

Rank-76051 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(64) is 1107562565

General information

Number of lines	9
Number of points	4289
Number of singular points	4
Number of Eckardt points	5
Number of double points	6
Number of single points	558
Number of points off lines	3720
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^9
Type of lines on points	$3^5, 2^6, 1^{558}, 0^{3720}$

Singular Points

The surface has 4 singular points:

$$\begin{aligned} 0 : P_{123} &= \mathbf{P}(\epsilon^{42}, 0, 1, 0) = \mathbf{P}(56, 0, 1, 0) & 3 : P_{241273} &= \mathbf{P}(\epsilon^{42}, \epsilon^{42}, \epsilon^{21}, 1) = \mathbf{P}(56, 56, 57, 1) \\ 1 : P_{124} &= \mathbf{P}(\epsilon^{21}, 0, 1, 0) = \mathbf{P}(57, 0, 1, 0) \\ 2 : P_{237242} &= \mathbf{P}(\epsilon^{21}, \epsilon^{21}, \epsilon^{42}, 1) = \mathbf{P}(57, 57, 56, 1) \end{aligned}$$

The 9 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{4096} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{4096} = \mathbf{P}\mathbf{l}(0, 0, 1, 0, 0, 0)_2$$

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17043520} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17043520} = \mathbf{Pl}(0, 0, 0, 1, 0, 0)_{129} \\
\ell_2 &= \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047616} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047616} = \mathbf{Pl}(0, 1, 0, 0, 0, 0)_1 \\
\ell_3 &= \begin{bmatrix} 1 & 0 & \epsilon^{21} & 0 \\ 0 & 1 & 1 & \epsilon^{21} \end{bmatrix}_{240826} = \begin{bmatrix} 1 & 0 & 57 & 0 \\ 0 & 1 & 1 & 57 \end{bmatrix}_{240826} = \mathbf{Pl}(56, 57, 56, 0, 1, 1)_{540160} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & \epsilon^{21} & 0 \\ 0 & 1 & 0 & \epsilon^{42} \end{bmatrix}_{240761} = \begin{bmatrix} 1 & 0 & 57 & 0 \\ 0 & 1 & 0 & 56 \end{bmatrix}_{240761} = \mathbf{Pl}(57, 56, 0, 0, 57, 1)_{15213113} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & \epsilon^{42} & 0 \\ 0 & 1 & 0 & \epsilon^{21} \end{bmatrix}_{236664} = \begin{bmatrix} 1 & 0 & 56 & 0 \\ 0 & 1 & 0 & 57 \end{bmatrix}_{236664} = \mathbf{Pl}(56, 57, 0, 0, 56, 1)_{14951032} \\
\ell_6 &= \begin{bmatrix} 1 & 0 & \epsilon^{42} & 0 \\ 0 & 1 & 1 & \epsilon^{42} \end{bmatrix}_{236601} = \begin{bmatrix} 1 & 0 & 56 & 0 \\ 0 & 1 & 1 & 56 \end{bmatrix}_{236601} = \mathbf{Pl}(57, 56, 57, 0, 1, 1)_{540224} \\
\ell_7 &= \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17043585} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17043585} = \mathbf{Pl}(0, 1, 0, 1, 0, 0)_{193} \\
\ell_8 &= \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{274562} = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{274562} = \mathbf{Pl}(0, 1, 1, 1, 1, 1)_{544642}
\end{aligned}$$

Rank of lines: (4096, 17043520, 17047616, 240826, 240761, 236664, 236601, 17043585, 274562)
Rank of points on Klein quadric: (2, 129, 1, 540160, 15213113, 14951032, 540224, 193, 544642)

Eckardt Points

The surface has 5 Eckardt points:

$$\begin{aligned}
0 : P_3 &= \mathbf{P}(0, 0, 0, 1) = \mathbf{P}(0, 0, 0, 1), \\
1 : P_{123} &= \mathbf{P}(\epsilon^{42}, 0, 1, 0) = \mathbf{P}(56, 0, 1, 0), \\
2 : P_{124} &= \mathbf{P}(\epsilon^{21}, 0, 1, 0) = \mathbf{P}(57, 0, 1, 0), \\
3 : P_{237242} &= \mathbf{P}(\epsilon^{21}, \epsilon^{21}, \epsilon^{42}, 1) = \mathbf{P}(57, 57, 56, 1), \\
4 : P_{241273} &= \mathbf{P}(\epsilon^{42}, \epsilon^{42}, \epsilon^{21}, 1) = \mathbf{P}(56, 56, 57, 1).
\end{aligned}$$

Double Points

The surface has 6 Double points:

The double points on the surface are:

$$\begin{aligned}
P_2 &= (0, 0, 1, 0) = \ell_0 \cap \ell_2 & P_{237121} &= (0, 56, 56, 1) = \ell_3 \cap \ell_7 \\
P_{7810} &= (0, 57, 0, 1) = \ell_1 \cap \ell_4 & P_{241281} &= (0, 57, 57, 1) = \ell_6 \cap \ell_7 \\
P_{7746} &= (0, 56, 0, 1) = \ell_1 \cap \ell_5 \\
P_{8258} &= (0, 0, 1, 1) = \ell_2 \cap \ell_8
\end{aligned}$$

Single Points

The surface has 558 single points:

