

Rank-74276 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0)

The point rank of the equation over GF(16) is 287379734

General information

Number of lines	6
Number of points	305
Number of singular points	1
Number of Eckardt points	0
Number of double points	4
Number of single points	90
Number of points off lines	210
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17^6
Type of lines on points	$4, 2^4, 1^{90}, 0^{210}$

Singular Points

The surface has 1 singular points:

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

The 6 Lines

The lines and their Pluecker coordinates are:

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

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70160} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{70160} = \mathbf{Pl}(0, 1, 0, 0, 0, 0)_1 \\
\ell_2 &= \begin{bmatrix} 1 & 1 & 0 & \delta^5 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{48577} = \begin{bmatrix} 1 & 1 & 0 & 11 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{48577} = \mathbf{Pl}(0, 11, 1, 0, 0, 1)_{4682} \\
\ell_3 &= \begin{bmatrix} 1 & 1 & 0 & \delta^{10} \\ 0 & 0 & 1 & 0 \end{bmatrix}_{44209} = \begin{bmatrix} 1 & 1 & 0 & 10 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{44209} = \mathbf{Pl}(0, 10, 1, 0, 0, 1)_{4681} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & \delta^5 & \delta^5 \\ 0 & 1 & \delta^5 & 0 \end{bmatrix}_{51062} = \begin{bmatrix} 1 & 0 & 11 & 11 \\ 0 & 1 & 11 & 0 \end{bmatrix}_{51062} = \mathbf{Pl}(10, 11, 1, 1, 0, 1)_{5595} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & \delta^{10} & \delta^{10} \\ 0 & 1 & \delta^{10} & 0 \end{bmatrix}_{46420} = \begin{bmatrix} 1 & 0 & 10 & 10 \\ 0 & 1 & 10 & 0 \end{bmatrix}_{46420} = \mathbf{Pl}(11, 10, 1, 1, 0, 1)_{5596}
\end{aligned}$$

Rank of lines: (69888, 70160, 48577, 44209, 51062, 46420)

Rank of points on Klein quadric: (4625, 1, 4682, 4681, 5595, 5596)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 4 Double points:

The double points on the surface are:

$$\begin{aligned}
P_{179} &= (0, 10, 1, 0) = \ell_0 \cap \ell_4 \\
P_{195} &= (0, 11, 1, 0) = \ell_0 \cap \ell_5 \\
P_{444} &= (10, 10, 0, 1) = \ell_2 \cap \ell_4
\end{aligned}$$

$$P_{461} = (11, 11, 0, 1) = \ell_3 \cap \ell_5$$

Single Points

The surface has 90 single points:

The single points on the surface are:

- 0 : $P_1 = (0, 1, 0, 0)$ lies on line ℓ_0
- 1 : $P_3 = (0, 0, 0, 1)$ lies on line ℓ_1
- 2 : $P_{35} = (0, 1, 1, 0)$ lies on line ℓ_0
- 3 : $P_{51} = (0, 2, 1, 0)$ lies on line ℓ_0
- 4 : $P_{67} = (0, 3, 1, 0)$ lies on line ℓ_0
- 5 : $P_{83} = (0, 4, 1, 0)$ lies on line ℓ_0
- 6 : $P_{99} = (0, 5, 1, 0)$ lies on line ℓ_0
- 7 : $P_{115} = (0, 6, 1, 0)$ lies on line ℓ_0
- 8 : $P_{131} = (0, 7, 1, 0)$ lies on line ℓ_0
- 9 : $P_{147} = (0, 8, 1, 0)$ lies on line ℓ_0
- 10 : $P_{163} = (0, 9, 1, 0)$ 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 : $P_{530} = (0, 0, 1, 1)$ lies on line ℓ_1
- 16 : $P_{540} = (10, 0, 1, 1)$ lies on line ℓ_4

- 17 : $P_{541} = (11, 0, 1, 1)$ lies on line ℓ_5
- 18 : $P_{699} = (10, 10, 1, 1)$ lies on line ℓ_2
- 19 : $P_{716} = (11, 11, 1, 1)$ lies on line ℓ_3
- 20 : $P_{785} = (0, 0, 2, 1)$ lies on line ℓ_1
- 21 : $P_{860} = (11, 4, 2, 1)$ lies on line ℓ_5
- 22 : $P_{907} = (10, 7, 2, 1)$ lies on line ℓ_4
- 23 : $P_{955} = (10, 10, 2, 1)$ lies on line ℓ_2
- 24 : $P_{972} = (11, 11, 2, 1)$ lies on line ℓ_3
- 25 : $P_{1041} = (0, 0, 3, 1)$ lies on line ℓ_1
- 26 : $P_{1211} = (10, 10, 3, 1)$ lies on line ℓ_2
- 27 : $P_{1228} = (11, 11, 3, 1)$ lies on line ℓ_3
- 28 : $P_{1259} = (10, 13, 3, 1)$ lies on line ℓ_4
- 29 : $P_{1292} = (11, 15, 3, 1)$ lies on line ℓ_5
- 30 : $P_{1297} = (0, 0, 4, 1)$ lies on line ℓ_1
- 31 : $P_{1451} = (10, 9, 4, 1)$ lies on line ℓ_4
- 32 : $P_{1467} = (10, 10, 4, 1)$ lies on line ℓ_2
- 33 : $P_{1484} = (11, 11, 4, 1)$ lies on line ℓ_3

