Rank-65695 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

$$X_2^3 + X_3^3 + X_0^2X_1 + X_0X_1^2 + X_0X_1X_2 = 0$$

(0, 0, 1, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1109461029

General information

Number of lines	3
Number of points	1057
Number of singular points	1
Number of Eckardt points	0
Number of double points	3
Number of single points	93
Number of points off lines	961
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^3
Type of lines on points	2^3, 1^{93}, 0^{961}

Singular Points

The surface has 1 singular points:

$0: \ P_{68} = \mathbf{P}(1,1,1,0) = \mathbf{P}(1,1,1,0)$

The 3 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{1025} = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{1025} = \mathbf{Pl}(0,0,1,0,1,0)_{1152}$$

$$\ell_1 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{1082369} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{1082369} = \mathbf{Pl}(0,0,0,1,0,1)_{36865}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{34914} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{34914} = \mathbf{Pl}(1,0,1,1,1,1)_{70563}$$

Rank of lines: (1025, 1082369, 34914)
Rank of points on Klein quadric: (1152, 36865, 70563)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

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

$P_{2082} = (0,0,1,1) = \ell_0 \cap \ell_1$
$P_{2083} = (1,0,1,1) = \ell_0 \cap \ell_2$
$P_{2114} = (0,1,1,1) = \ell_1 \cap \ell_2$

Single Points

The surface has 93 single points:
The single points on the surface are:

0 : $P_0 = (1,0,0,0)$ lies on line ℓ_0
1 : $P_1 = (0,1,0,0)$ lies on line ℓ_1
2 : $P_5 = (1,1,0,0)$ lies on line ℓ_2
3 : $P_{2084} = (2,0,1,1)$ lies on line ℓ_0
4 : $P_{2085} = (3,0,1,1)$ lies on line ℓ_0
5 : $P_{2086} = (4,0,1,1)$ lies on line ℓ_0
6 : $P_{2087} = (5,0,1,1)$ lies on line ℓ_0
7 : $P_{2088} = (6,0,1,1)$ lies on line ℓ_0
8 : $P_{2089} = (7,0,1,1)$ lies on line ℓ_0
9 : $P_{2090} = (8,0,1,1)$ lies on line ℓ_0
10 : $P_{2091} = (9,0,1,1)$ lies on line ℓ_0
11 : $P_{2092} = (10,0,1,1)$ lies on line ℓ_0
12 : $P_{2093} = (11,0,1,1)$ lies on line ℓ_0
13 : $P_{2094} = (12,0,1,1)$ lies on line ℓ_0
14 : $P_{2095} = (13,0,1,1)$ lies on line ℓ_0
15 : $P_{2096} = (14,0,1,1)$ lies on line ℓ_0
16 : $P_{2097} = (15,0,1,1)$ lies on line ℓ_0
17 : $P_{2098} = (16,0,1,1)$ lies on line ℓ_0
18 : $P_{2099} = (17,0,1,1)$ lies on line ℓ_0
19 : $P_{2100} = (18,0,1,1)$ lies on line ℓ_0
20 : $P_{2101} = (19,0,1,1)$ lies on line ℓ_0
21 : $P_{2102} = (20,0,1,1)$ lies on line ℓ_0
22 : $P_{2103} = (21,0,1,1)$ lies on line ℓ_0
23 : $P_{2104} = (22,0,1,1)$ lies on line ℓ_0
24 : $P_{2105} = (23,0,1,1)$ lies on line ℓ_0
25 : $P_{2106} = (24,0,1,1)$ lies on line ℓ_0
26 : $P_{2107} = (25,0,1,1)$ lies on line ℓ_0
27 : $P_{2108} = (26,0,1,1)$ lies on line ℓ_0
28 : $P_{2109} = (27,0,1,1)$ lies on line ℓ_0
29 : $P_{2110} = (28,0,1,1)$ lies on line ℓ_0
30 : $P_{2111} = (29,0,1,1)$ lies on line ℓ_0
31 : $P_{2112} = (30,0,1,1)$ lies on line ℓ_0
32 : $P_{2113} = (31,0,1,1)$ lies on line ℓ_0
33 : $P_{2145} = (0,2,1,1)$ lies on line ℓ_1
34 : $P_{2148} = (3,2,1,1)$ lies on line ℓ_2
35 : $P_{2177} = (0,3,1,1)$ lies on line ℓ_1
36 : $P_{2179} = (2,3,1,1)$ lies on line ℓ_2
37 : $P_{2209} = (0,4,1,1)$ lies on line ℓ_1
38 : $P_{2214} = (5,4,1,1)$ lies on line ℓ_2
39 : $P_{2241} = (0,5,1,1)$ lies on line ℓ_1
40 : $P_{2245} = (4,5,1,1)$ lies on line ℓ_2
41 : $P_{2273} = (0,6,1,1)$ lies on line ℓ_1
42 : $P_{2280} = (7,6,1,1)$ lies on line ℓ_2
43 : $P_{2305} = (0,7,1,1)$ lies on line ℓ_1
44 : $P_{2311} = (6,7,1,1)$ lies on line ℓ_2
45 : $P_{2337} = (0,8,1,1)$ lies on line ℓ_1
46 : $P_{2346} = (9,8,1,1)$ lies on line ℓ_2
47 : $P_{2369} = (0,9,1,1)$ lies on line ℓ_1
48 : $P_{2377} = (8,9,1,1)$ lies on line ℓ_2
49 : $P_{2401} = (0,10,1,1)$ lies on line ℓ_1
50 : $P_{2412} = (11,10,1,1)$ lies on line ℓ_2
51 : $P_{2433} = (0,11,1,1)$ lies on line ℓ_1

