Rank-20 over GF(32)

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The equation

The equation of the surface is :

$$X_0^3+X_1^3+X_2^3+X_3^3+X_0^2X_1+X_0^2X_2+X_0^2X_3+X_0X_1^2+X_1^2X_2+X_1^2X_3$$
$$+X_0X_2^2+X_1X_2^2+X_2^2X_3+X_0X_3^2+X_1X_3^2+X_2X_3^2+X_0X_1X_2+X_0X_1X_3+X_0X_2X_3+X_1X_2X_3=0$$

(1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1)
The point rank of the equation over GF(32) is 20

General information

Number of lines	9
Number of points	1121
Number of singular points	4
Number of Eckardt points	5
Number of double points	6
Number of single points	270
Number of points off lines	840
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^9
Type of lines on points	3^5, 2^6, 1^{270}, 0^{840}

Singular Points

The surface has 4 singular points:

0 : $P_{68}=\mathbf{P}(1,1,1,0)=\mathbf{P}(1,1,1,0)$
1 : $P_{1091}=\mathbf{P}(1,1,0,1)=\mathbf{P}(1,1,0,1)$
2 : $P_{2083}=\mathbf{P}(1,0,1,1)=\mathbf{P}(1,0,1,1)$
3 : $P_{2114}=\mathbf{P}(0,1,1,1)=\mathbf{P}(0,1,1,1)$

The 9 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2082} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2082} = \mathbf{Pl}(0,0,1,1,1,1)_{70562}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{34914} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{34914} = \mathbf{Pl}(1,0,1,1,1,1)_{70563}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{1089} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{1089} = \mathbf{Pl}(1,1,0,0,1,1)_{68609}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1090} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{1090} = \mathbf{Pl}(1,1,1,0,1,1)_{68640}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{33825} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{33825} = \mathbf{Pl}(1,1,1,1,0,0)_{128}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{34882} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{34882} = \mathbf{Pl}(1,1,1,1,0,1)_{38818}$$

$$\ell_6 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33857} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{33857} = \mathbf{Pl}(1,1,1,1,1,0)_{5058}$$

$$\ell_7 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{34913} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{34913} = \mathbf{Pl}(1,1,0,1,1,1)_{69601}$$

$$\ell_8 = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{35906} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{35906} = \mathbf{Pl}(0,1,1,1,1,1)_{70594}$$

Rank of lines: (2082, 34914, 1089, 1090, 33825, 34882, 33857, 34913, 35906)
Rank of points on Klein quadric: (70562, 70563, 68609, 68640, 128, 38818, 5058, 69601, 70594)

Eckardt Points

The surface has 5 Eckardt points:
$0 : P_4 = \mathbf{P}(1,1,1,1) = \mathbf{P}(1,1,1,1)$,
$1 : P_{68} = \mathbf{P}(1,1,1,0) = \mathbf{P}(1,1,1,0)$,
$2 : P_{1091} = \mathbf{P}(1,1,0,1) = \mathbf{P}(1,1,0,1)$,
$3 : P_{2083} = \mathbf{P}(1,0,1,1) = \mathbf{P}(1,0,1,1)$,
$4 : P_{2114} = \mathbf{P}(0,1,1,1) = \mathbf{P}(0,1,1,1)$.

Double Points

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

$P_5 = (1,1,0,0) = \ell_0 \cap \ell_1$
$P_{2082} = (0,0,1,1) = \ell_0 \cap \ell_8$
$P_{36} = (1,0,1,0) = \ell_2 \cap \ell_3$
$P_{1090} = (0,1,0,1) = \ell_2 \cap \ell_7$
$P_{67} = (0,1,1,0) = \ell_4 \cap \ell_5$
$P_{1059} = (1,0,0,1) = \ell_4 \cap \ell_6$

Single Points

The surface has 270 single points:
The single points on the surface are:

$0:\ P_{2147} = (2,2,1,1)$ lies on line ℓ_0
$1:\ P_{2148} = (3,2,1,1)$ lies on line ℓ_1
$2:\ P_{2179} = (2,3,1,1)$ lies on line ℓ_1
$3:\ P_{2180} = (3,3,1,1)$ lies on line ℓ_0
$4:\ P_{2213} = (4,4,1,1)$ lies on line ℓ_0
$5:\ P_{2214} = (5,4,1,1)$ lies on line ℓ_1
$6:\ P_{2245} = (4,5,1,1)$ lies on line ℓ_1
$7:\ P_{2246} = (5,5,1,1)$ lies on line ℓ_0
$8:\ P_{2279} = (6,6,1,1)$ lies on line ℓ_0
$9:\ P_{2280} = (7,6,1,1)$ lies on line ℓ_1
$10:\ P_{2311} = (6,7,1,1)$ lies on line ℓ_1
$11:\ P_{2312} = (7,7,1,1)$ lies on line ℓ_0
$12:\ P_{2345} = (8,8,1,1)$ lies on line ℓ_0
$13:\ P_{2346} = (9,8,1,1)$ lies on line ℓ_1
$14:\ P_{2377} = (8,9,1,1)$ lies on line ℓ_1
$15:\ P_{2378} = (9,9,1,1)$ lies on line ℓ_0
$16:\ P_{2411} = (10,10,1,1)$ lies on line ℓ_0
$17:\ P_{2412} = (11,10,1,1)$ lies on line ℓ_1
$18:\ P_{2443} = (10,11,1,1)$ lies on line ℓ_1
$19:\ P_{2444} = (11,11,1,1)$ lies on line ℓ_0
$20:\ P_{2477} = (12,12,1,1)$ lies on line ℓ_0
$21:\ P_{2478} = (13,12,1,1)$ lies on line ℓ_1
$22:\ P_{2509} = (12,13,1,1)$ lies on line ℓ_1
$23:\ P_{2510} = (13,13,1,1)$ lies on line ℓ_0
$24:\ P_{2543} = (14,14,1,1)$ lies on line ℓ_0
$25:\ P_{2544} = (15,14,1,1)$ lies on line ℓ_1
$26:\ P_{2575} = (14,15,1,1)$ lies on line ℓ_1
$27:\ P_{2576} = (15,15,1,1)$ lies on line ℓ_0
$28:\ P_{2609} = (16,16,1,1)$ lies on line ℓ_0
$29:\ P_{2610} = (17,16,1,1)$ lies on line ℓ_1
$30:\ P_{2641} = (16,17,1,1)$ lies on line ℓ_1
$31:\ P_{2642} = (17,17,1,1)$ lies on line ℓ_0
$32:\ P_{2675} = (18,18,1,1)$ lies on line ℓ_0
$33:\ P_{2676} = (19,18,1,1)$ lies on line ℓ_1
$34:\ P_{2707} = (18,19,1,1)$ lies on line ℓ_1
$35:\ P_{2708} = (19,19,1,1)$ lies on line ℓ_0
$36:\ P_{2741} = (20,20,1,1)$ lies on line ℓ_0
$37:\ P_{2742} = (21,20,1,1)$ lies on line ℓ_1
$38:\ P_{2773} = (20,21,1,1)$ lies on line ℓ_1
$39:\ P_{2774} = (21,21,1,1)$ lies on line ℓ_0
$40:\ P_{2807} = (22,22,1,1)$ lies on line ℓ_0
$41:\ P_{2808} = (23,22,1,1)$ lies on line ℓ_1
$42:\ P_{2839} = (22,23,1,1)$ lies on line ℓ_1
$43:\ P_{2840} = (23,23,1,1)$ lies on line ℓ_0
$44:\ P_{2873} = (24,24,1,1)$ lies on line ℓ_0
$45:\ P_{2874} = (25,24,1,1)$ lies on line ℓ_1
$46:\ P_{2905} = (24,25,1,1)$ lies on line ℓ_1
$47:\ P_{2906} = (25,25,1,1)$ lies on line ℓ_0
$48:\ P_{2939} = (26,26,1,1)$ lies on line ℓ_0
$49:\ P_{2940} = (27,26,1,1)$ lies on line ℓ_1
$50:\ P_{2971} = (26,27,1,1)$ lies on line ℓ_1
$51:\ P_{2972} = (27,27,1,1)$ lies on line ℓ_0
$52:\ P_{3005} = (28,28,1,1)$ lies on line ℓ_0
$53:\ P_{3006} = (29,28,1,1)$ lies on line ℓ_1
$54:\ P_{3037} = (28,29,1,1)$ lies on line ℓ_1
$55:\ P_{3038} = (29,29,1,1)$ lies on line ℓ_0
$56:\ P_{3071} = (30,30,1,1)$ lies on line ℓ_0
$57:\ P_{3072} = (31,30,1,1)$ lies on line ℓ_1
$58:\ P_{3103} = (30,31,1,1)$ lies on line ℓ_1
$59:\ P_{3104} = (31,31,1,1)$ lies on line ℓ_0
$60:\ P_{3139} = (2,1,2,1)$ lies on line ℓ_2
$61:\ P_{3140} = (3,1,2,1)$ lies on line ℓ_3
$62:\ P_{3170} = (1,2,2,1)$ lies on line ℓ_4
$63:\ P_{3172} = (3,2,2,1)$ lies on line ℓ_6
$64:\ P_{3202} = (1,3,2,1)$ lies on line ℓ_5
$65:\ P_{3203} = (2,3,2,1)$ lies on line ℓ_7
$66:\ P_{3204} = (3,3,2,1)$ lies on line ℓ_8
$67:\ P_{4163} = (2,1,3,1)$ lies on line ℓ_3
$68:\ P_{4164} = (3,1,3,1)$ lies on line ℓ_2
$69:\ P_{4194} = (1,2,3,1)$ lies on line ℓ_5
$70:\ P_{4195} = (2,2,3,1)$ lies on line ℓ_8
$71:\ P_{4196} = (3,2,3,1)$ lies on line ℓ_7
$72:\ P_{4226} = (1,3,3,1)$ lies on line ℓ_4
$73:\ P_{4227} = (2,3,3,1)$ lies on line ℓ_6
$74:\ P_{5189} = (4,1,4,1)$ lies on line ℓ_2
$75:\ P_{5190} = (5,1,4,1)$ lies on line ℓ_3
$76:\ P_{5282} = (1,4,4,1)$ lies on line ℓ_4
$77:\ P_{5286} = (5,4,4,1)$ lies on line ℓ_6
$78:\ P_{5314} = (1,5,4,1)$ lies on line ℓ_5
$79:\ P_{5317} = (4,5,4,1)$ lies on line ℓ_7
$80:\ P_{5318} = (5,5,4,1)$ lies on line ℓ_8
$81:\ P_{6213} = (4,1,5,1)$ lies on line ℓ_3
$82:\ P_{6214} = (5,1,5,1)$ lies on line ℓ_2
$83:\ P_{6306} = (1,4,5,1)$ lies on line ℓ_5
$84:\ P_{6309} = (4,4,5,1)$ lies on line ℓ_8
$85:\ P_{6310} = (5,4,5,1)$ lies on line ℓ_7
$86:\ P_{6338} = (1,5,5,1)$ lies on line ℓ_4
$87:\ P_{6341} = (4,5,5,1)$ lies on line ℓ_6
$88:\ P_{7239} = (6,1,6,1)$ lies on line ℓ_2
$89:\ P_{7240} = (7,1,6,1)$ lies on line ℓ_3
$90:\ P_{7394} = (1,6,6,1)$ lies on line ℓ_4
$91:\ P_{7400} = (7,6,6,1)$ lies on line ℓ_6
$92:\ P_{7426} = (1,7,6,1)$ lies on line ℓ_5
$93:\ P_{7431} = (6,7,6,1)$ lies on line ℓ_7
$94:\ P_{7432} = (7,7,6,1)$ lies on line ℓ_8
$95:\ P_{8263} = (6,1,7,1)$ lies on line ℓ_3
$96:\ P_{8264} = (7,1,7,1)$ lies on line ℓ_2
$97:\ P_{8418} = (1,6,7,1)$ lies on line ℓ_5
$98:\ P_{8423} = (6,6,7,1)$ lies on line ℓ_8
$99:\ P_{8424} = (7,6,7,1)$ lies on line ℓ_7
$100:\ P_{8450} = (1,7,7,1)$ lies on line ℓ_4
$101:\ P_{8455} = (6,7,7,1)$ lies on line ℓ_6
$102:\ P_{9289} = (8,1,8,1)$ lies on line ℓ_2
$103:\ P_{9290} = (9,1,8,1)$ lies on line ℓ_3
$104:\ P_{9506} = (1,8,8,1)$ lies on line ℓ_4
$105:\ P_{9514} = (9,8,8,1)$ lies on line ℓ_6
$106:\ P_{9538} = (1,9,8,1)$ lies on line ℓ_5
$107:\ P_{9545} = (8,9,8,1)$ lies on line ℓ_7