34 : $P_{1500} = (11, 12, 4, 1)$ lies on line ℓ_5
 35 : $P_{1553} = (0, 0, 5, 1)$ lies on line ℓ_1
 36 : $P_{1611} = (10, 3, 5, 1)$ lies on line ℓ_4
 37 : $P_{1676} = (11, 7, 5, 1)$ lies on line ℓ_5
 38 : $P_{1723} = (10, 10, 5, 1)$ lies on line ℓ_2
 39 : $P_{1740} = (11, 11, 5, 1)$ lies on line ℓ_3
 40 : $P_{1809} = (0, 0, 6, 1)$ lies on line ℓ_1
 41 : $P_{1868} = (11, 3, 6, 1)$ lies on line ℓ_5
 42 : $P_{1883} = (10, 4, 6, 1)$ lies on line ℓ_4
 43 : $P_{1979} = (10, 10, 6, 1)$ lies on line ℓ_2
 44 : $P_{1996} = (11, 11, 6, 1)$ lies on line ℓ_3
 45 : $P_{2065} = (0, 0, 7, 1)$ lies on line ℓ_1
 46 : $P_{2204} = (11, 8, 7, 1)$ lies on line ℓ_5
 47 : $P_{2235} = (10, 10, 7, 1)$ lies on line ℓ_2
 48 : $P_{2252} = (11, 11, 7, 1)$ lies on line ℓ_3
 49 : $P_{2299} = (10, 14, 7, 1)$ lies on line ℓ_4
 50 : $P_{2321} = (0, 0, 8, 1)$ lies on line ℓ_1
 51 : $P_{2412} = (11, 5, 8, 1)$ lies on line ℓ_5
 52 : $P_{2491} = (10, 10, 8, 1)$ lies on line ℓ_2
 53 : $P_{2508} = (11, 11, 8, 1)$ lies on line ℓ_3
 54 : $P_{2523} = (10, 12, 8, 1)$ lies on line ℓ_4
 55 : $P_{2577} = (0, 0, 9, 1)$ lies on line ℓ_1
 56 : $P_{2683} = (10, 6, 9, 1)$ lies on line ℓ_4
 57 : $P_{2747} = (10, 10, 9, 1)$ lies on line ℓ_2
 58 : $P_{2764} = (11, 11, 9, 1)$ lies on line ℓ_3
 59 : $P_{2812} = (11, 14, 9, 1)$ lies on line ℓ_5
 60 : $P_{2833} = (0, 0, 10, 1)$ lies on line ℓ_1
 61 : $P_{2859} = (10, 1, 10, 1)$ lies on line ℓ_4
 62 : $P_{3003} = (10, 10, 10, 1)$ lies on line ℓ_2

63 : $P_{3004} = (11, 10, 10, 1)$ lies on line ℓ_5
 64 : $P_{3020} = (11, 11, 10, 1)$ lies on line ℓ_3
 65 : $P_{3089} = (0, 0, 11, 1)$ lies on line ℓ_1
 66 : $P_{3116} = (11, 1, 11, 1)$ lies on line ℓ_5
 67 : $P_{3259} = (10, 10, 11, 1)$ lies on line ℓ_2
 68 : $P_{3275} = (10, 11, 11, 1)$ lies on line ℓ_4
 69 : $P_{3276} = (11, 11, 11, 1)$ lies on line ℓ_3
 70 : $P_{3345} = (0, 0, 12, 1)$ lies on line ℓ_1
 71 : $P_{3388} = (11, 2, 12, 1)$ lies on line ℓ_5
 72 : $P_{3515} = (10, 10, 12, 1)$ lies on line ℓ_2
 73 : $P_{3532} = (11, 11, 12, 1)$ lies on line ℓ_3
 74 : $P_{3595} = (10, 15, 12, 1)$ lies on line ℓ_4
 75 : $P_{3601} = (0, 0, 13, 1)$ lies on line ℓ_1
 76 : $P_{3691} = (10, 5, 13, 1)$ lies on line ℓ_4
 77 : $P_{3756} = (11, 9, 13, 1)$ lies on line ℓ_5
 78 : $P_{3771} = (10, 10, 13, 1)$ lies on line ℓ_2
 79 : $P_{3788} = (11, 11, 13, 1)$ lies on line ℓ_3
 80 : $P_{3857} = (0, 0, 14, 1)$ lies on line ℓ_1
 81 : $P_{3899} = (10, 2, 14, 1)$ lies on line ℓ_4
 82 : $P_{4027} = (10, 10, 14, 1)$ lies on line ℓ_2
 83 : $P_{4044} = (11, 11, 14, 1)$ lies on line ℓ_3
 84 : $P_{4076} = (11, 13, 14, 1)$ lies on line ℓ_5
 85 : $P_{4113} = (0, 0, 15, 1)$ lies on line ℓ_1
 86 : $P_{4220} = (11, 6, 15, 1)$ lies on line ℓ_5
 87 : $P_{4251} = (10, 8, 15, 1)$ lies on line ℓ_4
 88 : $P_{4283} = (10, 10, 15, 1)$ lies on line ℓ_2
 89 : $P_{4300} = (11, 11, 15, 1)$ lies on line ℓ_3

The single points on the surface are:

Points on surface but on no line

The surface has 210 points not on any line:

The points on the surface but not on lines are:

0 : $P_{20} = (1, 0, 1, 0)$	15 : $P_{275} = (1, 0, 0, 1)$
1 : $P_{45} = (10, 1, 1, 0)$	16 : $P_{335} = (13, 3, 0, 1)$
2 : $P_{46} = (11, 1, 1, 0)$	17 : $P_{361} = (7, 5, 0, 1)$
3 : $P_{117} = (2, 6, 1, 0)$	18 : $P_{378} = (8, 6, 0, 1)$
4 : $P_{118} = (3, 6, 1, 0)$	19 : $P_{389} = (3, 7, 0, 1)$
5 : $P_{139} = (8, 7, 1, 0)$	20 : $P_{414} = (12, 8, 0, 1)$
6 : $P_{140} = (9, 7, 1, 0)$	21 : $P_{438} = (4, 10, 0, 1)$
7 : $P_{191} = (12, 10, 1, 0)$	22 : $P_{448} = (14, 10, 0, 1)$
8 : $P_{192} = (13, 10, 1, 0)$	23 : $P_{452} = (2, 11, 0, 1)$
9 : $P_{201} = (6, 11, 1, 0)$	24 : $P_{459} = (9, 11, 0, 1)$
10 : $P_{202} = (7, 11, 1, 0)$	25 : $P_{471} = (5, 12, 0, 1)$
11 : $P_{225} = (14, 12, 1, 0)$	26 : $P_{497} = (15, 13, 0, 1)$
12 : $P_{226} = (15, 12, 1, 0)$	27 : $P_{520} = (6, 15, 0, 1)$
13 : $P_{231} = (4, 13, 1, 0)$	28 : $P_{566} = (5, 2, 1, 1)$
14 : $P_{232} = (5, 13, 1, 0)$	29 : $P_{601} = (8, 4, 1, 1)$

30 : $P_{640} = (15, 6, 1, 1)$	84 : $P_{1939} = (2, 8, 6, 1)$
31 : $P_{646} = (5, 7, 1, 1)$	85 : $P_{1960} = (7, 9, 6, 1)$
32 : $P_{688} = (15, 9, 1, 1)$	86 : $P_{1988} = (3, 11, 6, 1)$
33 : $P_{690} = (1, 10, 1, 1)$	87 : $P_{1999} = (14, 11, 6, 1)$
34 : $P_{706} = (1, 11, 1, 1)$	88 : $P_{2025} = (8, 13, 6, 1)$
35 : $P_{729} = (8, 12, 1, 1)$	89 : $P_{2057} = (8, 15, 6, 1)$
36 : $P_{740} = (3, 13, 1, 1)$	90 : $P_{2083} = (2, 1, 7, 1)$
37 : $P_{756} = (3, 14, 1, 1)$	91 : $P_{2089} = (8, 1, 7, 1)$
38 : $P_{789} = (4, 0, 2, 1)$	92 : $P_{2094} = (13, 1, 7, 1)$
39 : $P_{791} = (6, 0, 2, 1)$	93 : $P_{2103} = (6, 2, 7, 1)$
40 : $P_{866} = (1, 5, 2, 1)$	94 : $P_{2122} = (9, 3, 7, 1)$
41 : $P_{898} = (1, 7, 2, 1)$	95 : $P_{2148} = (3, 5, 7, 1)$
42 : $P_{906} = (9, 7, 2, 1)$	96 : $P_{2173} = (12, 6, 7, 1)$
43 : $P_{917} = (4, 8, 2, 1)$	97 : $P_{2215} = (6, 9, 7, 1)$
44 : $P_{983} = (6, 12, 2, 1)$	98 : $P_{2221} = (12, 9, 7, 1)$
45 : $P_{986} = (9, 12, 2, 1)$	99 : $P_{2222} = (13, 9, 7, 1)$
46 : $P_{990} = (13, 12, 2, 1)$	100 : $P_{2245} = (4, 11, 7, 1)$
47 : $P_{1038} = (13, 15, 2, 1)$	101 : $P_{2249} = (8, 11, 7, 1)$
48 : $P_{1110} = (5, 4, 3, 1)$	102 : $P_{2260} = (3, 12, 7, 1)$
49 : $P_{1114} = (9, 4, 3, 1)$	103 : $P_{2293} = (4, 14, 7, 1)$
50 : $P_{1120} = (15, 4, 3, 1)$	104 : $P_{2298} = (9, 14, 7, 1)$
51 : $P_{1134} = (13, 5, 3, 1)$	105 : $P_{2307} = (2, 15, 7, 1)$
52 : $P_{1146} = (9, 6, 3, 1)$	106 : $P_{2435} = (2, 7, 8, 1)$
53 : $P_{1222} = (5, 11, 3, 1)$	107 : $P_{2509} = (12, 11, 8, 1)$
54 : $P_{1230} = (13, 11, 3, 1)$	108 : $P_{2512} = (15, 11, 8, 1)$
55 : $P_{1248} = (15, 12, 3, 1)$	109 : $P_{2534} = (5, 13, 8, 1)$
56 : $P_{1306} = (9, 0, 4, 1)$	110 : $P_{2547} = (2, 14, 8, 1)$
57 : $P_{1310} = (13, 0, 4, 1)$	111 : $P_{2550} = (5, 14, 8, 1)$
58 : $P_{1352} = (7, 3, 4, 1)$	112 : $P_{2560} = (15, 14, 8, 1)$
59 : $P_{1400} = (7, 6, 4, 1)$	113 : $P_{2573} = (12, 15, 8, 1)$
60 : $P_{1406} = (13, 6, 4, 1)$	114 : $P_{2584} = (7, 0, 9, 1)$
61 : $P_{1407} = (14, 6, 4, 1)$	115 : $P_{2591} = (14, 0, 9, 1)$
62 : $P_{1426} = (1, 8, 4, 1)$	116 : $P_{2639} = (14, 3, 9, 1)$
63 : $P_{1490} = (1, 12, 4, 1)$	117 : $P_{2669} = (12, 5, 9, 1)$
64 : $P_{1503} = (14, 12, 4, 1)$	118 : $P_{2674} = (1, 6, 9, 1)$
65 : $P_{1546} = (9, 15, 4, 1)$	119 : $P_{2675} = (2, 6, 9, 1)$
66 : $P_{1652} = (3, 6, 5, 1)$	120 : $P_{2787} = (2, 13, 9, 1)$
67 : $P_{1688} = (7, 8, 5, 1)$	121 : $P_{2792} = (7, 13, 9, 1)$
68 : $P_{1700} = (3, 9, 5, 1)$	122 : $P_{2797} = (12, 13, 9, 1)$
69 : $P_{1705} = (8, 9, 5, 1)$	123 : $P_{2818} = (1, 15, 9, 1)$
70 : $P_{1711} = (14, 9, 5, 1)$	124 : $P_{2838} = (5, 0, 10, 1)$
71 : $P_{1720} = (7, 10, 5, 1)$	125 : $P_{2848} = (15, 0, 10, 1)$
72 : $P_{1721} = (8, 10, 5, 1)$	126 : $P_{2880} = (15, 2, 10, 1)$
73 : $P_{1775} = (14, 13, 5, 1)$	127 : $P_{2889} = (8, 3, 10, 1)$
74 : $P_{1828} = (3, 1, 6, 1)$	128 : $P_{2898} = (1, 4, 10, 1)$
75 : $P_{1834} = (9, 1, 6, 1)$	129 : $P_{2917} = (4, 5, 10, 1)$
76 : $P_{1837} = (12, 1, 6, 1)$	130 : $P_{2919} = (6, 5, 10, 1)$
77 : $P_{1848} = (7, 2, 6, 1)$	131 : $P_{2921} = (8, 5, 10, 1)$
78 : $P_{1853} = (12, 2, 6, 1)$	132 : $P_{2933} = (4, 6, 10, 1)$
79 : $P_{1854} = (13, 2, 6, 1)$	133 : $P_{2959} = (14, 7, 10, 1)$
80 : $P_{1875} = (2, 4, 6, 1)$	134 : $P_{2964} = (3, 8, 10, 1)$
81 : $P_{1887} = (14, 4, 6, 1)$	135 : $P_{2982} = (5, 9, 10, 1)$
82 : $P_{1898} = (9, 5, 6, 1)$	136 : $P_{3015} = (6, 11, 10, 1)$
83 : $P_{1934} = (13, 7, 6, 1)$	137 : $P_{3016} = (7, 11, 10, 1)$