52 : $P_{2443} = (10, 11, 1, 1)$ lies on line ℓ_2
53 : $P_{2465} = (0, 12, 1, 1)$ lies on line ℓ_1
54 : $P_{2478} = (13, 12, 1, 1)$ lies on line ℓ_2
55 : $P_{2497} = (0, 13, 1, 1)$ lies on line ℓ_1
56 : $P_{2509} = (12, 13, 1, 1)$ lies on line ℓ_2
57 : $P_{2529} = (0, 14, 1, 1)$ lies on line ℓ_1
58 : $P_{2544} = (15, 14, 1, 1)$ lies on line ℓ_2
59 : $P_{2561} = (0, 15, 1, 1)$ lies on line ℓ_1
60 : $P_{2575} = (14, 15, 1, 1)$ lies on line ℓ_2
61 : $P_{2593} = (0, 16, 1, 1)$ lies on line ℓ_1
62 : $P_{2610} = (17, 16, 1, 1)$ lies on line ℓ_2
63 : $P_{2625} = (0, 17, 1, 1)$ lies on line ℓ_1
64 : $P_{2641} = (16, 17, 1, 1)$ lies on line ℓ_2
65 : $P_{2657} = (0, 18, 1, 1)$ lies on line ℓ_1
66 : $P_{2676} = (19, 18, 1, 1)$ lies on line ℓ_2
67 : $P_{2689} = (0, 19, 1, 1)$ lies on line ℓ_1
68 : $P_{2707} = (18, 19, 1, 1)$ lies on line ℓ_2
69 : $P_{2721} = (0, 20, 1, 1)$ lies on line ℓ_1
70 : $P_{2742} = (21, 20, 1, 1)$ lies on line ℓ_2
71 : $P_{2753} = (0, 21, 1, 1)$ lies on line ℓ_1
72 : $P_{2773} = (20, 21, 1, 1)$ lies on line ℓ_2
73 : $P_{2785} = (0, 22, 1, 1)$ lies on line ℓ_1
74 : $P_{2808} = (23, 22, 1, 1)$ lies on line ℓ_2
75 : $P_{2817} = (0, 23, 1, 1)$ lies on line ℓ_1
76 : $P_{2839} = (22, 23, 1, 1)$ lies on line ℓ_2
77 : $P_{2849} = (0, 24, 1, 1)$ lies on line ℓ_1
78 : $P_{2874} = (25, 24, 1, 1)$ lies on line ℓ_2
79 : $P_{2881} = (0, 25, 1, 1)$ lies on line ℓ_1
80 : $P_{2905} = (24, 25, 1, 1)$ lies on line ℓ_2
81 : $P_{2913} = (0, 26, 1, 1)$ lies on line ℓ_1
82 : $P_{2940} = (27, 26, 1, 1)$ lies on line ℓ_2
83 : $P_{2945} = (0, 27, 1, 1)$ lies on line ℓ_1
84 : $P_{2971} = (26, 27, 1, 1)$ lies on line ℓ_2
85 : $P_{2977} = (0, 28, 1, 1)$ lies on line ℓ_1
86 : $P_{3006} = (29, 28, 1, 1)$ lies on line ℓ_2
87 : $P_{3009} = (0, 29, 1, 1)$ lies on line ℓ_1
88 : $P_{3037} = (28, 29, 1, 1)$ lies on line ℓ_2
89 : $P_{3041} = (0, 30, 1, 1)$ lies on line ℓ_1
90 : $P_{3072} = (31, 30, 1, 1)$ lies on line ℓ_2
91 : $P_{3073} = (0, 31, 1, 1)$ lies on line ℓ_1
92 : $P_{3103} = (30, 31, 1, 1)$ lies on line ℓ_2

The single points on the surface are:

Points on surface but on no line

The surface has 961 points not on any line:
The points on the surface but not on lines are:

0 : $P_{68} = (1, 1, 1, 0)$
1 : $P_{107} = (8, 2, 1, 0)$
2 : $P_{110} = (11, 2, 1, 0)$
3 : $P_{173} = (10, 4, 1, 0)$
4 : $P_{178} = (15, 4, 1, 0)$
5 : $P_{293} = (2, 8, 1, 0)$
6 : $P_{302} = (11, 8, 1, 0)$
7 : $P_{342} = (19, 9, 1, 0)$
8 : $P_{350} = (27, 9, 1, 0)$
9 : $P_{359} = (4, 10, 1, 0)$
10 : $P_{370} = (15, 10, 1, 0)$
11 : $P_{389} = (2, 11, 1, 0)$
12 : $P_{395} = (8, 11, 1, 0)$
13 : $P_{469} = (18, 13, 1, 0)$
14 : $P_{481} = (30, 13, 1, 0)$
15 : $P_{499} = (16, 14, 1, 0)$
16 : $P_{514} = (31, 14, 1, 0)$
17 : $P_{519} = (4, 15, 1, 0)$
18 : $P_{525} = (10, 15, 1, 0)$
19 : $P_{561} = (14, 16, 1, 0)$
20 : $P_{578} = (31, 16, 1, 0)$
21 : $P_{624} = (13, 18, 1, 0)$
22 : $P_{641} = (30, 18, 1, 0)$
23 : $P_{652} = (9, 19, 1, 0)$
24 : $P_{670} = (27, 19, 1, 0)$
25 : $P_{908} = (9, 27, 1, 0)$
26 : $P_{918} = (19, 27, 1, 0)$
27 : $P_{1008} = (13, 30, 1, 0)$
28 : $P_{1013} = (18, 30, 1, 0)$
29 : $P_{1041} = (14, 31, 1, 0)$
30 : $P_{1043} = (16, 31, 1, 0)$
31 : $P_{1146} = (24, 2, 0, 1)$
32 : $P_{1148} = (26, 2, 0, 1)$
33 : $P_{1158} = (4, 3, 0, 1)$
34 : $P_{1161} = (7, 3, 0, 1)$
35 : $P_{1189} = (3, 4, 0, 1)$
36 : $P_{1193} = (7, 4, 0, 1)$
37 : $P_{1234} = (16, 5, 0, 1)$
38 : $P_{1239} = (21, 5, 0, 1)$
39 : $P_{1285} = (3, 7, 0, 1)$
40 : $P_{1286} = (4, 7, 0, 1)$
41 : $P_{1465} = (23, 12, 0, 1)$
42 : $P_{1469} = (27, 12, 0, 1)$
43 : $P_{1491} = (17, 13, 0, 1)$
44 : $P_{1502} = (28, 13, 0, 1)$
45 : $P_{1575} = (5, 16, 0, 1)$