The single points on the surface are:

$$\begin{aligned}
0 : P_0 &= (1, 0, 0, 0) \text{ lies on line } \ell_0 & 3 : P_{69} &= (2, 0, 1, 0) \text{ lies on line } \ell_0 \\
1 : P_1 &= (0, 1, 0, 0) \text{ lies on line } \ell_1 & 4 : P_{70} &= (3, 0, 1, 0) \text{ lies on line } \ell_0 \\
2 : P_{68} &= (1, 0, 1, 0) \text{ lies on line } \ell_0 & 5 : P_{71} &= (4, 0, 1, 0) \text{ lies on line } \ell_0
\end{aligned}$$

6 : $P_{72} = (5, 0, 1, 0)$ lies on line ℓ_0
 7 : $P_{73} = (6, 0, 1, 0)$ lies on line ℓ_0
 8 : $P_{74} = (7, 0, 1, 0)$ lies on line ℓ_0
 9 : $P_{75} = (8, 0, 1, 0)$ lies on line ℓ_0
 10 : $P_{76} = (9, 0, 1, 0)$ lies on line ℓ_0
 11 : $P_{77} = (10, 0, 1, 0)$ lies on line ℓ_0
 12 : $P_{78} = (11, 0, 1, 0)$ lies on line ℓ_0
 13 : $P_{79} = (12, 0, 1, 0)$ lies on line ℓ_0
 14 : $P_{80} = (13, 0, 1, 0)$ lies on line ℓ_0
 15 : $P_{81} = (14, 0, 1, 0)$ lies on line ℓ_0
 16 : $P_{82} = (15, 0, 1, 0)$ lies on line ℓ_0
 17 : $P_{83} = (16, 0, 1, 0)$ lies on line ℓ_0
 18 : $P_{84} = (17, 0, 1, 0)$ lies on line ℓ_0
 19 : $P_{85} = (18, 0, 1, 0)$ lies on line ℓ_0
 20 : $P_{86} = (19, 0, 1, 0)$ lies on line ℓ_0
 21 : $P_{87} = (20, 0, 1, 0)$ lies on line ℓ_0
 22 : $P_{88} = (21, 0, 1, 0)$ lies on line ℓ_0
 23 : $P_{89} = (22, 0, 1, 0)$ lies on line ℓ_0
 24 : $P_{90} = (23, 0, 1, 0)$ lies on line ℓ_0
 25 : $P_{91} = (24, 0, 1, 0)$ lies on line ℓ_0
 26 : $P_{92} = (25, 0, 1, 0)$ lies on line ℓ_0
 27 : $P_{93} = (26, 0, 1, 0)$ lies on line ℓ_0
 28 : $P_{94} = (27, 0, 1, 0)$ lies on line ℓ_0
 29 : $P_{95} = (28, 0, 1, 0)$ lies on line ℓ_0
 30 : $P_{96} = (29, 0, 1, 0)$ lies on line ℓ_0
 31 : $P_{97} = (30, 0, 1, 0)$ lies on line ℓ_0
 32 : $P_{98} = (31, 0, 1, 0)$ lies on line ℓ_0
 33 : $P_{99} = (32, 0, 1, 0)$ lies on line ℓ_0
 34 : $P_{100} = (33, 0, 1, 0)$ lies on line ℓ_0
 35 : $P_{101} = (34, 0, 1, 0)$ lies on line ℓ_0
 36 : $P_{102} = (35, 0, 1, 0)$ lies on line ℓ_0
 37 : $P_{103} = (36, 0, 1, 0)$ lies on line ℓ_0
 38 : $P_{104} = (37, 0, 1, 0)$ lies on line ℓ_0
 39 : $P_{105} = (38, 0, 1, 0)$ lies on line ℓ_0
 40 : $P_{106} = (39, 0, 1, 0)$ lies on line ℓ_0
 41 : $P_{107} = (40, 0, 1, 0)$ lies on line ℓ_0
 42 : $P_{108} = (41, 0, 1, 0)$ lies on line ℓ_0
 43 : $P_{109} = (42, 0, 1, 0)$ lies on line ℓ_0
 44 : $P_{110} = (43, 0, 1, 0)$ lies on line ℓ_0
 45 : $P_{111} = (44, 0, 1, 0)$ lies on line ℓ_0
 46 : $P_{112} = (45, 0, 1, 0)$ lies on line ℓ_0
 47 : $P_{113} = (46, 0, 1, 0)$ lies on line ℓ_0
 48 : $P_{114} = (47, 0, 1, 0)$ lies on line ℓ_0
 49 : $P_{115} = (48, 0, 1, 0)$ lies on line ℓ_0
 50 : $P_{116} = (49, 0, 1, 0)$ lies on line ℓ_0
 51 : $P_{117} = (50, 0, 1, 0)$ lies on line ℓ_0
 52 : $P_{118} = (51, 0, 1, 0)$ lies on line ℓ_0
 53 : $P_{119} = (52, 0, 1, 0)$ lies on line ℓ_0
 54 : $P_{120} = (53, 0, 1, 0)$ lies on line ℓ_0
 55 : $P_{121} = (54, 0, 1, 0)$ lies on line ℓ_0
 56 : $P_{122} = (55, 0, 1, 0)$ lies on line ℓ_0
 57 : $P_{125} = (58, 0, 1, 0)$ lies on line ℓ_0
 58 : $P_{126} = (59, 0, 1, 0)$ lies on line ℓ_0
 59 : $P_{127} = (60, 0, 1, 0)$ lies on line ℓ_0