138 : $P_{3058} = (1, 14, 10, 1)$
 139 : $P_{3076} = (3, 15, 10, 1)$
 140 : $P_{3080} = (7, 15, 10, 1)$
 141 : $P_{3087} = (14, 15, 10, 1)$
 142 : $P_{3092} = (3, 0, 11, 1)$
 143 : $P_{3097} = (8, 0, 11, 1)$
 144 : $P_{3122} = (1, 2, 11, 1)$
 145 : $P_{3139} = (2, 3, 11, 1)$
 146 : $P_{3142} = (5, 3, 11, 1)$
 147 : $P_{3149} = (12, 3, 11, 1)$
 148 : $P_{3156} = (3, 4, 11, 1)$
 149 : $P_{3184} = (15, 5, 11, 1)$
 150 : $P_{3226} = (9, 8, 11, 1)$
 151 : $P_{3230} = (13, 8, 11, 1)$
 152 : $P_{3232} = (15, 8, 11, 1)$
 153 : $P_{3234} = (1, 9, 11, 1)$
 154 : $P_{3261} = (12, 10, 11, 1)$
 155 : $P_{3262} = (13, 10, 11, 1)$
 156 : $P_{3283} = (2, 12, 11, 1)$
 157 : $P_{3306} = (9, 13, 11, 1)$
 158 : $P_{3321} = (8, 14, 11, 1)$
 159 : $P_{3334} = (5, 15, 11, 1)$
 160 : $P_{3365} = (4, 1, 12, 1)$
 161 : $P_{3368} = (7, 1, 12, 1)$
 162 : $P_{3376} = (15, 1, 12, 1)$
 163 : $P_{3386} = (9, 2, 12, 1)$
 164 : $P_{3391} = (14, 2, 12, 1)$
 165 : $P_{3397} = (4, 3, 12, 1)$
 166 : $P_{3422} = (13, 4, 12, 1)$
 167 : $P_{3439} = (14, 5, 12, 1)$
 168 : $P_{3446} = (5, 6, 12, 1)$
 169 : $P_{3478} = (5, 8, 12, 1)$
 170 : $P_{3514} = (9, 10, 12, 1)$
 171 : $P_{3520} = (15, 10, 12, 1)$
 172 : $P_{3559} = (6, 13, 12, 1)$
 173 : $P_{3575} = (6, 14, 12, 1)$
 174 : $P_{3576} = (7, 14, 12, 1)$
 175 : $P_{3582} = (13, 14, 12, 1)$
 176 : $P_{3622} = (5, 1, 13, 1)$
 177 : $P_{3623} = (6, 1, 13, 1)$
 178 : $P_{3631} = (14, 1, 13, 1)$
 179 : $P_{3664} = (15, 3, 13, 1)$
 180 : $P_{3671} = (6, 4, 13, 1)$
 181 : $P_{3672} = (7, 4, 13, 1)$
 182 : $P_{3677} = (12, 4, 13, 1)$
 183 : $P_{3728} = (15, 7, 13, 1)$
 184 : $P_{3743} = (14, 8, 13, 1)$
 185 : $P_{3747} = (2, 9, 13, 1)$
 186 : $P_{3749} = (4, 9, 13, 1)$
 187 : $P_{3763} = (2, 10, 13, 1)$
 188 : $P_{3766} = (5, 10, 13, 1)$
 189 : $P_{3800} = (7, 12, 13, 1)$
 190 : $P_{3837} = (12, 14, 13, 1)$
 191 : $P_{3845} = (4, 15, 13, 1)$
 192 : $P_{3859} = (2, 0, 14, 1)$
 193 : $P_{3869} = (12, 0, 14, 1)$
 194 : $P_{3906} = (1, 3, 14, 1)$
 195 : $P_{3939} = (2, 5, 14, 1)$
 196 : $P_{3973} = (4, 7, 14, 1)$
 197 : $P_{3975} = (6, 7, 14, 1)$
 198 : $P_{3981} = (12, 7, 14, 1)$
 199 : $P_{3991} = (6, 8, 14, 1)$
 200 : $P_{4066} = (1, 13, 14, 1)$
 201 : $P_{4069} = (4, 13, 14, 1)$
 202 : $P_{4148} = (3, 2, 15, 1)$
 203 : $P_{4149} = (4, 2, 15, 1)$
 204 : $P_{4153} = (8, 2, 15, 1)$
 205 : $P_{4167} = (6, 3, 15, 1)$
 206 : $P_{4233} = (8, 7, 15, 1)$
 207 : $P_{4276} = (3, 10, 15, 1)$
 208 : $P_{4279} = (6, 10, 15, 1)$
 209 : $P_{4309} = (4, 12, 15, 1)$