108 : $P_{9546} = (9, 9, 8, 1)$ lies on line ℓ_8
109 : $P_{10313} = (8, 1, 9, 1)$ lies on line ℓ_3
110 : $P_{10314} = (9, 1, 9, 1)$ lies on line ℓ_2
111 : $P_{10530} = (1, 8, 9, 1)$ lies on line ℓ_5
112 : $P_{10537} = (8, 8, 9, 1)$ lies on line ℓ_8
113 : $P_{10538} = (9, 8, 9, 1)$ lies on line ℓ_7
114 : $P_{10562} = (1, 9, 9, 1)$ lies on line ℓ_4
115 : $P_{10569} = (8, 9, 9, 1)$ lies on line ℓ_6
116 : $P_{11339} = (10, 1, 10, 1)$ lies on line ℓ_2
117 : $P_{11340} = (11, 1, 10, 1)$ lies on line ℓ_3
118 : $P_{11618} = (1, 10, 10, 1)$ lies on line ℓ_4
119 : $P_{11628} = (11, 10, 10, 1)$ lies on line ℓ_6
120 : $P_{11650} = (1, 11, 10, 1)$ lies on line ℓ_5
121 : $P_{11659} = (10, 11, 10, 1)$ lies on line ℓ_7
122 : $P_{11660} = (11, 11, 10, 1)$ lies on line ℓ_8
123 : $P_{12363} = (10, 1, 11, 1)$ lies on line ℓ_3
124 : $P_{12364} = (11, 1, 11, 1)$ lies on line ℓ_2
125 : $P_{12642} = (1, 10, 11, 1)$ lies on line ℓ_5
126 : $P_{12651} = (10, 10, 11, 1)$ lies on line ℓ_8
127 : $P_{12652} = (11, 10, 11, 1)$ lies on line ℓ_7
128 : $P_{12674} = (1, 11, 11, 1)$ lies on line ℓ_4
129 : $P_{12683} = (10, 11, 11, 1)$ lies on line ℓ_6
130 : $P_{13389} = (12, 1, 12, 1)$ lies on line ℓ_2
131 : $P_{13390} = (13, 1, 12, 1)$ lies on line ℓ_3
132 : $P_{13730} = (1, 12, 12, 1)$ lies on line ℓ_4
133 : $P_{13742} = (13, 12, 12, 1)$ lies on line ℓ_6
134 : $P_{13762} = (1, 13, 12, 1)$ lies on line ℓ_5
135 : $P_{13773} = (12, 13, 12, 1)$ lies on line ℓ_7
136 : $P_{13774} = (13, 13, 12, 1)$ lies on line ℓ_8
137 : $P_{14413} = (12, 1, 13, 1)$ lies on line ℓ_3
138 : $P_{14414} = (13, 1, 13, 1)$ lies on line ℓ_2
139 : $P_{14754} = (1, 12, 13, 1)$ lies on line ℓ_5
140 : $P_{14765} = (12, 12, 13, 1)$ lies on line ℓ_8
141 : $P_{14766} = (13, 12, 13, 1)$ lies on line ℓ_7
142 : $P_{14786} = (1, 13, 13, 1)$ lies on line ℓ_4
143 : $P_{14797} = (12, 13, 13, 1)$ lies on line ℓ_6
144 : $P_{15439} = (14, 1, 14, 1)$ lies on line ℓ_2
145 : $P_{15440} = (15, 1, 14, 1)$ lies on line ℓ_3
146 : $P_{15842} = (1, 14, 14, 1)$ lies on line ℓ_4
147 : $P_{15856} = (15, 14, 14, 1)$ lies on line ℓ_6
148 : $P_{15874} = (1, 15, 14, 1)$ lies on line ℓ_5
149 : $P_{15887} = (14, 15, 14, 1)$ lies on line ℓ_7
150 : $P_{15888} = (15, 15, 14, 1)$ lies on line ℓ_8
151 : $P_{16463} = (14, 1, 15, 1)$ lies on line ℓ_3
152 : $P_{16464} = (15, 1, 15, 1)$ lies on line ℓ_2
153 : $P_{16866} = (1, 14, 15, 1)$ lies on line ℓ_5
154 : $P_{16879} = (14, 14, 15, 1)$ lies on line ℓ_8
155 : $P_{16880} = (15, 14, 15, 1)$ lies on line ℓ_7
156 : $P_{16898} = (1, 15, 15, 1)$ lies on line ℓ_4
157 : $P_{16911} = (14, 15, 15, 1)$ lies on line ℓ_6
158 : $P_{17489} = (16, 1, 16, 1)$ lies on line ℓ_2
159 : $P_{17490} = (17, 1, 16, 1)$ lies on line ℓ_3
160 : $P_{17954} = (1, 16, 16, 1)$ lies on line ℓ_4
161 : $P_{17970} = (17, 16, 16, 1)$ lies on line ℓ_6
162 : $P_{17986} = (1, 17, 16, 1)$ lies on line ℓ_5
163 : $P_{18001} = (16, 17, 16, 1)$ lies on line ℓ_7
164 : $P_{18002} = (17, 17, 16, 1)$ lies on line ℓ_8
165 : $P_{18513} = (16, 1, 17, 1)$ lies on line ℓ_3
166 : $P_{18514} = (17, 1, 17, 1)$ lies on line ℓ_2
167 : $P_{18978} = (1, 16, 17, 1)$ lies on line ℓ_5
168 : $P_{18993} = (16, 16, 17, 1)$ lies on line ℓ_8
169 : $P_{18994} = (17, 16, 17, 1)$ lies on line ℓ_7
170 : $P_{19010} = (1, 17, 17, 1)$ lies on line ℓ_4
171 : $P_{19025} = (16, 17, 17, 1)$ lies on line ℓ_6
172 : $P_{19539} = (18, 1, 18, 1)$ lies on line ℓ_2
173 : $P_{19540} = (19, 1, 18, 1)$ lies on line ℓ_3
174 : $P_{20066} = (1, 18, 18, 1)$ lies on line ℓ_4
175 : $P_{20084} = (19, 18, 18, 1)$ lies on line ℓ_6
176 : $P_{20098} = (1, 19, 18, 1)$ lies on line ℓ_5
177 : $P_{20115} = (18, 19, 18, 1)$ lies on line ℓ_7
178 : $P_{20116} = (19, 19, 18, 1)$ lies on line ℓ_8
179 : $P_{20563} = (18, 1, 19, 1)$ lies on line ℓ_3
180 : $P_{20564} = (19, 1, 19, 1)$ lies on line ℓ_2
181 : $P_{21090} = (1, 18, 19, 1)$ lies on line ℓ_5
182 : $P_{21107} = (18, 18, 19, 1)$ lies on line ℓ_8
183 : $P_{21108} = (19, 18, 19, 1)$ lies on line ℓ_7
184 : $P_{21122} = (1, 19, 19, 1)$ lies on line ℓ_4
185 : $P_{21139} = (18, 19, 19, 1)$ lies on line ℓ_6
186 : $P_{21589} = (20, 1, 20, 1)$ lies on line ℓ_2
187 : $P_{21590} = (21, 1, 20, 1)$ lies on line ℓ_3
188 : $P_{22178} = (1, 20, 20, 1)$ lies on line ℓ_4
189 : $P_{22198} = (21, 20, 20, 1)$ lies on line ℓ_6
190 : $P_{22210} = (1, 21, 20, 1)$ lies on line ℓ_5
191 : $P_{22229} = (20, 21, 20, 1)$ lies on line ℓ_7
192 : $P_{22230} = (21, 21, 20, 1)$ lies on line ℓ_8
193 : $P_{22613} = (20, 1, 21, 1)$ lies on line ℓ_3
194 : $P_{22614} = (21, 1, 21, 1)$ lies on line ℓ_2
195 : $P_{23202} = (1, 20, 21, 1)$ lies on line ℓ_5
196 : $P_{23221} = (20, 20, 21, 1)$ lies on line ℓ_8
197 : $P_{23222} = (21, 20, 21, 1)$ lies on line ℓ_7
198 : $P_{23234} = (1, 21, 21, 1)$ lies on line ℓ_4
199 : $P_{23253} = (20, 21, 21, 1)$ lies on line ℓ_6
200 : $P_{23639} = (22, 1, 22, 1)$ lies on line ℓ_2
201 : $P_{23640} = (23, 1, 22, 1)$ lies on line ℓ_3
202 : $P_{24290} = (1, 22, 22, 1)$ lies on line ℓ_4
203 : $P_{24312} = (23, 22, 22, 1)$ lies on line ℓ_6
204 : $P_{24322} = (1, 23, 22, 1)$ lies on line ℓ_5
205 : $P_{24343} = (22, 23, 22, 1)$ lies on line ℓ_7
206 : $P_{24344} = (23, 23, 22, 1)$ lies on line ℓ_8
207 : $P_{24663} = (22, 1, 23, 1)$ lies on line ℓ_3
208 : $P_{24664} = (23, 1, 23, 1)$ lies on line ℓ_2
209 : $P_{25314} = (1, 22, 23, 1)$ lies on line ℓ_5
210 : $P_{25335} = (22, 22, 23, 1)$ lies on line ℓ_8
211 : $P_{25336} = (23, 22, 23, 1)$ lies on line ℓ_7
212 : $P_{25346} = (1, 23, 23, 1)$ lies on line ℓ_4
213 : $P_{25367} = (22, 23, 23, 1)$ lies on line ℓ_6
214 : $P_{25689} = (24, 1, 24, 1)$ lies on line ℓ_2
215 : $P_{25690} = (25, 1, 24, 1)$ lies on line ℓ_3