46 : $P_{1591} = (21, 16, 0, 1)$
47 : $P_{1615} = (13, 17, 0, 1)$
48 : $P_{1630} = (28, 17, 0, 1)$
49 : $P_{1735} = (5, 21, 0, 1)$
50 : $P_{1746} = (16, 21, 0, 1)$
51 : $P_{1806} = (12, 23, 0, 1)$
52 : $P_{1821} = (27, 23, 0, 1)$
53 : $P_{1828} = (2, 24, 0, 1)$
54 : $P_{1852} = (26, 24, 0, 1)$
55 : $P_{1892} = (2, 26, 0, 1)$
56 : $P_{1914} = (24, 26, 0, 1)$
57 : $P_{1934} = (12, 27, 0, 1)$
58 : $P_{1945} = (23, 27, 0, 1)$
59 : $P_{1967} = (13, 28, 0, 1)$
60 : $P_{1971} = (17, 28, 0, 1)$
61 : $P_{3198} = (29, 2, 2, 1)$
62 : $P_{3284} = (19, 5, 2, 1)$
63 : $P_{3285} = (20, 5, 2, 1)$
64 : $P_{3338} = (9, 7, 2, 1)$
65 : $P_{3341} = (12, 7, 2, 1)$
66 : $P_{3378} = (17, 8, 2, 1)$
67 : $P_{3388} = (27, 8, 2, 1)$
68 : $P_{3400} = (7, 9, 2, 1)$
69 : $P_{3405} = (12, 9, 2, 1)$
70 : $P_{3496} = (7, 12, 2, 1)$
71 : $P_{3498} = (9, 12, 2, 1)$
72 : $P_{3569} = (16, 14, 2, 1)$
73 : $P_{3581} = (28, 14, 2, 1)$
74 : $P_{3631} = (14, 16, 2, 1)$
75 : $P_{3645} = (28, 16, 2, 1)$
76 : $P_{3657} = (8, 17, 2, 1)$
77 : $P_{3676} = (27, 17, 2, 1)$
78 : $P_{3718} = (5, 19, 2, 1)$
79 : $P_{3733} = (20, 19, 2, 1)$
80 : $P_{3750} = (5, 20, 2, 1)$
81 : $P_{3764} = (19, 20, 2, 1)$
82 : $P_{3977} = (8, 27, 2, 1)$
83 : $P_{3986} = (17, 27, 2, 1)$
84 : $P_{4015} = (14, 28, 2, 1)$
85 : $P_{4017} = (16, 28, 2, 1)$
86 : $P_{4035} = (2, 29, 2, 1)$
87 : $P_{4062} = (29, 29, 2, 1)$
88 : $P_{4247} = (22, 3, 3, 1)$
89 : $P_{4266} = (9, 4, 3, 1)$
90 : $P_{4271} = (14, 4, 3, 1)$
91 : $P_{4347} = (26, 6, 3, 1)$
92 : $P_{4352} = (31, 6, 3, 1)$
93 : $P_{4370} = (17, 7, 3, 1)$
94 : $P_{4374} = (21, 7, 3, 1)$
95 : $P_{4421} = (4, 9, 3, 1)$
96 : $P_{4431} = (14, 9, 3, 1)$
97 : $P_{4533} = (20, 12, 3, 1)$
98 : $P_{4540} = (27, 12, 3, 1)$
99 : $P_{4581} = (4, 14, 3, 1)$
100 : $P_{4586} = (9, 14, 3, 1)$
101 : $P_{4680} = (7, 17, 3, 1)$
102 : $P_{4694} = (21, 17, 3, 1)$
103 : $P_{4781} = (12, 20, 3, 1)$
104 : $P_{4796} = (27, 20, 3, 1)$
105 : $P_{4808} = (7, 21, 3, 1)$
106 : $P_{4818} = (17, 21, 3, 1)$
107 : $P_{4836} = (3, 22, 3, 1)$
108 : $P_{4855} = (22, 22, 3, 1)$
109 : $P_{4967} = (6, 26, 3, 1)$
110 : $P_{4992} = (31, 26, 3, 1)$
111 : $P_{5005} = (12, 27, 3, 1)$
112 : $P_{5013} = (20, 27, 3, 1)$
113 : $P_{5127} = (6, 31, 3, 1)$
114 : $P_{5147} = (26, 31, 3, 1)$
115 : $P_{5227} = (10, 2, 4, 1)$
116 : $P_{5229} = (12, 2, 4, 1)$
117 : $P_{5303} = (22, 4, 4, 1)$
118 : $P_{5426} = (17, 8, 4, 1)$
119 : $P_{5438} = (29, 8, 4, 1)$
120 : $P_{5475} = (2, 10, 4, 1)$
121 : $P_{5485} = (12, 10, 4, 1)$
122 : $P_{5526} = (21, 11, 4, 1)$
123 : $P_{5531} = (26, 11, 4, 1)$
124 : $P_{5539} = (2, 12, 4, 1)$
125 : $P_{5547} = (10, 12, 4, 1)$
126 : $P_{5592} = (23, 13, 4, 1)$
127 : $P_{5599} = (30, 13, 4, 1)$
128 : $P_{5705} = (8, 17, 4, 1)$
129 : $P_{5726} = (29, 17, 4, 1)$
130 : $P_{5836} = (11, 21, 4, 1)$
131 : $P_{5851} = (26, 21, 4, 1)$
132 : $P_{5861} = (4, 22, 4, 1)$
133 : $P_{5879} = (22, 22, 4, 1)$
134 : $P_{5902} = (13, 23, 4, 1)$
135 : $P_{5919} = (30, 23, 4, 1)$
136 : $P_{5996} = (11, 26, 4, 1)$
137 : $P_{6006} = (21, 26, 4, 1)$
138 : $P_{6089} = (8, 29, 4, 1)$
139 : $P_{6098} = (17, 29, 4, 1)$
140 : $P_{6126} = (13, 30, 4, 1)$
141 : $P_{6136} = (23, 30, 4, 1)$
142 : $P_{6267} = (26, 2, 5, 1)$
143 : $P_{6270} = (29, 2, 5, 1)$
144 : $P_{6291} = (18, 3, 5, 1)$
145 : $P_{6293} = (20, 3, 5, 1)$
146 : $P_{6362} = (25, 5, 5, 1)$
147 : $P_{6545} = (16, 11, 5, 1)$
148 : $P_{6559} = (30, 11, 5, 1)$
149 : $P_{6582} = (21, 12, 5, 1)$
150 : $P_{6589} = (28, 12, 5, 1)$
151 : $P_{6700} = (11, 16, 5, 1)$
152 : $P_{6719} = (30, 16, 5, 1)$
153 : $P_{6756} = (3, 18, 5, 1)$