Line Intersection Graph

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

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5
in point	P_2	P_2	P_2	P_{179}	P_{195}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3
in point	P_2	P_2	P_2

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4
in point	P_2	P_2	P_2	P_{444}

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_5
in point	P_2	P_2	P_2	P_{461}

Line 4 intersects

Line	ℓ_0	ℓ_2
in point	P_{179}	P_{444}

Line 5 intersects

Line	ℓ_0	ℓ_3
in point	P_{195}	P_{461}

The surface has 305 points:

The points on the surface are:

- | | | |
|---------------------------------|---------------------------------|-----------------------------------|
| 0 : $P_1 = (0, 1, 0, 0)$ | 37 : $P_{389} = (3, 7, 0, 1)$ | 74 : $P_{983} = (6, 12, 2, 1)$ |
| 1 : $P_2 = (0, 0, 1, 0)$ | 38 : $P_{414} = (12, 8, 0, 1)$ | 75 : $P_{986} = (9, 12, 2, 1)$ |
| 2 : $P_3 = (0, 0, 0, 1)$ | 39 : $P_{438} = (4, 10, 0, 1)$ | 76 : $P_{990} = (13, 12, 2, 1)$ |
| 3 : $P_{20} = (1, 0, 1, 0)$ | 40 : $P_{444} = (10, 10, 0, 1)$ | 77 : $P_{1038} = (13, 15, 2, 1)$ |
| 4 : $P_{35} = (0, 1, 1, 0)$ | 41 : $P_{448} = (14, 10, 0, 1)$ | 78 : $P_{1041} = (0, 0, 3, 1)$ |
| 5 : $P_{45} = (10, 1, 1, 0)$ | 42 : $P_{452} = (2, 11, 0, 1)$ | 79 : $P_{1110} = (5, 4, 3, 1)$ |
| 6 : $P_{46} = (11, 1, 1, 0)$ | 43 : $P_{459} = (9, 11, 0, 1)$ | 80 : $P_{1114} = (9, 4, 3, 1)$ |
| 7 : $P_{51} = (0, 2, 1, 0)$ | 44 : $P_{461} = (11, 11, 0, 1)$ | 81 : $P_{1120} = (15, 4, 3, 1)$ |
| 8 : $P_{67} = (0, 3, 1, 0)$ | 45 : $P_{471} = (5, 12, 0, 1)$ | 82 : $P_{1134} = (13, 5, 3, 1)$ |
| 9 : $P_{83} = (0, 4, 1, 0)$ | 46 : $P_{497} = (15, 13, 0, 1)$ | 83 : $P_{1146} = (9, 6, 3, 1)$ |
| 10 : $P_{99} = (0, 5, 1, 0)$ | 47 : $P_{520} = (6, 15, 0, 1)$ | 84 : $P_{1211} = (10, 10, 3, 1)$ |
| 11 : $P_{115} = (0, 6, 1, 0)$ | 48 : $P_{530} = (0, 0, 1, 1)$ | 85 : $P_{1222} = (5, 11, 3, 1)$ |
| 12 : $P_{117} = (2, 6, 1, 0)$ | 49 : $P_{540} = (10, 0, 1, 1)$ | 86 : $P_{1228} = (11, 11, 3, 1)$ |
| 13 : $P_{118} = (3, 6, 1, 0)$ | 50 : $P_{541} = (11, 0, 1, 1)$ | 87 : $P_{1230} = (13, 11, 3, 1)$ |
| 14 : $P_{131} = (0, 7, 1, 0)$ | 51 : $P_{566} = (5, 2, 1, 1)$ | 88 : $P_{1248} = (15, 12, 3, 1)$ |
| 15 : $P_{139} = (8, 7, 1, 0)$ | 52 : $P_{601} = (8, 4, 1, 1)$ | 89 : $P_{1259} = (10, 13, 3, 1)$ |
| 16 : $P_{140} = (9, 7, 1, 0)$ | 53 : $P_{640} = (15, 6, 1, 1)$ | 90 : $P_{1292} = (11, 15, 3, 1)$ |
| 17 : $P_{147} = (0, 8, 1, 0)$ | 54 : $P_{646} = (5, 7, 1, 1)$ | 91 : $P_{1297} = (0, 0, 4, 1)$ |
| 18 : $P_{163} = (0, 9, 1, 0)$ | 55 : $P_{688} = (15, 9, 1, 1)$ | 92 : $P_{1306} = (9, 0, 4, 1)$ |
| 19 : $P_{179} = (0, 10, 1, 0)$ | 56 : $P_{690} = (1, 10, 1, 1)$ | 93 : $P_{1310} = (13, 0, 4, 1)$ |
| 20 : $P_{191} = (12, 10, 1, 0)$ | 57 : $P_{699} = (10, 10, 1, 1)$ | 94 : $P_{1352} = (7, 3, 4, 1)$ |
| 21 : $P_{192} = (13, 10, 1, 0)$ | 58 : $P_{706} = (1, 11, 1, 1)$ | 95 : $P_{1400} = (7, 6, 4, 1)$ |
| 22 : $P_{195} = (0, 11, 1, 0)$ | 59 : $P_{716} = (11, 11, 1, 1)$ | 96 : $P_{1406} = (13, 6, 4, 1)$ |
| 23 : $P_{201} = (6, 11, 1, 0)$ | 60 : $P_{729} = (8, 12, 1, 1)$ | 97 : $P_{1407} = (14, 6, 4, 1)$ |
| 24 : $P_{202} = (7, 11, 1, 0)$ | 61 : $P_{740} = (3, 13, 1, 1)$ | 98 : $P_{1426} = (1, 8, 4, 1)$ |
| 25 : $P_{211} = (0, 12, 1, 0)$ | 62 : $P_{756} = (3, 14, 1, 1)$ | 99 : $P_{1451} = (10, 9, 4, 1)$ |
| 26 : $P_{225} = (14, 12, 1, 0)$ | 63 : $P_{785} = (0, 0, 2, 1)$ | 100 : $P_{1467} = (10, 10, 4, 1)$ |
| 27 : $P_{226} = (15, 12, 1, 0)$ | 64 : $P_{789} = (4, 0, 2, 1)$ | 101 : $P_{1484} = (11, 11, 4, 1)$ |
| 28 : $P_{227} = (0, 13, 1, 0)$ | 65 : $P_{791} = (6, 0, 2, 1)$ | 102 : $P_{1490} = (1, 12, 4, 1)$ |
| 29 : $P_{231} = (4, 13, 1, 0)$ | 66 : $P_{860} = (11, 4, 2, 1)$ | 103 : $P_{1500} = (11, 12, 4, 1)$ |
| 30 : $P_{232} = (5, 13, 1, 0)$ | 67 : $P_{866} = (1, 5, 2, 1)$ | 104 : $P_{1503} = (14, 12, 4, 1)$ |
| 31 : $P_{243} = (0, 14, 1, 0)$ | 68 : $P_{898} = (1, 7, 2, 1)$ | 105 : $P_{1546} = (9, 15, 4, 1)$ |
| 32 : $P_{259} = (0, 15, 1, 0)$ | 69 : $P_{906} = (9, 7, 2, 1)$ | 106 : $P_{1553} = (0, 0, 5, 1)$ |
| 33 : $P_{275} = (1, 0, 0, 1)$ | 70 : $P_{907} = (10, 7, 2, 1)$ | 107 : $P_{1611} = (10, 3, 5, 1)$ |
| 34 : $P_{335} = (13, 3, 0, 1)$ | 71 : $P_{917} = (4, 8, 2, 1)$ | 108 : $P_{1652} = (3, 6, 5, 1)$ |
| 35 : $P_{361} = (7, 5, 0, 1)$ | 72 : $P_{955} = (10, 10, 2, 1)$ | 109 : $P_{1676} = (11, 7, 5, 1)$ |
| 36 : $P_{378} = (8, 6, 0, 1)$ | 73 : $P_{972} = (11, 11, 2, 1)$ | 110 : $P_{1688} = (7, 8, 5, 1)$ |