60 : $P_{128} = (61, 0, 1, 0)$ lies on line ℓ_0
 61 : $P_{129} = (62, 0, 1, 0)$ lies on line ℓ_0
 62 : $P_{130} = (63, 0, 1, 0)$ lies on line ℓ_0
 63 : $P_{131} = (0, 1, 1, 0)$ lies on line ℓ_7
 64 : $P_{132} = (1, 1, 1, 0)$ lies on line ℓ_8
 65 : $P_{4226} = (0, 1, 0, 1)$ lies on line ℓ_1
 66 : $P_{4227} = (1, 1, 0, 1)$ lies on line ℓ_8
 67 : $P_{4290} = (0, 2, 0, 1)$ lies on line ℓ_1
 68 : $P_{4354} = (0, 3, 0, 1)$ lies on line ℓ_1
 69 : $P_{4418} = (0, 4, 0, 1)$ lies on line ℓ_1
 70 : $P_{4482} = (0, 5, 0, 1)$ lies on line ℓ_1
 71 : $P_{4546} = (0, 6, 0, 1)$ lies on line ℓ_1
 72 : $P_{4610} = (0, 7, 0, 1)$ lies on line ℓ_1
 73 : $P_{4674} = (0, 8, 0, 1)$ lies on line ℓ_1
 74 : $P_{4738} = (0, 9, 0, 1)$ lies on line ℓ_1
 75 : $P_{4802} = (0, 10, 0, 1)$ lies on line ℓ_1
 76 : $P_{4866} = (0, 11, 0, 1)$ lies on line ℓ_1
 77 : $P_{4930} = (0, 12, 0, 1)$ lies on line ℓ_1
 78 : $P_{4994} = (0, 13, 0, 1)$ lies on line ℓ_1
 79 : $P_{5058} = (0, 14, 0, 1)$ lies on line ℓ_1
 80 : $P_{5122} = (0, 15, 0, 1)$ lies on line ℓ_1
 81 : $P_{5186} = (0, 16, 0, 1)$ lies on line ℓ_1
 82 : $P_{5250} = (0, 17, 0, 1)$ lies on line ℓ_1
 83 : $P_{5314} = (0, 18, 0, 1)$ lies on line ℓ_1
 84 : $P_{5378} = (0, 19, 0, 1)$ lies on line ℓ_1
 85 : $P_{5442} = (0, 20, 0, 1)$ lies on line ℓ_1
 86 : $P_{5506} = (0, 21, 0, 1)$ lies on line ℓ_1
 87 : $P_{5570} = (0, 22, 0, 1)$ lies on line ℓ_1
 88 : $P_{5634} = (0, 23, 0, 1)$ lies on line ℓ_1
 89 : $P_{5698} = (0, 24, 0, 1)$ lies on line ℓ_1
 90 : $P_{5762} = (0, 25, 0, 1)$ lies on line ℓ_1
 91 : $P_{5826} = (0, 26, 0, 1)$ lies on line ℓ_1
 92 : $P_{5890} = (0, 27, 0, 1)$ lies on line ℓ_1
 93 : $P_{5954} = (0, 28, 0, 1)$ lies on line ℓ_1
 94 : $P_{6018} = (0, 29, 0, 1)$ lies on line ℓ_1
 95 : $P_{6082} = (0, 30, 0, 1)$ lies on line ℓ_1
 96 : $P_{6146} = (0, 31, 0, 1)$ lies on line ℓ_1
 97 : $P_{6210} = (0, 32, 0, 1)$ lies on line ℓ_1
 98 : $P_{6274} = (0, 33, 0, 1)$ lies on line ℓ_1
 99 : $P_{6338} = (0, 34, 0, 1)$ lies on line ℓ_1
 100 : $P_{6402} = (0, 35, 0, 1)$ lies on line ℓ_1
 101 : $P_{6466} = (0, 36, 0, 1)$ lies on line ℓ_1
 102 : $P_{6530} = (0, 37, 0, 1)$ lies on line ℓ_1
 103 : $P_{6594} = (0, 38, 0, 1)$ lies on line ℓ_1
 104 : $P_{6658} = (0, 39, 0, 1)$ lies on line ℓ_1
 105 : $P_{6722} = (0, 40, 0, 1)$ lies on line ℓ_1
 106 : $P_{6786} = (0, 41, 0, 1)$ lies on line ℓ_1
 107 : $P_{6850} = (0, 42, 0, 1)$ lies on line ℓ_1
 108 : $P_{6914} = (0, 43, 0, 1)$ lies on line ℓ_1
 109 : $P_{6978} = (0, 44, 0, 1)$ lies on line ℓ_1
 110 : $P_{7042} = (0, 45, 0, 1)$ lies on line ℓ_1
 111 : $P_{7106} = (0, 46, 0, 1)$ lies on line ℓ_1
 112 : $P_{7170} = (0, 47, 0, 1)$ lies on line ℓ_1
 113 : $P_{7234} = (0, 48, 0, 1)$ lies on line ℓ_1