$154: P_{6773} = (20, 18, 5, 1)$
$155: P_{6820} = (3, 20, 5, 1)$
$156: P_{6835} = (18, 20, 5, 1)$
$157: P_{6861} = (12, 21, 5, 1)$
$158: P_{6877} = (28, 21, 5, 1)$
$159: P_{6982} = (5, 25, 5, 1)$
$160: P_{7002} = (25, 25, 5, 1)$
$161: P_{7011} = (2, 26, 5, 1)$
$162: P_{7038} = (29, 26, 5, 1)$
$163: P_{7085} = (12, 28, 5, 1)$
$164: P_{7094} = (21, 28, 5, 1)$
$165: P_{7107} = (2, 29, 5, 1)$
$166: P_{7131} = (26, 29, 5, 1)$
$167: P_{7148} = (11, 30, 5, 1)$
$168: P_{7153} = (16, 30, 5, 1)$
$169: P_{7283} = (18, 2, 6, 1)$
$170: P_{7287} = (22, 2, 6, 1)$
$171: P_{7405} = (12, 6, 6, 1)$
$172: P_{7474} = (17, 8, 6, 1)$
$173: P_{7488} = (31, 8, 6, 1)$
$174: P_{7508} = (19, 9, 6, 1)$
$175: P_{7517} = (28, 9, 6, 1)$
$176: P_{7573} = (20, 11, 6, 1)$
$177: P_{7578} = (25, 11, 6, 1)$
$178: P_{7591} = (6, 12, 6, 1)$
$179: P_{7597} = (12, 12, 6, 1)$
$180: P_{7633} = (16, 13, 6, 1)$
$181: P_{7644} = (27, 13, 6, 1)$
$182: P_{7726} = (13, 16, 6, 1)$
$183: P_{7740} = (27, 16, 6, 1)$
$184: P_{7753} = (8, 17, 6, 1)$
$185: P_{7776} = (31, 17, 6, 1)$
$186: P_{7779} = (2, 18, 6, 1)$
$187: P_{7799} = (22, 18, 6, 1)$
$188: P_{7818} = (9, 19, 6, 1)$
$189: P_{7837} = (28, 19, 6, 1)$
$190: P_{7852} = (11, 20, 6, 1)$
$191: P_{7866} = (25, 20, 6, 1)$
$192: P_{7907} = (2, 22, 6, 1)$
$193: P_{7923} = (18, 22, 6, 1)$
$194: P_{8012} = (11, 25, 6, 1)$
$195: P_{8021} = (20, 25, 6, 1)$
$196: P_{8078} = (13, 27, 6, 1)$
$197: P_{8081} = (16, 27, 6, 1)$
$198: P_{8106} = (9, 28, 6, 1)$
$199: P_{8116} = (19, 28, 6, 1)$
$200: P_{8201} = (8, 31, 6, 1)$
$201: P_{8210} = (17, 31, 6, 1)$
$202: P_{8274} = (17, 1, 7, 1)$
$203: P_{8280} = (23, 1, 7, 1)$
$204: P_{8313} = (24, 2, 7, 1)$
$205: P_{8318} = (29, 2, 7, 1)$
$206: P_{8331} = (10, 3, 7, 1)$
$207: P_{8335} = (14, 3, 7, 1)$
$208: P_{8378} = (25, 4, 7, 1)$
$209: P_{8379} = (26, 4, 7, 1)$
$210: P_{8398} = (13, 5, 7, 1)$
$211: P_{8400} = (15, 5, 7, 1)$
$212: P_{8471} = (22, 7, 7, 1)$
$213: P_{8534} = (21, 9, 7, 1)$
$214: P_{8540} = (27, 9, 7, 1)$
$215: P_{8548} = (3, 10, 7, 1)$
$216: P_{8559} = (14, 10, 7, 1)$
$217: P_{8646} = (5, 13, 7, 1)$
$218: P_{8656} = (15, 13, 7, 1)$
$219: P_{8676} = (3, 14, 7, 1)$
$220: P_{8683} = (10, 14, 7, 1)$
$221: P_{8710} = (5, 15, 7, 1)$
$222: P_{8718} = (13, 15, 7, 1)$
$223: P_{8770} = (1, 17, 7, 1)$