111 : $P_{1700} = (3, 9, 5, 1)$	165 : $P_{2508} = (11, 11, 8, 1)$	219 : $P_{3149} = (12, 3, 11, 1)$
112 : $P_{1705} = (8, 9, 5, 1)$	166 : $P_{2509} = (12, 11, 8, 1)$	220 : $P_{3156} = (3, 4, 11, 1)$
113 : $P_{1711} = (14, 9, 5, 1)$	167 : $P_{2512} = (15, 11, 8, 1)$	221 : $P_{3184} = (15, 5, 11, 1)$
114 : $P_{1720} = (7, 10, 5, 1)$	168 : $P_{2523} = (10, 12, 8, 1)$	222 : $P_{3226} = (9, 8, 11, 1)$
115 : $P_{1721} = (8, 10, 5, 1)$	169 : $P_{2534} = (5, 13, 8, 1)$	223 : $P_{3230} = (13, 8, 11, 1)$
116 : $P_{1723} = (10, 10, 5, 1)$	170 : $P_{2547} = (2, 14, 8, 1)$	224 : $P_{3232} = (15, 8, 11, 1)$
117 : $P_{1740} = (11, 11, 5, 1)$	171 : $P_{2550} = (5, 14, 8, 1)$	225 : $P_{3234} = (1, 9, 11, 1)$
118 : $P_{1775} = (14, 13, 5, 1)$	172 : $P_{2560} = (15, 14, 8, 1)$	226 : $P_{3259} = (10, 10, 11, 1)$
119 : $P_{1809} = (0, 0, 6, 1)$	173 : $P_{2573} = (12, 15, 8, 1)$	227 : $P_{3261} = (12, 10, 11, 1)$
120 : $P_{1828} = (3, 1, 6, 1)$	174 : $P_{2577} = (0, 0, 9, 1)$	228 : $P_{3262} = (13, 10, 11, 1)$
121 : $P_{1834} = (9, 1, 6, 1)$	175 : $P_{2584} = (7, 0, 9, 1)$	229 : $P_{3275} = (10, 11, 11, 1)$
122 : $P_{1837} = (12, 1, 6, 1)$	176 : $P_{2591} = (14, 0, 9, 1)$	230 : $P_{3276} = (11, 11, 11, 1)$
123 : $P_{1848} = (7, 2, 6, 1)$	177 : $P_{2639} = (14, 3, 9, 1)$	231 : $P_{3283} = (2, 12, 11, 1)$
124 : $P_{1853} = (12, 2, 6, 1)$	178 : $P_{2669} = (12, 5, 9, 1)$	232 : $P_{3306} = (9, 13, 11, 1)$
125 : $P_{1854} = (13, 2, 6, 1)$	179 : $P_{2674} = (1, 6, 9, 1)$	233 : $P_{3321} = (8, 14, 11, 1)$
126 : $P_{1868} = (11, 3, 6, 1)$	180 : $P_{2675} = (2, 6, 9, 1)$	234 : $P_{3334} = (5, 15, 11, 1)$
127 : $P_{1875} = (2, 4, 6, 1)$	181 : $P_{2683} = (10, 6, 9, 1)$	235 : $P_{3345} = (0, 0, 12, 1)$
128 : $P_{1883} = (10, 4, 6, 1)$	182 : $P_{2747} = (10, 10, 9, 1)$	236 : $P_{3365} = (4, 1, 12, 1)$
129 : $P_{1887} = (14, 4, 6, 1)$	183 : $P_{2764} = (11, 11, 9, 1)$	237 : $P_{3368} = (7, 1, 12, 1)$
130 : $P_{1898} = (9, 5, 6, 1)$	184 : $P_{2787} = (2, 13, 9, 1)$	238 : $P_{3376} = (15, 1, 12, 1)$
131 : $P_{1934} = (13, 7, 6, 1)$	185 : $P_{2792} = (7, 13, 9, 1)$	239 : $P_{3386} = (9, 2, 12, 1)$
132 : $P_{1939} = (2, 8, 6, 1)$	186 : $P_{2797} = (12, 13, 9, 1)$	240 : $P_{3388} = (11, 2, 12, 1)$
133 : $P_{1960} = (7, 9, 6, 1)$	187 : $P_{2812} = (11, 14, 9, 1)$	241 : $P_{3391} = (14, 2, 12, 1)$
134 : $P_{1979} = (10, 10, 6, 1)$	188 : $P_{2818} = (1, 15, 9, 1)$	242 : $P_{3397} = (4, 3, 12, 1)$
135 : $P_{1988} = (3, 11, 6, 1)$	189 : $P_{2833} = (0, 0, 10, 1)$	243 : $P_{3422} = (13, 4, 12, 1)$
136 : $P_{1996} = (11, 11, 6, 1)$	190 : $P_{2838} = (5, 0, 10, 1)$	244 : $P_{3439} = (14, 5, 12, 1)$
137 : $P_{1999} = (14, 11, 6, 1)$	191 : $P_{2848} = (15, 0, 10, 1)$	245 : $P_{3446} = (5, 6, 12, 1)$