114 : $P_{7298} = (0, 49, 0, 1)$ lies on line ℓ_1
 115 : $P_{7362} = (0, 50, 0, 1)$ lies on line ℓ_1
 116 : $P_{7426} = (0, 51, 0, 1)$ lies on line ℓ_1
 117 : $P_{7490} = (0, 52, 0, 1)$ lies on line ℓ_1
 118 : $P_{7554} = (0, 53, 0, 1)$ lies on line ℓ_1
 119 : $P_{7618} = (0, 54, 0, 1)$ lies on line ℓ_1
 120 : $P_{7682} = (0, 55, 0, 1)$ lies on line ℓ_1
 121 : $P_{7803} = (57, 56, 0, 1)$ lies on line ℓ_3
 122 : $P_{7866} = (56, 57, 0, 1)$ lies on line ℓ_6
 123 : $P_{7874} = (0, 58, 0, 1)$ lies on line ℓ_1
 124 : $P_{7938} = (0, 59, 0, 1)$ lies on line ℓ_1
 125 : $P_{8002} = (0, 60, 0, 1)$ lies on line ℓ_1
 126 : $P_{8066} = (0, 61, 0, 1)$ lies on line ℓ_1
 127 : $P_{8130} = (0, 62, 0, 1)$ lies on line ℓ_1
 128 : $P_{8194} = (0, 63, 0, 1)$ lies on line ℓ_1
 129 : $P_{8322} = (0, 1, 1, 1)$ lies on line ℓ_7
 130 : $P_{11842} = (1, 56, 1, 1)$ lies on line ℓ_3
 131 : $P_{11898} = (57, 56, 1, 1)$ lies on line ℓ_5
 132 : $P_{11906} = (1, 57, 1, 1)$ lies on line ℓ_6
 133 : $P_{11961} = (56, 57, 1, 1)$ lies on line ℓ_4
 134 : $P_{12353} = (0, 0, 2, 1)$ lies on line ℓ_2
 135 : $P_{12481} = (0, 2, 2, 1)$ lies on line ℓ_7
 136 : $P_{12548} = (3, 3, 2, 1)$ lies on line ℓ_8
 137 : $P_{15956} = (19, 56, 2, 1)$ lies on line ℓ_5
 138 : $P_{15977} = (40, 56, 2, 1)$ lies on line ℓ_3
 139 : $P_{16018} = (17, 57, 2, 1)$ lies on line ℓ_4
 140 : $P_{16044} = (43, 57, 2, 1)$ lies on line ℓ_6
 141 : $P_{16449} = (0, 0, 3, 1)$ lies on line ℓ_2
 142 : $P_{16579} = (2, 2, 3, 1)$ lies on line ℓ_8
 143 : $P_{16641} = (0, 3, 3, 1)$ lies on line ℓ_7
 144 : $P_{20049} = (16, 56, 3, 1)$ lies on line ℓ_3
 145 : $P_{20075} = (42, 56, 3, 1)$ lies on line ℓ_5
 146 : $P_{20115} = (18, 57, 3, 1)$ lies on line ℓ_6
 147 : $P_{20138} = (41, 57, 3, 1)$ lies on line ℓ_4
 148 : $P_{20545} = (0, 0, 4, 1)$ lies on line ℓ_2
 149 : $P_{20801} = (0, 4, 4, 1)$ lies on line ℓ_7
 150 : $P_{20870} = (5, 5, 4, 1)$ lies on line ℓ_8
 151 : $P_{24156} = (27, 56, 4, 1)$ lies on line ℓ_3
 152 : $P_{24167} = (38, 56, 4, 1)$ lies on line ℓ_5
 153 : $P_{24223} = (30, 57, 4, 1)$ lies on line ℓ_6
 154 : $P_{24227} = (34, 57, 4, 1)$ lies on line ℓ_4
 155 : $P_{24641} = (0, 0, 5, 1)$ lies on line ℓ_2
 156 : $P_{24901} = (4, 4, 5, 1)$ lies on line ℓ_8
 157 : $P_{24961} = (0, 5, 5, 1)$ lies on line ℓ_7
 158 : $P_{28256} = (31, 56, 5, 1)$ lies on line ℓ_5
 159 : $P_{28260} = (35, 56, 5, 1)$ lies on line ℓ_3
 160 : $P_{28315} = (26, 57, 5, 1)$ lies on line ℓ_4
 161 : $P_{28328} = (39, 57, 5, 1)$ lies on line ℓ_6
 162 : $P_{28737} = (0, 0, 6, 1)$ lies on line ℓ_2
 163 : $P_{29121} = (0, 6, 6, 1)$ lies on line ℓ_7
 164 : $P_{29192} = (7, 7, 6, 1)$ lies on line ℓ_8
 165 : $P_{32331} = (10, 56, 6, 1)$ lies on line ℓ_3
 166 : $P_{32374} = (53, 56, 6, 1)$ lies on line ℓ_5
 167 : $P_{32398} = (13, 57, 6, 1)$ lies on line ℓ_6