216 : $P_{26402} = (1, 24, 24, 1)$ lies on line ℓ_4
217 : $P_{26426} = (25, 24, 24, 1)$ lies on line ℓ_6
218 : $P_{26434} = (1, 25, 24, 1)$ lies on line ℓ_5
219 : $P_{26457} = (24, 25, 24, 1)$ lies on line ℓ_7
220 : $P_{26458} = (25, 25, 24, 1)$ lies on line ℓ_8
221 : $P_{26713} = (24, 1, 25, 1)$ lies on line ℓ_3
222 : $P_{26714} = (25, 1, 25, 1)$ lies on line ℓ_2
223 : $P_{27426} = (1, 24, 25, 1)$ lies on line ℓ_5
224 : $P_{27449} = (24, 24, 25, 1)$ lies on line ℓ_8
225 : $P_{27450} = (25, 24, 25, 1)$ lies on line ℓ_7
226 : $P_{27458} = (1, 25, 25, 1)$ lies on line ℓ_4
227 : $P_{27481} = (24, 25, 25, 1)$ lies on line ℓ_6
228 : $P_{27739} = (26, 1, 26, 1)$ lies on line ℓ_2
229 : $P_{27740} = (27, 1, 26, 1)$ lies on line ℓ_3
230 : $P_{28514} = (1, 26, 26, 1)$ lies on line ℓ_4
231 : $P_{28540} = (27, 26, 26, 1)$ lies on line ℓ_6
232 : $P_{28546} = (1, 27, 26, 1)$ lies on line ℓ_5
233 : $P_{28571} = (26, 27, 26, 1)$ lies on line ℓ_7
234 : $P_{28572} = (27, 27, 26, 1)$ lies on line ℓ_8
235 : $P_{28763} = (26, 1, 27, 1)$ lies on line ℓ_3
236 : $P_{28764} = (27, 1, 27, 1)$ lies on line ℓ_2
237 : $P_{29538} = (1, 26, 27, 1)$ lies on line ℓ_5
238 : $P_{29563} = (26, 26, 27, 1)$ lies on line ℓ_8
239 : $P_{29564} = (27, 26, 27, 1)$ lies on line ℓ_7
240 : $P_{29570} = (1, 27, 27, 1)$ lies on line ℓ_4
241 : $P_{29595} = (26, 27, 27, 1)$ lies on line ℓ_6
242 : $P_{29789} = (28, 1, 28, 1)$ lies on line ℓ_2
243 : $P_{29790} = (29, 1, 28, 1)$ lies on line ℓ_3
244 : $P_{30626} = (1, 28, 28, 1)$ lies on line ℓ_4
245 : $P_{30654} = (29, 28, 28, 1)$ lies on line ℓ_6
246 : $P_{30658} = (1, 29, 28, 1)$ lies on line ℓ_5
247 : $P_{30685} = (28, 29, 28, 1)$ lies on line ℓ_7
248 : $P_{30686} = (29, 29, 28, 1)$ lies on line ℓ_8
249 : $P_{30813} = (28, 1, 29, 1)$ lies on line ℓ_3
250 : $P_{30814} = (29, 1, 29, 1)$ lies on line ℓ_2
251 : $P_{31650} = (1, 28, 29, 1)$ lies on line ℓ_5
252 : $P_{31677} = (28, 28, 29, 1)$ lies on line ℓ_8
253 : $P_{31678} = (29, 28, 29, 1)$ lies on line ℓ_7
254 : $P_{31682} = (1, 29, 29, 1)$ lies on line ℓ_4
255 : $P_{31709} = (28, 29, 29, 1)$ lies on line ℓ_6
256 : $P_{31839} = (30, 1, 30, 1)$ lies on line ℓ_2
257 : $P_{31840} = (31, 1, 30, 1)$ lies on line ℓ_3
258 : $P_{32738} = (1, 30, 30, 1)$ lies on line ℓ_4
259 : $P_{32768} = (31, 30, 30, 1)$ lies on line ℓ_6
260 : $P_{32770} = (1, 31, 30, 1)$ lies on line ℓ_5
261 : $P_{32799} = (30, 31, 30, 1)$ lies on line ℓ_7
262 : $P_{32800} = (31, 31, 30, 1)$ lies on line ℓ_8
263 : $P_{32863} = (30, 1, 31, 1)$ lies on line ℓ_3
264 : $P_{32864} = (31, 1, 31, 1)$ lies on line ℓ_2
265 : $P_{33762} = (1, 30, 31, 1)$ lies on line ℓ_5
266 : $P_{33791} = (30, 30, 31, 1)$ lies on line ℓ_8
267 : $P_{33792} = (31, 30, 31, 1)$ lies on line ℓ_7
268 : $P_{33794} = (1, 31, 31, 1)$ lies on line ℓ_4
269 : $P_{33823} = (30, 31, 31, 1)$ lies on line ℓ_6

The single points on the surface are:

Points on surface but on no line

The surface has 840 points not on any line:
The points on the surface but not on lines are:

0 : $P_{127} = (28, 2, 1, 0)$
1 : $P_{137} = (6, 3, 1, 0)$
2 : $P_{186} = (23, 4, 1, 0)$
3 : $P_{215} = (20, 5, 1, 0)$
4 : $P_{230} = (3, 6, 1, 0)$
5 : $P_{272} = (13, 7, 1, 0)$
6 : $P_{306} = (15, 8, 1, 0)$
7 : $P_{353} = (30, 9, 1, 0)$
8 : $P_{386} = (31, 10, 1, 0)$
9 : $P_{406} = (19, 11, 1, 0)$
10 : $P_{441} = (22, 12, 1, 0)$
11 : $P_{458} = (7, 13, 1, 0)$
12 : $P_{501} = (18, 14, 1, 0)$
13 : $P_{523} = (8, 15, 1, 0)$
14 : $P_{571} = (24, 16, 1, 0)$
15 : $P_{608} = (29, 17, 1, 0)$
16 : $P_{625} = (14, 18, 1, 0)$
17 : $P_{654} = (11, 19, 1, 0)$
18 : $P_{680} = (5, 20, 1, 0)$
19 : $P_{734} = (27, 21, 1, 0)$
20 : $P_{751} = (12, 22, 1, 0)$
21 : $P_{775} = (4, 23, 1, 0)$
22 : $P_{819} = (16, 24, 1, 0)$
23 : $P_{861} = (26, 25, 1, 0)$
24 : $P_{892} = (25, 26, 1, 0)$
25 : $P_{920} = (21, 27, 1, 0)$
26 : $P_{933} = (2, 28, 1, 0)$
27 : $P_{980} = (17, 29, 1, 0)$
28 : $P_{1004} = (9, 30, 1, 0)$
29 : $P_{1037} = (10, 31, 1, 0)$
30 : $P_{1150} = (28, 2, 0, 1)$
31 : $P_{1160} = (6, 3, 0, 1)$

$32: P_{1209} = (23, 4, 0, 1)$
$33: P_{1238} = (20, 5, 0, 1)$
$34: P_{1253} = (3, 6, 0, 1)$
$35: P_{1295} = (13, 7, 0, 1)$
$36: P_{1329} = (15, 8, 0, 1)$
$37: P_{1376} = (30, 9, 0, 1)$
$38: P_{1409} = (31, 10, 0, 1)$
$39: P_{1429} = (19, 11, 0, 1)$
$40: P_{1464} = (22, 12, 0, 1)$
$41: P_{1481} = (7, 13, 0, 1)$
$42: P_{1524} = (18, 14, 0, 1)$
$43: P_{1546} = (8, 15, 0, 1)$
$44: P_{1594} = (24, 16, 0, 1)$
$45: P_{1631} = (29, 17, 0, 1)$
$46: P_{1648} = (14, 18, 0, 1)$
$47: P_{1677} = (11, 19, 0, 1)$
$48: P_{1703} = (5, 20, 0, 1)$
$49: P_{1757} = (27, 21, 0, 1)$
$50: P_{1774} = (12, 22, 0, 1)$
$51: P_{1798} = (4, 23, 0, 1)$
$52: P_{1842} = (16, 24, 0, 1)$
$53: P_{1884} = (26, 25, 0, 1)$
$54: P_{1915} = (25, 26, 0, 1)$
$55: P_{1943} = (21, 27, 0, 1)$
$56: P_{1956} = (2, 28, 0, 1)$
$57: P_{2003} = (17, 29, 0, 1)$
$58: P_{2027} = (9, 30, 0, 1)$
$59: P_{2060} = (10, 31, 0, 1)$
$60: P_{3133} = (28, 0, 2, 1)$
$61: P_{3255} = (22, 4, 2, 1)$
$62: P_{3343} = (14, 7, 2, 1)$
$63: P_{3382} = (21, 8, 2, 1)$
$64: P_{3475} = (18, 11, 2, 1)$
$65: P_{3513} = (24, 12, 2, 1)$
$66: P_{3560} = (7, 14, 2, 1)$
$67: P_{3692} = (11, 18, 2, 1)$
$68: P_{3785} = (8, 21, 2, 1)$
$69: P_{3813} = (4, 22, 2, 1)$
$70: P_{3872} = (31, 23, 2, 1)$
$71: P_{3885} = (12, 24, 2, 1)$
$72: P_{3967} = (30, 26, 2, 1)$
$73: P_{3998} = (29, 27, 2, 1)$
$74: P_{4001} = (0, 28, 2, 1)$
$75: P_{4060} = (27, 29, 2, 1)$
$76: P_{4091} = (26, 30, 2, 1)$
$77: P_{4120} = (23, 31, 2, 1)$
$78: P_{4135} = (6, 0, 3, 1)$
$79: P_{4276} = (19, 4, 3, 1)$
$80: P_{4321} = (0, 6, 3, 1)$
$81: P_{4363} = (10, 7, 3, 1)$
$82: P_{4375} = (22, 7, 3, 1)$
$83: P_{4378} = (25, 7, 3, 1)$
$84: P_{4402} = (17, 8, 3, 1)$
$85: P_{4456} = (7, 10, 3, 1)$
$86: P_{4471} = (22, 10, 3, 1)$
$87: P_{4474} = (25, 10, 3, 1)$
$88: P_{4510} = (29, 11, 3, 1)$
$89: P_{4543} = (30, 12, 3, 1)$
$90: P_{4632} = (23, 15, 3, 1)$
$91: P_{4662} = (21, 16, 3, 1)$
$92: P_{4681} = (8, 17, 3, 1)$
$93: P_{4741} = (4, 19, 3, 1)$
$94: P_{4817} = (16, 21, 3, 1)$
$95: P_{4840} = (7, 22, 3, 1)$
$96: P_{4843} = (10, 22, 3, 1)$
$97: P_{4858} = (25, 22, 3, 1)$
$98: P_{4880} = (15, 23, 3, 1)$
$99: P_{4936} = (7, 25, 3, 1)$
$100: P_{4939} = (10, 25, 3, 1)$
$101: P_{4951} = (22, 25, 3, 1)$
$102: P_{5068} = (11, 29, 3, 1)$
$103: P_{5101} = (12, 30, 3, 1)$
$104: P_{5176} = (23, 0, 4, 1)$
$105: P_{5239} = (22, 2, 4, 1)$
$106: P_{5268} = (19, 3, 4, 1)$
$107: P_{5403} = (26, 7, 4, 1)$
$108: P_{5456} = (15, 9, 4, 1)$
$109: P_{5501} = (28, 10, 4, 1)$
$110: P_{5642} = (9, 15, 4, 1)$
$111: P_{5690} = (25, 16, 4, 1)$
$112: P_{5753} = (24, 18, 4, 1)$
$113: P_{5764} = (3, 19, 4, 1)$
$114: P_{5855} = (30, 21, 4, 1)$
$115: P_{5859} = (2, 22, 4, 1)$
$116: P_{5889} = (0, 23, 4, 1)$
$117: P_{5939} = (18, 24, 4, 1)$
$118: P_{5969} = (16, 25, 4, 1)$
$119: P_{5992} = (7, 26, 4, 1)$
$120: P_{6059} = (10, 28, 4, 1)$
$121: P_{6134} = (21, 30, 4, 1)$
$122: P_{6197} = (20, 0, 5, 1)$
$123: P_{6383} = (14, 6, 5, 1)$
$124: P_{6390} = (21, 6, 5, 1)$
$125: P_{6394} = (25, 6, 5, 1)$
$126: P_{6449} = (16, 8, 5, 1)$
$127: P_{6509} = (12, 10, 5, 1)$
$128: P_{6571} = (10, 12, 5, 1)$
$129: P_{6621} = (28, 13, 5, 1)$
$130: P_{6631} = (6, 14, 5, 1)$
$131: P_{6646} = (21, 14, 5, 1)$
$132: P_{6650} = (25, 14, 5, 1)$
$133: P_{6679} = (22, 15, 5, 1)$
$134: P_{6697} = (8, 16, 5, 1)$
$135: P_{6811} = (26, 19, 5, 1)$
$136: P_{6817} = (0, 20, 5, 1)$
$137: P_{6855} = (6, 21, 5, 1)$
$138: P_{6863} = (14, 21, 5, 1)$
$139: P_{6874} = (25, 21, 5, 1)$