138 : $P_{2025} = (8, 13, 6, 1)$	192 : $P_{2859} = (10, 1, 10, 1)$	246 : $P_{3478} = (5, 8, 12, 1)$
139 : $P_{2057} = (8, 15, 6, 1)$	193 : $P_{2880} = (15, 2, 10, 1)$	247 : $P_{3514} = (9, 10, 12, 1)$
140 : $P_{2065} = (0, 0, 7, 1)$	194 : $P_{2889} = (8, 3, 10, 1)$	248 : $P_{3515} = (10, 10, 12, 1)$
141 : $P_{2083} = (2, 1, 7, 1)$	195 : $P_{2898} = (1, 4, 10, 1)$	249 : $P_{3520} = (15, 10, 12, 1)$
142 : $P_{2089} = (8, 1, 7, 1)$	196 : $P_{2917} = (4, 5, 10, 1)$	250 : $P_{3532} = (11, 11, 12, 1)$
143 : $P_{2094} = (13, 1, 7, 1)$	197 : $P_{2919} = (6, 5, 10, 1)$	251 : $P_{3559} = (6, 13, 12, 1)$
144 : $P_{2103} = (6, 2, 7, 1)$	198 : $P_{2921} = (8, 5, 10, 1)$	252 : $P_{3575} = (6, 14, 12, 1)$
145 : $P_{2122} = (9, 3, 7, 1)$	199 : $P_{2933} = (4, 6, 10, 1)$	253 : $P_{3576} = (7, 14, 12, 1)$
146 : $P_{2148} = (3, 5, 7, 1)$	200 : $P_{2959} = (14, 7, 10, 1)$	254 : $P_{3582} = (13, 14, 12, 1)$
147 : $P_{2173} = (12, 6, 7, 1)$	201 : $P_{2964} = (3, 8, 10, 1)$	255 : $P_{3595} = (10, 15, 12, 1)$
148 : $P_{2204} = (11, 8, 7, 1)$	202 : $P_{2982} = (5, 9, 10, 1)$	256 : $P_{3601} = (0, 0, 13, 1)$
149 : $P_{2215} = (6, 9, 7, 1)$	203 : $P_{3003} = (10, 10, 10, 1)$	257 : $P_{3622} = (5, 1, 13, 1)$
150 : $P_{2221} = (12, 9, 7, 1)$	204 : $P_{3004} = (11, 10, 10, 1)$	258 : $P_{3623} = (6, 1, 13, 1)$
151 : $P_{2222} = (13, 9, 7, 1)$	205 : $P_{3015} = (6, 11, 10, 1)$	259 : $P_{3631} = (14, 1, 13, 1)$
152 : $P_{2235} = (10, 10, 7, 1)$	206 : $P_{3016} = (7, 11, 10, 1)$	260 : $P_{3664} = (15, 3, 13, 1)$
153 : $P_{2245} = (4, 11, 7, 1)$	207 : $P_{3020} = (11, 11, 10, 1)$	261 : $P_{3671} = (6, 4, 13, 1)$
154 : $P_{2249} = (8, 11, 7, 1)$	208 : $P_{3058} = (1, 14, 10, 1)$	262 : $P_{3672} = (7, 4, 13, 1)$
155 : $P_{2252} = (11, 11, 7, 1)$	209 : $P_{3076} = (3, 15, 10, 1)$	263 : $P_{3677} = (12, 4, 13, 1)$
156 : $P_{2260} = (3, 12, 7, 1)$	210 : $P_{3080} = (7, 15, 10, 1)$	264 : $P_{3691} = (10, 5, 13, 1)$
157 : $P_{2293} = (4, 14, 7, 1)$	211 : $P_{3087} = (14, 15, 10, 1)$	265 : $P_{3728} = (15, 7, 13, 1)$
158 : $P_{2298} = (9, 14, 7, 1)$	212 : $P_{3089} = (0, 0, 11, 1)$	266 : $P_{3743} = (14, 8, 13, 1)$
159 : $P_{2299} = (10, 14, 7, 1)$	213 : $P_{3092} = (3, 0, 11, 1)$	267 : $P_{3747} = (2, 9, 13, 1)$
160 : $P_{2307} = (2, 15, 7, 1)$	214 : $P_{3097} = (8, 0, 11, 1)$	268 : $P_{3749} = (4, 9, 13, 1)$
161 : $P_{2321} = (0, 0, 8, 1)$	215 : $P_{3116} = (11, 1, 11, 1)$	269 : $P_{3756} = (11, 9, 13, 1)$
162 : $P_{2412} = (11, 5, 8, 1)$	216 : $P_{3122} = (1, 2, 11, 1)$	270 : $P_{3763} = (2, 10, 13, 1)$
163 : $P_{2435} = (2, 7, 8, 1)$	217 : $P_{3139} = (2, 3, 11, 1)$	271 : $P_{3766} = (5, 10, 13, 1)$
164 : $P_{2491} = (10, 10, 8, 1)$	218 : $P_{3142} = (5, 3, 11, 1)$	272 : $P_{3771} = (10, 10, 13, 1)$