168 : $P_{32436} = (51, 57, 6, 1)$ lies on line ℓ_4
 169 : $P_{32833} = (0, 0, 7, 1)$ lies on line ℓ_2
 170 : $P_{33223} = (6, 6, 7, 1)$ lies on line ℓ_8
 171 : $P_{33281} = (0, 7, 7, 1)$ lies on line ℓ_7
 172 : $P_{36429} = (12, 56, 7, 1)$ lies on line ℓ_5
 173 : $P_{36467} = (50, 56, 7, 1)$ lies on line ℓ_3
 174 : $P_{36492} = (11, 57, 7, 1)$ lies on line ℓ_4
 175 : $P_{36533} = (52, 57, 7, 1)$ lies on line ℓ_6
 176 : $P_{36929} = (0, 0, 8, 1)$ lies on line ℓ_2
 177 : $P_{37441} = (0, 8, 8, 1)$ lies on line ℓ_7
 178 : $P_{37514} = (9, 9, 8, 1)$ lies on line ℓ_8
 179 : $P_{40541} = (28, 56, 8, 1)$ lies on line ℓ_3
 180 : $P_{40558} = (45, 56, 8, 1)$ lies on line ℓ_5
 181 : $P_{40598} = (21, 57, 8, 1)$ lies on line ℓ_6
 182 : $P_{40614} = (37, 57, 8, 1)$ lies on line ℓ_4
 183 : $P_{41025} = (0, 0, 9, 1)$ lies on line ℓ_2
 184 : $P_{41545} = (8, 8, 9, 1)$ lies on line ℓ_8
 185 : $P_{41601} = (0, 9, 9, 1)$ lies on line ℓ_7
 186 : $P_{44629} = (20, 56, 9, 1)$ lies on line ℓ_5
 187 : $P_{44645} = (36, 56, 9, 1)$ lies on line ℓ_3
 188 : $P_{44702} = (29, 57, 9, 1)$ lies on line ℓ_4
 189 : $P_{44717} = (44, 57, 9, 1)$ lies on line ℓ_6
 190 : $P_{45121} = (0, 0, 10, 1)$ lies on line ℓ_2
 191 : $P_{45761} = (0, 10, 10, 1)$ lies on line ℓ_7
 192 : $P_{45836} = (11, 11, 10, 1)$ lies on line ℓ_8
 193 : $P_{48718} = (13, 56, 10, 1)$ lies on line ℓ_3
 194 : $P_{48767} = (62, 56, 10, 1)$ lies on line ℓ_5
 195 : $P_{48775} = (6, 57, 10, 1)$ lies on line ℓ_6
 196 : $P_{48821} = (52, 57, 10, 1)$ lies on line ℓ_4
 197 : $P_{49217} = (0, 0, 11, 1)$ lies on line ℓ_2
 198 : $P_{49867} = (10, 10, 11, 1)$ lies on line ℓ_8
 199 : $P_{49921} = (0, 11, 11, 1)$ lies on line ℓ_7
 200 : $P_{52808} = (7, 56, 11, 1)$ lies on line ℓ_5
 201 : $P_{52854} = (53, 56, 11, 1)$ lies on line ℓ_3
 202 : $P_{52877} = (12, 57, 11, 1)$ lies on line ℓ_4
 203 : $P_{52928} = (63, 57, 11, 1)$ lies on line ℓ_6
 204 : $P_{53313} = (0, 0, 12, 1)$ lies on line ℓ_2
 205 : $P_{54081} = (0, 12, 12, 1)$ lies on line ℓ_7
 206 : $P_{54158} = (13, 13, 12, 1)$ lies on line ℓ_8
 207 : $P_{56908} = (11, 56, 12, 1)$ lies on line ℓ_5
 208 : $P_{56959} = (62, 56, 12, 1)$ lies on line ℓ_3
 209 : $P_{56968} = (7, 57, 12, 1)$ lies on line ℓ_4
 210 : $P_{57012} = (51, 57, 12, 1)$ lies on line ℓ_6
 211 : $P_{57409} = (0, 0, 13, 1)$ lies on line ℓ_2
 212 : $P_{58189} = (12, 12, 13, 1)$ lies on line ℓ_8
 213 : $P_{58241} = (0, 13, 13, 1)$ lies on line ℓ_7
 214 : $P_{60999} = (6, 56, 13, 1)$ lies on line ℓ_3
 215 : $P_{61043} = (50, 56, 13, 1)$ lies on line ℓ_5
 216 : $P_{61067} = (10, 57, 13, 1)$ lies on line ℓ_6
 217 : $P_{61120} = (63, 57, 13, 1)$ lies on line ℓ_4
 218 : $P_{61505} = (0, 0, 14, 1)$ lies on line ℓ_2
 219 : $P_{62401} = (0, 14, 14, 1)$ lies on line ℓ_7
 220 : $P_{62480} = (15, 15, 14, 1)$ lies on line ℓ_8
 221 : $P_{65113} = (24, 56, 14, 1)$ lies on line ℓ_5