140 : $P_{6896} = (15, 22, 5, 1)$
141 : $P_{6976} = (31, 24, 5, 1)$
142 : $P_{6983} = (6, 25, 5, 1)$
143 : $P_{6991} = (14, 25, 5, 1)$
144 : $P_{6998} = (21, 25, 5, 1)$
145 : $P_{7028} = (19, 26, 5, 1)$
146 : $P_{7086} = (13, 28, 5, 1)$
147 : $P_{7193} = (24, 31, 5, 1)$
148 : $P_{7204} = (3, 0, 6, 1)$
149 : $P_{7297} = (0, 3, 6, 1)$
150 : $P_{7375} = (14, 5, 6, 1)$
151 : $P_{7382} = (21, 5, 6, 1)$
152 : $P_{7386} = (25, 5, 6, 1)$
153 : $P_{7511} = (22, 9, 6, 1)$
154 : $P_{7603} = (18, 12, 6, 1)$
155 : $P_{7633} = (16, 13, 6, 1)$
156 : $P_{7654} = (5, 14, 6, 1)$
157 : $P_{7670} = (21, 14, 6, 1)$
158 : $P_{7674} = (25, 14, 6, 1)$
159 : $P_{7710} = (29, 15, 6, 1)$
160 : $P_{7726} = (13, 16, 6, 1)$
161 : $P_{7765} = (20, 17, 6, 1)$
162 : $P_{7773} = (28, 17, 6, 1)$
163 : $P_{7775} = (30, 17, 6, 1)$
164 : $P_{7789} = (12, 18, 6, 1)$
165 : $P_{7858} = (17, 20, 6, 1)$
166 : $P_{7869} = (28, 20, 6, 1)$
167 : $P_{7871} = (30, 20, 6, 1)$
168 : $P_{7878} = (5, 21, 6, 1)$
169 : $P_{7887} = (14, 21, 6, 1)$
170 : $P_{7898} = (25, 21, 6, 1)$
171 : $P_{7914} = (9, 22, 6, 1)$
172 : $P_{8006} = (5, 25, 6, 1)$
173 : $P_{8015} = (14, 25, 6, 1)$
174 : $P_{8022} = (21, 25, 6, 1)$
175 : $P_{8114} = (17, 28, 6, 1)$
176 : $P_{8117} = (20, 28, 6, 1)$
177 : $P_{8127} = (30, 28, 6, 1)$
178 : $P_{8144} = (15, 29, 6, 1)$
179 : $P_{8178} = (17, 30, 6, 1)$
180 : $P_{8181} = (20, 30, 6, 1)$
181 : $P_{8189} = (28, 30, 6, 1)$
182 : $P_{8238} = (13, 0, 7, 1)$
183 : $P_{8303} = (14, 2, 7, 1)$
184 : $P_{8331} = (10, 3, 7, 1)$
185 : $P_{8343} = (22, 3, 7, 1)$
186 : $P_{8346} = (25, 3, 7, 1)$
187 : $P_{8379} = (26, 4, 7, 1)$
188 : $P_{8529} = (16, 9, 7, 1)$
189 : $P_{8548} = (3, 10, 7, 1)$
190 : $P_{8567} = (22, 10, 7, 1)$
191 : $P_{8570} = (25, 10, 7, 1)$
192 : $P_{8592} = (15, 11, 7, 1)$
193 : $P_{8641} = (0, 13, 7, 1)$
194 : $P_{8675} = (2, 14, 7, 1)$
195 : $P_{8716} = (11, 15, 7, 1)$
196 : $P_{8746} = (9, 16, 7, 1)$
197 : $P_{8787} = (18, 17, 7, 1)$
198 : $P_{8818} = (17, 18, 7, 1)$
199 : $P_{8860} = (27, 19, 7, 1)$
200 : $P_{8932} = (3, 22, 7, 1)$
201 : $P_{8939} = (10, 22, 7, 1)$
202 : $P_{8954} = (25, 22, 7, 1)$
203 : $P_{9028} = (3, 25, 7, 1)$
204 : $P_{9035} = (10, 25, 7, 1)$
205 : $P_{9047} = (22, 25, 7, 1)$
206 : $P_{9061} = (4, 26, 7, 1)$
207 : $P_{9108} = (19, 27, 7, 1)$
208 : $P_{9264} = (15, 0, 8, 1)$
209 : $P_{9334} = (21, 2, 8, 1)$
210 : $P_{9362} = (17, 3, 8, 1)$
211 : $P_{9425} = (16, 5, 8, 1)$
212 : $P_{9583} = (14, 10, 8, 1)$
213 : $P_{9588} = (19, 10, 8, 1)$
214 : $P_{9599} = (30, 10, 8, 1)$
215 : $P_{9688} = (23, 13, 8, 1)$
216 : $P_{9707} = (10, 14, 8, 1)$
217 : $P_{9716} = (19, 14, 8, 1)$
218 : $P_{9727} = (30, 14, 8, 1)$
219 : $P_{9729} = (0, 15, 8, 1)$
220 : $P_{9766} = (5, 16, 8, 1)$
221 : $P_{9796} = (3, 17, 8, 1)$
222 : $P_{9867} = (10, 19, 8, 1)$
223 : $P_{9871} = (14, 19, 8, 1)$
224 : $P_{9887} = (30, 19, 8, 1)$
225 : $P_{9923} = (2, 21, 8, 1)$
226 : $P_{9977} = (24, 22, 8, 1)$
227 : $P_{9979} = (26, 22, 8, 1)$
228 : $P_{9982} = (29, 22, 8, 1)$
229 : $P_{9998} = (13, 23, 8, 1)$
230 : $P_{10039} = (22, 24, 8, 1)$
231 : $P_{10043} = (26, 24, 8, 1)$
232 : $P_{10046} = (29, 24, 8, 1)$
233 : $P_{10103} = (22, 26, 8, 1)$
234 : $P_{10105} = (24, 26, 8, 1)$
235 : $P_{10110} = (29, 26, 8, 1)$
236 : $P_{10199} = (22, 29, 8, 1)$
237 : $P_{10201} = (24, 29, 8, 1)$
238 : $P_{10203} = (26, 29, 8, 1)$
239 : $P_{10219} = (10, 30, 8, 1)$
240 : $P_{10223} = (14, 30, 8, 1)$
241 : $P_{10228} = (19, 30, 8, 1)$
242 : $P_{10303} = (30, 0, 9, 1)$
243 : $P_{10416} = (15, 4, 9, 1)$
244 : $P_{10487} = (22, 6, 9, 1)$
245 : $P_{10513} = (16, 7, 9, 1)$
246 : $P_{10649} = (24, 11, 9, 1)$
247 : $P_{10678} = (21, 12, 9, 1)$