$224: P_{8792} = (23, 17, 7, 1)$
$225: P_{8906} = (9, 21, 7, 1)$
$226: P_{8924} = (27, 21, 7, 1)$
$227: P_{8936} = (7, 22, 7, 1)$
$228: P_{8951} = (22, 22, 7, 1)$
$229: P_{8962} = (1, 23, 7, 1)$
$230: P_{8978} = (17, 23, 7, 1)$
$231: P_{8995} = (2, 24, 7, 1)$
$232: P_{9022} = (29, 24, 7, 1)$
$233: P_{9029} = (4, 25, 7, 1)$
$234: P_{9051} = (26, 25, 7, 1)$
$235: P_{9061} = (4, 26, 7, 1)$
$236: P_{9082} = (25, 26, 7, 1)$
$237: P_{9098} = (9, 27, 7, 1)$
$238: P_{9110} = (21, 27, 7, 1)$
$239: P_{9155} = (2, 29, 7, 1)$
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646 : $P_{23840} = (31, 7, 22, 1)$
647 : $P_{23940} = (3, 11, 22, 1)$
648 : $P_{23967} = (30, 11, 22, 1)$
649 : $P_{24016} = (15, 13, 22, 1)$
650 : $P_{24021} = (20, 13, 22, 1)$
651 : $P_{24040} = (7, 14, 22, 1)$
652 : $P_{24064} = (31, 14, 22, 1)$
653 : $P_{24078} = (13, 15, 22, 1)$
654 : $P_{24085} = (20, 15, 22, 1)$
655 : $P_{24099} = (2, 16, 22, 1)$
656 : $P_{24101} = (4, 16, 22, 1)$
657 : $P_{24186} = (25, 18, 22, 1)$
658 : $P_{24190} = (29, 18, 22, 1)$
659 : $P_{24238} = (13, 20, 22, 1)$
660 : $P_{24240} = (15, 20, 22, 1)$
661 : $P_{24294} = (5, 22, 22, 1)$
662 : $P_{24403} = (18, 25, 22, 1)$
663 : $P_{24414} = (29, 25, 22, 1)$
664 : $P_{24531} = (18, 29, 22, 1)$
665 : $P_{24538} = (25, 29, 22, 1)$
666 : $P_{24548} = (3, 30, 22, 1)$
667 : $P_{24556} = (11, 30, 22, 1)$
668 : $P_{24584} = (7, 31, 22, 1)$
669 : $P_{24591} = (14, 31, 22, 1)$
670 : $P_{24644} = (3, 1, 23, 1)$
671 : $P_{24662} = (21, 1, 23, 1)$
672 : $P_{24706} = (1, 3, 23, 1)$
673 : $P_{24726} = (21, 3, 23, 1)$
674 : $P_{24746} = (9, 4, 23, 1)$
675 : $P_{24763} = (26, 4, 23, 1)$
676 : $P_{24814} = (13, 6, 23, 1)$
677 : $P_{24829} = (28, 6, 23, 1)$
678 : $P_{24877} = (12, 8, 23, 1)$
679 : $P_{24884} = (19, 8, 23, 1)$
680 : $P_{24901} = (4, 9, 23, 1)$
681 : $P_{24923} = (26, 9, 23, 1)$
682 : $P_{25001} = (8, 12, 23, 1)$
683 : $P_{25012} = (19, 12, 23, 1)$
684 : $P_{25031} = (6, 13, 23, 1)$
685 : $P_{25053} = (28, 13, 23, 1)$
686 : $P_{25145} = (24, 16, 23, 1)$
687 : $P_{25152} = (31, 16, 23, 1)$
688 : $P_{25180} = (27, 17, 23, 1)$
689 : $P_{25182} = (29, 17, 23, 1)$
690 : $P_{25225} = (8, 19, 23, 1)$
691 : $P_{25229} = (12, 19, 23, 1)$
692 : $P_{25269} = (20, 20, 23, 1)$
693 : $P_{25272} = (23, 20, 23, 1)$