222 : $P_{65136} = (47, 56, 14, 1)$ lies on line ℓ_3
 223 : $P_{65175} = (22, 57, 14, 1)$ lies on line ℓ_4
 224 : $P_{65185} = (32, 57, 14, 1)$ lies on line ℓ_6
 225 : $P_{65601} = (0, 0, 15, 1)$ lies on line ℓ_2
 226 : $P_{66511} = (14, 14, 15, 1)$ lies on line ℓ_8
 227 : $P_{66561} = (0, 15, 15, 1)$ lies on line ℓ_7
 228 : $P_{69208} = (23, 56, 15, 1)$ lies on line ℓ_3
 229 : $P_{69218} = (33, 56, 15, 1)$ lies on line ℓ_5
 230 : $P_{69274} = (25, 57, 15, 1)$ lies on line ℓ_6
 231 : $P_{69295} = (46, 57, 15, 1)$ lies on line ℓ_4
 232 : $P_{69697} = (0, 0, 16, 1)$ lies on line ℓ_2
 233 : $P_{70721} = (0, 16, 16, 1)$ lies on line ℓ_7
 234 : $P_{70802} = (17, 17, 16, 1)$ lies on line ℓ_8
 235 : $P_{73299} = (18, 56, 16, 1)$ lies on line ℓ_3
 236 : $P_{73340} = (59, 56, 16, 1)$ lies on line ℓ_5
 237 : $P_{73348} = (3, 57, 16, 1)$ lies on line ℓ_6
 238 : $P_{73388} = (43, 57, 16, 1)$ lies on line ℓ_4
 239 : $P_{73793} = (0, 0, 17, 1)$ lies on line ℓ_2
 240 : $P_{74833} = (16, 16, 17, 1)$ lies on line ℓ_8
 241 : $P_{74881} = (0, 17, 17, 1)$ lies on line ℓ_7
 242 : $P_{77379} = (2, 56, 17, 1)$ lies on line ℓ_5
 243 : $P_{77419} = (42, 56, 17, 1)$ lies on line ℓ_3
 244 : $P_{77460} = (19, 57, 17, 1)$ lies on line ℓ_4
 245 : $P_{77499} = (58, 57, 17, 1)$ lies on line ℓ_6
 246 : $P_{77889} = (0, 0, 18, 1)$ lies on line ℓ_2
 247 : $P_{79041} = (0, 18, 18, 1)$ lies on line ℓ_7
 248 : $P_{79124} = (19, 19, 18, 1)$ lies on line ℓ_8
 249 : $P_{81476} = (3, 56, 18, 1)$ lies on line ℓ_3
 250 : $P_{81513} = (40, 56, 18, 1)$ lies on line ℓ_5
 251 : $P_{81553} = (16, 57, 18, 1)$ lies on line ℓ_6
 252 : $P_{81595} = (58, 57, 18, 1)$ lies on line ℓ_4
 253 : $P_{81985} = (0, 0, 19, 1)$ lies on line ℓ_2
 254 : $P_{83155} = (18, 18, 19, 1)$ lies on line ℓ_8
 255 : $P_{83201} = (0, 19, 19, 1)$ lies on line ℓ_7
 256 : $P_{85586} = (17, 56, 19, 1)$ lies on line ℓ_5
 257 : $P_{85628} = (59, 56, 19, 1)$ lies on line ℓ_3
 258 : $P_{85635} = (2, 57, 19, 1)$ lies on line ℓ_4
 259 : $P_{85674} = (41, 57, 19, 1)$ lies on line ℓ_6
 260 : $P_{86081} = (0, 0, 20, 1)$ lies on line ℓ_2
 261 : $P_{87361} = (0, 20, 20, 1)$ lies on line ℓ_7
 262 : $P_{87446} = (21, 21, 20, 1)$ lies on line ℓ_8
 263 : $P_{89694} = (29, 56, 20, 1)$ lies on line ℓ_5
 264 : $P_{89713} = (48, 56, 20, 1)$ lies on line ℓ_3
 265 : $P_{89738} = (9, 57, 20, 1)$ lies on line ℓ_4
 266 : $P_{89766} = (37, 57, 20, 1)$ lies on line ℓ_6
 267 : $P_{90177} = (0, 0, 21, 1)$ lies on line ℓ_2
 268 : $P_{91477} = (20, 20, 21, 1)$ lies on line ℓ_8
 269 : $P_{91521} = (0, 21, 21, 1)$ lies on line ℓ_7
 270 : $P_{93769} = (8, 56, 21, 1)$ lies on line ℓ_3
 271 : $P_{93797} = (36, 56, 21, 1)$ lies on line ℓ_5
 272 : $P_{93853} = (28, 57, 21, 1)$ lies on line ℓ_6
 273 : $P_{93874} = (49, 57, 21, 1)$ lies on line ℓ_4
 274 : $P_{94273} = (0, 0, 22, 1)$ lies on line ℓ_2
 275 : $P_{95681} = (0, 22, 22, 1)$ lies on line ℓ_7