273 : $P_{3788} = (11, 11, 13, 1)$	284 : $P_{3975} = (6, 7, 14, 1)$	295 : $P_{4153} = (8, 2, 15, 1)$
274 : $P_{3800} = (7, 12, 13, 1)$	285 : $P_{3981} = (12, 7, 14, 1)$	296 : $P_{4167} = (6, 3, 15, 1)$
275 : $P_{3837} = (12, 14, 13, 1)$	286 : $P_{3991} = (6, 8, 14, 1)$	297 : $P_{4220} = (11, 6, 15, 1)$
276 : $P_{3845} = (4, 15, 13, 1)$	287 : $P_{4027} = (10, 10, 14, 1)$	298 : $P_{4233} = (8, 7, 15, 1)$
277 : $P_{3857} = (0, 0, 14, 1)$	288 : $P_{4044} = (11, 11, 14, 1)$	299 : $P_{4251} = (10, 8, 15, 1)$
278 : $P_{3859} = (2, 0, 14, 1)$	289 : $P_{4066} = (1, 13, 14, 1)$	300 : $P_{4276} = (3, 10, 15, 1)$
279 : $P_{3869} = (12, 0, 14, 1)$	290 : $P_{4069} = (4, 13, 14, 1)$	301 : $P_{4279} = (6, 10, 15, 1)$
280 : $P_{3899} = (10, 2, 14, 1)$	291 : $P_{4076} = (11, 13, 14, 1)$	302 : $P_{4283} = (10, 10, 15, 1)$
281 : $P_{3906} = (1, 3, 14, 1)$	292 : $P_{4113} = (0, 0, 15, 1)$	303 : $P_{4300} = (11, 11, 15, 1)$
282 : $P_{3939} = (2, 5, 14, 1)$	293 : $P_{4148} = (3, 2, 15, 1)$	304 : $P_{4309} = (4, 12, 15, 1)$
283 : $P_{3973} = (4, 7, 14, 1)$	294 : $P_{4149} = (4, 2, 15, 1)$	