$248: P_{10757} = (4, 15, 9, 1)$
$249: P_{10792} = (7, 16, 9, 1)$
$250: P_{10872} = (23, 18, 9, 1)$
$251: P_{10939} = (26, 20, 9, 1)$
$252: P_{10957} = (12, 21, 9, 1)$
$253: P_{10983} = (6, 22, 9, 1)$
$254: P_{11027} = (18, 23, 9, 1)$
$255: P_{11052} = (11, 24, 9, 1)$
$256: P_{11125} = (20, 26, 9, 1)$
$257: P_{11168} = (31, 27, 9, 1)$
$258: P_{11233} = (0, 30, 9, 1)$
$259: P_{11292} = (27, 31, 9, 1)$
$260: P_{11328} = (31, 0, 10, 1)$
$261: P_{11400} = (7, 3, 10, 1)$
$262: P_{11415} = (22, 3, 10, 1)$
$263: P_{11418} = (25, 3, 10, 1)$
$264: P_{11453} = (28, 4, 10, 1)$
$265: P_{11469} = (12, 5, 10, 1)$
$266: P_{11524} = (3, 7, 10, 1)$
$267: P_{11543} = (22, 7, 10, 1)$
$268: P_{11546} = (25, 7, 10, 1)$
$269: P_{11567} = (14, 8, 10, 1)$
$270: P_{11572} = (19, 8, 10, 1)$
$271: P_{11583} = (30, 8, 10, 1)$
$272: P_{11686} = (5, 12, 10, 1)$
$273: P_{11730} = (17, 13, 10, 1)$
$274: P_{11753} = (8, 14, 10, 1)$
$275: P_{11764} = (19, 14, 10, 1)$
$276: P_{11775} = (30, 14, 10, 1)$
$277: P_{11854} = (13, 17, 10, 1)$
$278: P_{11913} = (8, 19, 10, 1)$
$279: P_{11919} = (14, 19, 10, 1)$
$280: P_{11935} = (30, 19, 10, 1)$
$281: P_{12004} = (3, 22, 10, 1)$
$282: P_{12008} = (7, 22, 10, 1)$
$283: P_{12026} = (25, 22, 10, 1)$
$284: P_{12092} = (27, 24, 10, 1)$
$285: P_{12100} = (3, 25, 10, 1)$
$286: P_{12104} = (7, 25, 10, 1)$
$287: P_{12119} = (22, 25, 10, 1)$
$288: P_{12185} = (24, 27, 10, 1)$
$289: P_{12197} = (4, 28, 10, 1)$
$290: P_{12265} = (8, 30, 10, 1)$
$291: P_{12271} = (14, 30, 10, 1)$
$292: P_{12276} = (19, 30, 10, 1)$
$293: P_{12289} = (0, 31, 10, 1)$
$294: P_{12340} = (19, 0, 11, 1)$
$295: P_{12403} = (18, 2, 11, 1)$
$296: P_{12446} = (29, 3, 11, 1)$
$297: P_{12560} = (15, 7, 11, 1)$
$298: P_{12633} = (24, 9, 11, 1)$
$299: P_{12758} = (21, 13, 11, 1)$
$300: P_{12808} = (7, 15, 11, 1)$
$301: P_{12864} = (31, 16, 11, 1)$
$302: P_{12899} = (2, 18, 11, 1)$
$303: P_{12929} = (0, 19, 11, 1)$
$304: P_{12986} = (25, 20, 11, 1)$
$305: P_{13006} = (13, 21, 11, 1)$
$306: P_{13098} = (9, 24, 11, 1)$
$307: P_{13141} = (20, 25, 11, 1)$
$308: P_{13181} = (28, 26, 11, 1)$
$309: P_{13243} = (26, 28, 11, 1)$
$310: P_{13252} = (3, 29, 11, 1)$
$311: P_{13329} = (16, 31, 11, 1)$
$312: P_{13367} = (22, 0, 12, 1)$
$313: P_{13433} = (24, 2, 12, 1)$
$314: P_{13471} = (30, 3, 12, 1)$
$315: P_{13515} = (10, 5, 12, 1)$
$316: P_{13555} = (18, 6, 12, 1)$
$317: P_{13654} = (21, 9, 12, 1)$
$318: P_{13670} = (5, 10, 12, 1)$
$319: P_{13820} = (27, 14, 12, 1)$
$320: P_{13927} = (6, 18, 12, 1)$
$321: P_{13973} = (20, 19, 12, 1)$
$322: P_{13976} = (23, 19, 12, 1)$
$323: P_{13982} = (29, 19, 12, 1)$
$324: P_{14004} = (19, 20, 12, 1)$
$325: P_{14008} = (23, 20, 12, 1)$
$326: P_{14014} = (29, 20, 12, 1)$
$327: P_{14026} = (9, 21, 12, 1)$
$328: P_{14049} = (0, 22, 12, 1)$
$329: P_{14100} = (19, 23, 12, 1)$
$330: P_{14101} = (20, 23, 12, 1)$
$331: P_{14110} = (29, 23, 12, 1)$
$332: P_{14115} = (2, 24, 12, 1)$
$333: P_{14223} = (14, 27, 12, 1)$
$334: P_{14292} = (19, 29, 12, 1)$
$335: P_{14293} = (20, 29, 12, 1)$
$336: P_{14296} = (23, 29, 12, 1)$
$337: P_{14308} = (3, 30, 12, 1)$
$338: P_{14376} = (7, 0, 13, 1)$
$339: P_{14557} = (28, 5, 13, 1)$
$340: P_{14577} = (16, 6, 13, 1)$
$341: P_{14593} = (0, 7, 13, 1)$
$342: P_{14648} = (23, 8, 13, 1)$
$343: P_{14706} = (17, 10, 13, 1)$
$344: P_{14742} = (21, 11, 13, 1)$
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748 : $P_{30572} = (11, 26, 28, 1)$
749 : $P_{30608} = (15, 27, 28, 1)$
750 : $P_{30695} = (6, 30, 28, 1)$
751 : $P_{30706} = (17, 30, 28, 1)$
752 : $P_{30709} = (20, 30, 28, 1)$
753 : $P_{30739} = (18, 31, 28, 1)$
754 : $P_{30770} = (17, 0, 29, 1)$
755 : $P_{30844} = (27, 2, 29, 1)$
756 : $P_{30860} = (11, 3, 29, 1)$
757 : $P_{30960} = (15, 6, 29, 1)$
758 : $P_{31031} = (22, 8, 29, 1)$
759 : $P_{31033} = (24, 8, 29, 1)$
760 : $P_{31035} = (26, 8, 29, 1)$
761 : $P_{31108} = (3, 11, 29, 1)$
762 : $P_{31156} = (19, 12, 29, 1)$
763 : $P_{31157} = (20, 12, 29, 1)$
764 : $P_{31160} = (23, 12, 29, 1)$
765 : $P_{31239} = (6, 15, 29, 1)$
766 : $P_{31297} = (0, 17, 29, 1)$
767 : $P_{31354} = (25, 18, 29, 1)$
768 : $P_{31373} = (12, 19, 29, 1)$
769 : $P_{31381} = (20, 19, 29, 1)$
770 : $P_{31384} = (23, 19, 29, 1)$
771 : $P_{31405} = (12, 20, 29, 1)$
772 : $P_{31412} = (19, 20, 29, 1)$
773 : $P_{31416} = (23, 20, 29, 1)$
774 : $P_{31465} = (8, 22, 29, 1)$
775 : $P_{31481} = (24, 22, 29, 1)$
776 : $P_{31483} = (26, 22, 29, 1)$
777 : $P_{31501} = (12, 23, 29, 1)$
778 : $P_{31508} = (19, 23, 29, 1)$
779 : $P_{31509} = (20, 23, 29, 1)$
780 : $P_{31529} = (8, 24, 29, 1)$
781 : $P_{31543} = (22, 24, 29, 1)$
782 : $P_{31547} = (26, 24, 29, 1)$
783 : $P_{31571} = (18, 25, 29, 1)$
784 : $P_{31593} = (8, 26, 29, 1)$
785 : $P_{31607} = (22, 26, 29, 1)$
786 : $P_{31609} = (24, 26, 29, 1)$
787 : $P_{31619} = (2, 27, 29, 1)$