276 : $P_{95768} = (23, 23, 22, 1)$ lies on line ℓ_8
 277 : $P_{97871} = (14, 56, 22, 1)$ lies on line ℓ_5
 278 : $P_{97890} = (33, 56, 22, 1)$ lies on line ℓ_3
 279 : $P_{97945} = (24, 57, 22, 1)$ lies on line ℓ_4
 280 : $P_{97975} = (54, 57, 22, 1)$ lies on line ℓ_6
 281 : $P_{98369} = (0, 0, 23, 1)$ lies on line ℓ_2
 282 : $P_{99799} = (22, 22, 23, 1)$ lies on line ℓ_8
 283 : $P_{99841} = (0, 23, 23, 1)$ lies on line ℓ_7
 284 : $P_{101978} = (25, 56, 23, 1)$ lies on line ℓ_3
 285 : $P_{102008} = (55, 56, 23, 1)$ lies on line ℓ_5
 286 : $P_{102032} = (15, 57, 23, 1)$ lies on line ℓ_6
 287 : $P_{102049} = (32, 57, 23, 1)$ lies on line ℓ_4
 288 : $P_{102465} = (0, 0, 24, 1)$ lies on line ℓ_2
 289 : $P_{104001} = (0, 24, 24, 1)$ lies on line ℓ_7
 290 : $P_{104090} = (25, 25, 24, 1)$ lies on line ℓ_8
 291 : $P_{106071} = (22, 56, 24, 1)$ lies on line ℓ_5
 292 : $P_{106104} = (55, 56, 24, 1)$ lies on line ℓ_3
 293 : $P_{106127} = (14, 57, 24, 1)$ lies on line ℓ_4
 294 : $P_{106159} = (46, 57, 24, 1)$ lies on line ℓ_6
 295 : $P_{106561} = (0, 0, 25, 1)$ lies on line ℓ_2
 296 : $P_{108121} = (24, 24, 25, 1)$ lies on line ℓ_8
 297 : $P_{108161} = (0, 25, 25, 1)$ lies on line ℓ_7
 298 : $P_{110160} = (15, 56, 25, 1)$ lies on line ℓ_3
 299 : $P_{110192} = (47, 56, 25, 1)$ lies on line ℓ_5
 300 : $P_{110232} = (23, 57, 25, 1)$ lies on line ℓ_6
 301 : $P_{110263} = (54, 57, 25, 1)$ lies on line ℓ_4
 302 : $P_{110657} = (0, 0, 26, 1)$ lies on line ℓ_2
 303 : $P_{112321} = (0, 26, 26, 1)$ lies on line ℓ_7
 304 : $P_{112412} = (27, 27, 26, 1)$ lies on line ℓ_8
 305 : $P_{114246} = (5, 56, 26, 1)$ lies on line ℓ_5
 306 : $P_{114279} = (38, 56, 26, 1)$ lies on line ℓ_3
 307 : $P_{114336} = (31, 57, 26, 1)$ lies on line ℓ_4
 308 : $P_{114366} = (61, 57, 26, 1)$ lies on line ℓ_6
 309 : $P_{114753} = (0, 0, 27, 1)$ lies on line ℓ_2
 310 : $P_{116443} = (26, 26, 27, 1)$ lies on line ℓ_8
 311 : $P_{116481} = (0, 27, 27, 1)$ lies on line ℓ_7
 312 : $P_{118367} = (30, 56, 27, 1)$ lies on line ℓ_3
 313 : $P_{118397} = (60, 56, 27, 1)$ lies on line ℓ_5
 314 : $P_{118405} = (4, 57, 27, 1)$ lies on line ℓ_6
 315 : $P_{118440} = (39, 57, 27, 1)$ lies on line ℓ_4
 316 : $P_{118849} = (0, 0, 28, 1)$ lies on line ℓ_2
 317 : $P_{120641} = (0, 28, 28, 1)$ lies on line ℓ_7
 318 : $P_{120734} = (29, 29, 28, 1)$ lies on line ℓ_8
 319 : $P_{122454} = (21, 56, 28, 1)$ lies on line ℓ_3
 320 : $P_{122481} = (48, 56, 28, 1)$ lies on line ℓ_5
 321 : $P_{122505} = (8, 57, 28, 1)$ lies on line ℓ_6
 322 : $P_{122541} = (44, 57, 28, 1)$ lies on line ℓ_4
 323 : $P_{122945} = (0, 0, 29, 1)$ lies on line ℓ_2
 324 : $P_{124765} = (28, 28, 29, 1)$ lies on line ℓ_8
 325 : $P_{124801} = (0, 29, 29, 1)$ lies on line ℓ_7
 326 : $P_{126538} = (9, 56, 29, 1)$ lies on line ℓ_5
 327 : $P_{126574} = (45, 56, 29, 1)$ lies on line ℓ_3
 328 : $P_{126613} = (20, 57, 29, 1)$ lies on line ℓ_4
 329 : $P_{126642} = (49, 57, 29, 1)$ lies on line ℓ_6