694 : $P_{25282} = (1, 21, 23, 1)$
695 : $P_{25284} = (3, 21, 23, 1)$
696 : $P_{25365} = (20, 23, 23, 1)$
697 : $P_{25393} = (16, 24, 23, 1)$
698 : $P_{25408} = (31, 24, 23, 1)$
699 : $P_{25445} = (4, 26, 23, 1)$
700 : $P_{25450} = (9, 26, 23, 1)$
701 : $P_{25490} = (17, 27, 23, 1)$
702 : $P_{25502} = (29, 27, 23, 1)$
703 : $P_{25511} = (6, 28, 23, 1)$
704 : $P_{25518} = (13, 28, 23, 1)$
705 : $P_{25554} = (17, 29, 23, 1)$
706 : $P_{25564} = (27, 29, 23, 1)$
707 : $P_{25617} = (16, 31, 23, 1)$
708 : $P_{25625} = (24, 31, 23, 1)$
709 : $P_{25670} = (5, 1, 24, 1)$
710 : $P_{25693} = (28, 1, 24, 1)$
711 : $P_{25709} = (12, 2, 24, 1)$
712 : $P_{25719} = (22, 2, 24, 1)$
713 : $P_{25740} = (11, 3, 24, 1)$
714 : $P_{25745} = (16, 3, 24, 1)$
715 : $P_{25794} = (1, 5, 24, 1)$
716 : $P_{25821} = (28, 5, 24, 1)$
717 : $P_{25870} = (13, 7, 24, 1)$
718 : $P_{25875} = (18, 7, 24, 1)$
719 : $P_{25899} = (10, 8, 24, 1)$
720 : $P_{25915} = (26, 8, 24, 1)$
721 : $P_{25961} = (8, 10, 24, 1)$
722 : $P_{25979} = (26, 10, 24, 1)$
723 : $P_{25988} = (3, 11, 24, 1)$
724 : $P_{26001} = (16, 11, 24, 1)$
725 : $P_{26019} = (2, 12, 24, 1)$
726 : $P_{26039} = (22, 12, 24, 1)$
727 : $P_{26056} = (7, 13, 24, 1)$
728 : $P_{26067} = (18, 13, 24, 1)$
729 : $P_{26148} = (3, 16, 24, 1)$
730 : $P_{26156} = (11, 16, 24, 1)$
731 : $P_{26216} = (7, 18, 24, 1)$
732 : $P_{26222} = (13, 18, 24, 1)$
733 : $P_{26296} = (23, 20, 24, 1)$
734 : $P_{26300} = (27, 20, 24, 1)$
735 : $P_{26339} = (2, 22, 24, 1)$
736 : $P_{26349} = (12, 22, 24, 1)$
737 : $P_{26389} = (20, 23, 24, 1)$
738 : $P_{26396} = (27, 23, 24, 1)$
739 : $P_{26430} = (29, 24, 24, 1)$
740 : $P_{26473} = (8, 26, 24, 1)$
741 : $P_{26475} = (10, 26, 24, 1)$
742 : $P_{26517} = (20, 27, 24, 1)$
743 : $P_{26520} = (23, 27, 24, 1)$
744 : $P_{26530} = (1, 28, 24, 1)$
745 : $P_{26534} = (5, 28, 24, 1)$
746 : $P_{26585} = (24, 29, 24, 1)$
747 : $P_{26590} = (29, 29, 24, 1)$
748 : $P_{26798} = (13, 4, 25, 1)$
749 : $P_{26801} = (16, 4, 25, 1)$
750 : $P_{26832} = (15, 5, 25, 1)$
751 : $P_{26836} = (19, 5, 25, 1)$
752 : $P_{26858} = (9, 6, 25, 1)$
753 : $P_{26871} = (22, 6, 25, 1)$
754 : $P_{26951} = (6, 9, 25, 1)$
755 : $P_{26967} = (22, 9, 25, 1)$
756 : $P_{27077} = (4, 13, 25, 1)$
757 : $P_{27089} = (16, 13, 25, 1)$
758 : $P_{27142} = (5, 15, 25, 1)$
759 : $P_{27156} = (19, 15, 25, 1)$
760 : $P_{27173} = (4, 16, 25, 1)$
761 : $P_{27182} = (13, 16, 25, 1)$
762 : $P_{27218} = (17, 17, 25, 1)$
763 : $P_{27226} = (25, 17, 25, 1)$
764 : $P_{27254} = (21, 18, 25, 1)$
765 : $P_{27263} = (30, 18, 25, 1)$
766 : $P_{27270} = (5, 19, 25, 1)$
767 : $P_{27280} = (15, 19, 25, 1)$
768 : $P_{27347} = (18, 21, 25, 1)$
769 : $P_{27359} = (30, 21, 25, 1)$
770 : $P_{27367} = (6, 22, 25, 1)$
771 : $P_{27370} = (9, 22, 25, 1)$
772 : $P_{27474} = (17, 25, 25, 1)$
773 : $P_{27550} = (29, 27, 25, 1)$
774 : $P_{27552} = (31, 27, 25, 1)$
775 : $P_{27612} = (27, 29, 25, 1)$
776 : $P_{27616} = (31, 29, 25, 1)$
777 : $P_{27635} = (18, 30, 25, 1)$
778 : $P_{27638} = (21, 30, 25, 1)$
779 : $P_{27676} = (27, 31, 25, 1)$
780 : $P_{27678} = (29, 31, 25, 1)$
781 : $P_{27755} = (10, 2, 26, 1)$
782 : $P_{27763} = (18, 2, 26, 1)$
783 : $P_{27848} = (7, 5, 26, 1)$
784 : $P_{27865} = (24, 5, 26, 1)$
785 : $P_{27886} = (13, 6, 26, 1)$
786 : $P_{27890} = (17, 6, 26, 1)$
787 : $P_{27910} = (5, 7, 26, 1)$
788 : $P_{27929} = (24, 7, 26, 1)$
789 : $P_{28003} = (2, 10, 26, 1)$
790 : $P_{28019} = (18, 10, 26, 1)$
791 : $P_{28080} = (15, 12, 26, 1)$
792 : $P_{28090} = (25, 12, 26, 1)$
793 : $P_{28103} = (6, 13, 26, 1)$
794 : $P_{28114} = (17, 13, 26, 1)$
795 : $P_{28173} = (12, 15, 26, 1)$
796 : $P_{28186} = (25, 15, 26, 1)$
797 : $P_{28231} = (6, 17, 26, 1)$
798 : $P_{28238} = (13, 17, 26, 1)$
799 : $P_{28259} = (2, 18, 26, 1)$
800 : $P_{28267} = (10, 18, 26, 1)$
801 : $P_{28454} = (5, 24, 26, 1)$