788 : $P_{31786} = (9, 0, 30, 1)$
789 : $P_{31867} = (26, 2, 30, 1)$
790 : $P_{31885} = (12, 3, 30, 1)$
791 : $P_{31926} = (21, 4, 30, 1)$
792 : $P_{31986} = (17, 6, 30, 1)$
793 : $P_{31989} = (20, 6, 30, 1)$
794 : $P_{31997} = (28, 6, 30, 1)$
795 : $P_{32043} = (10, 8, 30, 1)$
796 : $P_{32047} = (14, 8, 30, 1)$
797 : $P_{32052} = (19, 8, 30, 1)$
798 : $P_{32065} = (0, 9, 30, 1)$
799 : $P_{32105} = (8, 10, 30, 1)$
800 : $P_{32111} = (14, 10, 30, 1)$
801 : $P_{32116} = (19, 10, 30, 1)$
802 : $P_{32164} = (3, 12, 30, 1)$
803 : $P_{32217} = (24, 13, 30, 1)$
804 : $P_{32233} = (8, 14, 30, 1)$
805 : $P_{32235} = (10, 14, 30, 1)$
806 : $P_{32244} = (19, 14, 30, 1)$
807 : $P_{32327} = (6, 17, 30, 1)$
808 : $P_{32341} = (20, 17, 30, 1)$
809 : $P_{32349} = (28, 17, 30, 1)$
810 : $P_{32393} = (8, 19, 30, 1)$
811 : $P_{32395} = (10, 19, 30, 1)$
812 : $P_{32399} = (14, 19, 30, 1)$
813 : $P_{32423} = (6, 20, 30, 1)$
814 : $P_{32434} = (17, 20, 30, 1)$
815 : $P_{32445} = (28, 20, 30, 1)$
816 : $P_{32453} = (4, 21, 30, 1)$
817 : $P_{32558} = (13, 24, 30, 1)$
818 : $P_{32611} = (2, 26, 30, 1)$
819 : $P_{32679} = (6, 28, 30, 1)$
820 : $P_{32690} = (17, 28, 30, 1)$
821 : $P_{32693} = (20, 28, 30, 1)$
822 : $P_{32811} = (10, 0, 31, 1)$
823 : $P_{32888} = (23, 2, 31, 1)$
824 : $P_{32985} = (24, 5, 31, 1)$
825 : $P_{33116} = (27, 9, 31, 1)$
826 : $P_{33121} = (0, 10, 31, 1)$
827 : $P_{33169} = (16, 11, 31, 1)$
828 : $P_{33302} = (21, 15, 31, 1)$
829 : $P_{33324} = (11, 16, 31, 1)$
830 : $P_{33370} = (25, 17, 31, 1)$
831 : $P_{33405} = (28, 18, 31, 1)$
832 : $P_{33463} = (22, 20, 31, 1)$
833 : $P_{33488} = (15, 21, 31, 1)$
834 : $P_{33525} = (20, 22, 31, 1)$
835 : $P_{33539} = (2, 23, 31, 1)$
836 : $P_{33574} = (5, 24, 31, 1)$
837 : $P_{33618} = (17, 25, 31, 1)$
838 : $P_{33674} = (9, 27, 31, 1)$
839 : $P_{33715} = (18, 28, 31, 1)$

Line Intersection Graph

	0	1	2	3	4	5	6	7	8
0	0	1	1	0	1	0	0	0	1
1	1	0	0	1	0	1	1	1	0
2	1	0	0	1	1	0	0	1	0
3	0	1	1	0	0	1	1	0	1
4	1	0	1	0	0	1	1	0	0
5	0	1	0	1	1	0	0	1	1
6	0	1	0	1	1	0	0	1	1
7	0	1	1	0	0	1	1	0	1
8	1	0	0	1	0	1	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_4	ℓ_8
in point	P_5	P_4	P_4	P_{2082}

Line 1 intersects

Line	ℓ_0	ℓ_3	ℓ_5	ℓ_6	ℓ_7
in point	P_5	P_{2114}	P_{2083}	P_{2114}	P_{2083}

Line 2 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_7
in point	P_4	P_{36}	P_4	P_{1090}

Line 3 intersects

Line	ℓ_1	ℓ_2	ℓ_5	ℓ_6	ℓ_8
in point	P_{2114}	P_{36}	P_{1091}	P_{2114}	P_{1091}

Line 4 intersects

Line	ℓ_0	ℓ_2	ℓ_5	ℓ_6
in point	P_4	P_4	P_{67}	P_{1059}

Line 5 intersects

Line	ℓ_1	ℓ_3	ℓ_4	ℓ_7	ℓ_8
in point	P_{2083}	P_{1091}	P_{67}	P_{2083}	P_{1091}

Line 6 intersects

Line	ℓ_1	ℓ_3	ℓ_4	ℓ_7	ℓ_8
in point	P_{2114}	P_{2114}	P_{1059}	P_{68}	P_{68}

Line 7 intersects

Line	ℓ_1	ℓ_2	ℓ_5	ℓ_6	ℓ_8
in point	P_{2083}	P_{1090}	P_{2083}	P_{68}	P_{68}

Line 8 intersects

Line	ℓ_0	ℓ_3	ℓ_5	ℓ_6	ℓ_7
in point	P_{2082}	P_{1091}	P_{1091}	P_{68}	P_{68}

The surface has 1121 points:
Too many to print.