, 15, 9, 1)$
211 : $P_{2833} = (0, 0, 10, 1)$
212 : $P_{2861} = (12, 1, 10, 1)$
213 : $P_{2862} = (13, 1, 10, 1)$
214 : $P_{2938} = (9, 6, 10, 1)$
215 : $P_{2939} = (10, 6, 10, 1)$
216 : $P_{2947} = (2, 7, 10, 1)$
217 : $P_{2955} = (10, 7, 10, 1)$
218 : $P_{2993} = (0, 10, 10, 1)$
219 : $P_{3004} = (11, 10, 10, 1)$
220 : $P_{3019} = (10, 11, 10, 1)$
221 : $P_{3028} = (3, 12, 10, 1)$
222 : $P_{3032} = (7, 12, 10, 1)$
223 : $P_{3047} = (6, 13, 10, 1)$
224 : $P_{3049} = (8, 13, 10, 1)$
225 : $P_{3089} = (0, 0, 11, 1)$
226 : $P_{3111} = (6, 1, 11, 1)$
227 : $P_{3112} = (7, 1, 11, 1)$
228 : $P_{3190} = (5, 6, 11, 1)$
229 : $P_{3197} = (12, 6, 11, 1)$
230 : $P_{3214} = (13, 7, 11, 1)$
231 : $P_{3216} = (15, 7, 11, 1)$
232 : $P_{3260} = (11, 10, 11, 1)$
233 : $P_{3265} = (0, 11, 11, 1)$
234 : $P_{3275} = (10, 11, 11, 1)$
235 : $P_{3285} = (4, 12, 11, 1)$
236 : $P_{3292} = (11, 12, 11, 1)$
237 : $P_{3308} = (11, 13, 11, 1)$
238 : $P_{3311} = (14, 13, 11, 1)$
239 : $P_{3355} = (10, 0, 12, 1)$
240 : $P_{3369} = (8, 1, 12, 1)$
241 : $P_{3370} = (9, 1, 12, 1)$
242 : $P_{3394} = (1, 3, 12, 1)$
243 : $P_{3402} = (9, 3, 12, 1)$
244 : $P_{3421} = (12, 4, 12, 1)$
245 : $P_{3424} = (15, 4, 12, 1)$
246 : $P_{3432} = (7, 5, 12, 1)$
247 : $P_{3437} = (12, 5, 12, 1)$
248 : $P_{3451} = (10, 6, 12, 1)$
249 : $P_{3454} = (13, 6, 12, 1)$
250 : $P_{3515} = (10, 10, 12, 1)$
251 : $P_{3519} = (14, 10, 12, 1)$
252 : $P_{3548} = (11, 12, 12, 1)$
253 : $P_{3550} = (13, 12, 12, 1)$
254 : $P_{3565} = (12, 13, 12, 1)$
255 : $P_{3572} = (3, 14, 12, 1)$
256 : $P_{3578} = (9, 14, 12, 1)$
257 : $P_{3587} = (2, 15, 12, 1)$
258 : $P_{3596} = (11, 15, 12, 1)$
259 : $P_{3611} = (10, 0, 13, 1)$
260 : $P_{3619} = (2, 1, 13, 1)$
261 : $P_{3620} = (3, 1, 13, 1)$
262 : $P_{3667} = (2, 4, 13, 1)$
263 : $P_{3673} = (8, 4, 13, 1)$
264 : $P_{3690} = (9, 5, 13, 1)$
265 : $P_{3692} = (11, 5, 13, 1)$
266 : $P_{3723} = (10, 7, 13, 1)$
267 : $P_{3725} = (12, 7, 13, 1)$
268 : $P_{3730} = (1, 8, 13, 1)$
269 : $P_{3731} = (2, 8, 13, 1)$
270 : $P_{3765} = (4, 10, 13, 1)$
271 : $P_{3771} = (10, 10, 13, 1)$
272 : $P_{3806} = (13, 12, 13, 1)$

$273: P_{3820} = (11, 13, 13, 1)$
$274: P_{3821} = (12, 13, 13, 1)$
$275: P_{3830} = (5, 14, 13, 1)$
$276: P_{3838} = (13, 14, 13, 1)$
$277: P_{3847} = (6, 15, 13, 1)$
$278: P_{3854} = (13, 15, 13, 1)$
$279: P_{3863} = (6, 0, 14, 1)$
$280: P_{3909} = (4, 3, 14, 1)$
$281: P_{3916} = (11, 3, 14, 1)$
$282: P_{3955} = (2, 6, 14, 1)$
$283: P_{3959} = (6, 6, 14, 1)$
$284: P_{3991} = (6, 8, 14, 1)$
$285: P_{4000} = (15, 8, 14, 1)$
$286: P_{4002} = (1, 9, 14, 1)$
$287: P_{4014} = (13, 9, 14, 1)$
$288: P_{4026} = (9, 10, 14, 1)$
$289: P_{4029} = (12, 10, 14, 1)$
$290: P_{4094} = (13, 14, 14, 1)$
$291: P_{4096} = (15, 14, 14, 1)$
$292: P_{4111} = (14, 15, 14, 1)$
$293: P_{4119} = (6, 0, 15, 1)$
$294: P_{4196} = (3, 5, 15, 1)$
$295: P_{4202} = (9, 5, 15, 1)$
$296: P_{4213} = (4, 6, 15, 1)$
$297: P_{4215} = (6, 6, 15, 1)$
$298: P_{4263} = (6, 9, 15, 1)$
$299: P_{4271} = (14, 9, 15, 1)$
$300: P_{4322} = (1, 13, 15, 1)$
$301: P_{4331} = (10, 13, 15, 1)$
$302: P_{4352} = (15, 14, 15, 1)$
$303: P_{4366} = (13, 15, 15, 1)$
$304: P_{4367} = (14, 15, 15, 1)$