802 : $P_{28456} = (7, 24, 26, 1)$
803 : $P_{28493} = (12, 25, 26, 1)$
804 : $P_{28496} = (15, 25, 26, 1)$
805 : $P_{28542} = (29, 26, 26, 1)$
806 : $P_{28635} = (26, 29, 26, 1)$
807 : $P_{28638} = (29, 29, 26, 1)$
808 : $P_{28807} = (6, 3, 27, 1)$
809 : $P_{28831} = (30, 3, 27, 1)$
810 : $P_{28843} = (10, 4, 27, 1)$
811 : $P_{28854} = (21, 4, 27, 1)$
812 : $P_{28878} = (13, 5, 27, 1)$
813 : $P_{28884} = (19, 5, 27, 1)$
814 : $P_{28900} = (3, 6, 27, 1)$
815 : $P_{28927} = (30, 6, 27, 1)$
816 : $P_{29029} = (4, 10, 27, 1)$
817 : $P_{29046} = (21, 10, 27, 1)$
818 : $P_{29126} = (5, 13, 27, 1)$
819 : $P_{29140} = (19, 13, 27, 1)$
820 : $P_{29267} = (18, 17, 27, 1)$
821 : $P_{29273} = (24, 17, 27, 1)$
822 : $P_{29298} = (17, 18, 27, 1)$
823 : $P_{29305} = (24, 18, 27, 1)$
824 : $P_{29318} = (5, 19, 27, 1)$
825 : $P_{29326} = (13, 19, 27, 1)$
826 : $P_{29365} = (20, 20, 27, 1)$
827 : $P_{29372} = (27, 20, 27, 1)$
828 : $P_{29381} = (4, 21, 27, 1)$
829 : $P_{29387} = (10, 21, 27, 1)$
830 : $P_{29490} = (17, 24, 27, 1)$
831 : $P_{29491} = (18, 24, 27, 1)$
832 : $P_{29589} = (20, 27, 27, 1)$
833 : $P_{29668} = (3, 30, 27, 1)$
834 : $P_{29671} = (6, 30, 27, 1)$
835 : $P_{29768} = (7, 1, 28, 1)$
836 : $P_{29787} = (26, 1, 28, 1)$
837 : $P_{29805} = (12, 2, 28, 1)$
838 : $P_{29811} = (18, 2, 28, 1)$
839 : $P_{29872} = (15, 4, 28, 1)$
840 : $P_{29880} = (23, 4, 28, 1)$
841 : $P_{29902} = (13, 5, 28, 1)$
842 : $P_{29909} = (20, 5, 28, 1)$
843 : $P_{29927} = (6, 6, 28, 1)$
844 : $P_{29949} = (28, 6, 28, 1)$
845 : $P_{29954} = (1, 7, 28, 1)$
846 : $P_{29979} = (26, 7, 28, 1)$
847 : $P_{30115} = (2, 12, 28, 1)$
848 : $P_{30131} = (18, 12, 28, 1)$
849 : $P_{30150} = (5, 13, 28, 1)$
850 : $P_{30165} = (20, 13, 28, 1)$
851 : $P_{30213} = (4, 15, 28, 1)$
852 : $P_{30232} = (23, 15, 28, 1)$
853 : $P_{30262} = (21, 16, 28, 1)$
854 : $P_{30266} = (25, 16, 28, 1)$
855 : $P_{30292} = (19, 17, 28, 1)$
856 : $P_{30303} = (30, 17, 28, 1)$
857 : $P_{30307} = (2, 18, 28, 1)$
858 : $P_{30317} = (12, 18, 28, 1)$
859 : $P_{30354} = (17, 19, 28, 1)$
860 : $P_{30367} = (30, 19, 28, 1)$
861 : $P_{30374} = (5, 20, 28, 1)$
862 : $P_{30382} = (13, 20, 28, 1)$
863 : $P_{30417} = (16, 21, 28, 1)$
864 : $P_{30426} = (25, 21, 28, 1)$
865 : $P_{30469} = (4, 23, 28, 1)$
866 : $P_{30480} = (15, 23, 28, 1)$
867 : $P_{30545} = (16, 25, 28, 1)$
868 : $P_{30550} = (21, 25, 28, 1)$
869 : $P_{30562} = (1, 26, 28, 1)$
870 : $P_{30568} = (7, 26, 28, 1)$
871 : $P_{30631} = (6, 28, 28, 1)$
872 : $P_{30706} = (17, 30, 28, 1)$
873 : $P_{30708} = (19, 30, 28, 1)$
874 : $P_{30821} = (4, 2, 29, 1)$
875 : $P_{30844} = (27, 2, 29, 1)$
876 : $P_{30852} = (3, 3, 29, 1)$
877 : $P_{30878} = (29, 3, 29, 1)$
878 : $P_{30883} = (2, 4, 29, 1)$
879 : $P_{30908} = (27, 4, 29, 1)$
880 : $P_{30956} = (11, 6, 29, 1)$
881 : $P_{30961} = (16, 6, 29, 1)$
882 : $P_{31055} = (14, 9, 29, 1)$
883 : $P_{31067} = (26, 9, 29, 1)$
884 : $P_{31088} = (15, 10, 29, 1)$
885 : $P_{31097} = (24, 10, 29, 1)$
886 : $P_{31111} = (6, 11, 29, 1)$
887 : $P_{31121} = (16, 11, 29, 1)$
888 : $P_{31210} = (9, 14, 29, 1)$
889 : $P_{31227} = (26, 14, 29, 1)$
890 : $P_{31243} = (10, 15, 29, 1)$
891 : $P_{31257} = (24, 15, 29, 1)$
892 : $P_{31271} = (6, 16, 29, 1)$
893 : $P_{31276} = (11, 16, 29, 1)$
894 : $P_{31415} = (22, 20, 29, 1)$
895 : $P_{31424} = (31, 20, 29, 1)$
896 : $P_{31477} = (20, 22, 29, 1)$
897 : $P_{31488} = (31, 22, 29, 1)$
898 : $P_{31531} = (10, 24, 29, 1)$
899 : $P_{31536} = (15, 24, 29, 1)$
900 : $P_{31594} = (9, 26, 29, 1)$
901 : $P_{31599} = (14, 26, 29, 1)$
902 : $P_{31619} = (2, 27, 29, 1)$
903 : $P_{31621} = (4, 27, 29, 1)$
904 : $P_{31684} = (3, 29, 29, 1)$
905 : $P_{31765} = (20, 31, 29, 1)$
906 : $P_{31767} = (22, 31, 29, 1)$
907 : $P_{31851} = (10, 2, 30, 1)$
908 : $P_{31863} = (22, 2, 30, 1)$
909 : $P_{31913} = (8, 4, 30, 1)$

910 : $P_{31923} = (18, 4, 30, 1)$
911 : $P_{31952} = (15, 5, 30, 1)$
912 : $P_{31957} = (20, 5, 30, 1)$
913 : $P_{32037} = (4, 8, 30, 1)$
914 : $P_{32051} = (18, 8, 30, 1)$
915 : $P_{32079} = (14, 9, 30, 1)$
916 : $P_{32090} = (25, 9, 30, 1)$
917 : $P_{32099} = (2, 10, 30, 1)$
918 : $P_{32119} = (22, 10, 30, 1)$
919 : $P_{32234} = (9, 14, 30, 1)$
920 : $P_{32250} = (25, 14, 30, 1)$
921 : $P_{32262} = (5, 15, 30, 1)$
922 : $P_{32277} = (20, 15, 30, 1)$
923 : $P_{32308} = (19, 16, 30, 1)$
924 : $P_{32318} = (29, 16, 30, 1)$
925 : $P_{32357} = (4, 18, 30, 1)$
926 : $P_{32361} = (8, 18, 30, 1)$
927 : $P_{32401} = (16, 19, 30, 1)$
928 : $P_{32414} = (29, 19, 30, 1)$
929 : $P_{32422} = (5, 20, 30, 1)$
930 : $P_{32432} = (15, 20, 30, 1)$
931 : $P_{32483} = (2, 22, 30, 1)$
932 : $P_{32491} = (10, 22, 30, 1)$
933 : $P_{32569} = (24, 24, 30, 1)$
934 : $P_{32575} = (30, 24, 30, 1)$
935 : $P_{32586} = (9, 25, 30, 1)$
936 : $P_{32591} = (14, 25, 30, 1)$
937 : $P_{32721} = (16, 29, 30, 1)$
938 : $P_{32724} = (19, 29, 30, 1)$
939 : $P_{32761} = (24, 30, 30, 1)$
940 : $P_{32843} = (10, 1, 31, 1)$
941 : $P_{32853} = (20, 1, 31, 1)$
942 : $P_{32878} = (13, 2, 31, 1)$
943 : $P_{32881} = (16, 2, 31, 1)$
944 : $P_{33122} = (1, 10, 31, 1)$
945 : $P_{33141} = (20, 10, 31, 1)$
946 : $P_{33219} = (2, 13, 31, 1)$
947 : $P_{33233} = (16, 13, 31, 1)$
948 : $P_{33315} = (2, 16, 31, 1)$
949 : $P_{33326} = (13, 16, 31, 1)$
950 : $P_{33395} = (18, 18, 31, 1)$
951 : $P_{33408} = (31, 18, 31, 1)$
952 : $P_{33442} = (1, 20, 31, 1)$
953 : $P_{33451} = (10, 20, 31, 1)$
954 : $P_{33595} = (26, 24, 31, 1)$
955 : $P_{33598} = (29, 24, 31, 1)$
956 : $P_{33657} = (24, 26, 31, 1)$
957 : $P_{33662} = (29, 26, 31, 1)$
958 : $P_{33753} = (24, 29, 31, 1)$
959 : $P_{33755} = (26, 29, 31, 1)$
960 : $P_{33811} = (18, 31, 31, 1)$

Line Intersection Graph

	0	1	2
0	0	1	1
1	1	0	1
2	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2
in point	P_{2082}	P_{2083}

Line 1 intersects

Line	ℓ_0	ℓ_2
in point	P_{2082}	P_{2114}

Line 2 intersects

Line	ℓ_0	ℓ_1
in point	P_{2083}	P_{2114}

The surface has 1057 points:
Too many to print.