330 : $P_{127041} = (0, 0, 30, 1)$ lies on line ℓ_2
 331 : $P_{128961} = (0, 30, 30, 1)$ lies on line ℓ_7
 332 : $P_{129056} = (31, 31, 30, 1)$ lies on line ℓ_8
 333 : $P_{130629} = (4, 56, 30, 1)$ lies on line ℓ_3
 334 : $P_{130660} = (35, 56, 30, 1)$ lies on line ℓ_5
 335 : $P_{130716} = (27, 57, 30, 1)$ lies on line ℓ_6
 336 : $P_{130750} = (61, 57, 30, 1)$ lies on line ℓ_4
 337 : $P_{131137} = (0, 0, 31, 1)$ lies on line ℓ_2
 338 : $P_{133087} = (30, 30, 31, 1)$ lies on line ℓ_8
 339 : $P_{133121} = (0, 31, 31, 1)$ lies on line ℓ_7
 340 : $P_{134747} = (26, 56, 31, 1)$ lies on line ℓ_5
 341 : $P_{134781} = (60, 56, 31, 1)$ lies on line ℓ_3
 342 : $P_{134790} = (5, 57, 31, 1)$ lies on line ℓ_4
 343 : $P_{134819} = (34, 57, 31, 1)$ lies on line ℓ_6
 344 : $P_{135233} = (0, 0, 32, 1)$ lies on line ℓ_2
 345 : $P_{137281} = (0, 32, 32, 1)$ lies on line ℓ_7
 346 : $P_{137378} = (33, 33, 32, 1)$ lies on line ℓ_8
 347 : $P_{138831} = (14, 56, 32, 1)$ lies on line ℓ_3
 348 : $P_{138840} = (23, 56, 32, 1)$ lies on line ℓ_5
 349 : $P_{138928} = (47, 57, 32, 1)$ lies on line ℓ_6
 350 : $P_{138936} = (55, 57, 32, 1)$ lies on line ℓ_4
 351 : $P_{139329} = (0, 0, 33, 1)$ lies on line ℓ_2
 352 : $P_{141409} = (32, 32, 33, 1)$ lies on line ℓ_8
 353 : $P_{141441} = (0, 33, 33, 1)$ lies on line ℓ_7
 354 : $P_{142959} = (46, 56, 33, 1)$ lies on line ℓ_5
 355 : $P_{142967} = (54, 56, 33, 1)$ lies on line ℓ_3
 356 : $P_{142992} = (15, 57, 33, 1)$ lies on line ℓ_4
 357 : $P_{142999} = (22, 57, 33, 1)$ lies on line ℓ_6
 358 : $P_{143425} = (0, 0, 34, 1)$ lies on line ℓ_2
 359 : $P_{145601} = (0, 34, 34, 1)$ lies on line ℓ_7
 360 : $P_{145700} = (35, 35, 34, 1)$ lies on line ℓ_8
 361 : $P_{147013} = (4, 56, 34, 1)$ lies on line ℓ_5
 362 : $P_{147040} = (31, 56, 34, 1)$ lies on line ℓ_3
 363 : $P_{147111} = (38, 57, 34, 1)$ lies on line ℓ_4
 364 : $P_{147133} = (60, 57, 34, 1)$ lies on line ℓ_6
 365 : $P_{147521} = (0, 0, 35, 1)$ lies on line ℓ_2
 366 : $P_{149731} = (34, 34, 35, 1)$ lies on line ℓ_8
 367 : $P_{149761} = (0, 35, 35, 1)$ lies on line ℓ_7
 368 : $P_{151144} = (39, 56, 35, 1)$ lies on line ℓ_3
 369 : $P_{151166} = (61, 56, 35, 1)$ lies on line ℓ_5
 370 : $P_{151174} = (5, 57, 35, 1)$ lies on line ℓ_6
 371 : $P_{151199} = (30, 57, 35, 1)$ lies on line ℓ_4
 372 : $P_{151617} = (0, 0, 36, 1)$ lies on line ℓ_2
 373 : $P_{153921} = (0, 36, 36, 1)$ lies on line ℓ_7
 374 : $P_{154022} = (37, 37, 36, 1)$ lies on line ℓ_8
 375 : $P_{155245} = (44, 56, 36, 1)$ lies on line ℓ_3
 376 : $P_{155250} = (49, 56, 36, 1)$ lies on line ℓ_5
 377 : $P_{155274} = (9, 57, 36, 1)$ lies on line ℓ_6
 378 : $P_{155286} = (21, 57, 36, 1)$ lies on line ℓ_4
 379 : $P_{155713} = (0, 0, 37, 1)$ lies on line ℓ_2
 380 : $P_{158053} = (36, 36, 37, 1)$ lies on line ℓ_8
 381 : $P_{158081} = (0, 37, 37, 1)$ lies on line ℓ_7
 382 : $P_{159305} = (8, 56, 37, 1)$ lies on line ℓ_5
 383 : $P_{159317} = (20, 56, 37, 1)$ lies on line ℓ_3
 384 : $P_{159406} = (45, 57, 37, 1)$ lies on line ℓ_4
 385 : $P_{159409} = (48, 57, 37, 1)$ lies on line ℓ_6
 386 : $P_{159809} = (0, 0, 38, 1)$ lies on line ℓ_2
 387 : $P_{162241} = (0, 38, 38, 1)$ lies on line ℓ_7
 388 : $P_{162344} = (39, 39, 38, 1)$ lies on line ℓ_8
 389 : $P_{163427} = (34, 56, 38, 1)$ lies on line ℓ_5
 390 : $P_{163454} = (61, 56, 38, 1)$ lies on line ℓ_3
 391 : $P_{163461} = (4, 57, 38, 1)$ lies on line ℓ_4
 392 : $P_{163483} = (26, 57, 38, 1)$ lies on line ℓ_6
 393 : $P_{163905} = (0, 0, 39, 1)$ lies on line ℓ_2
 394 : $P_{166375} = (38, 38, 39, 1)$ lies on line ℓ_8
 395 : $P_{166401} = (0, 39, 39, 1)$ lies on line ℓ_7
 396 : $P_{167494} = (5, 56, 39, 1)$ lies on line ℓ_3
 397 : $P_{167516} = (27, 56, 39, 1)$ lies on line ℓ_5
 398 : $P_{167588} = (35, 57, 39, 1)$ lies on line ℓ_6
 399 : $P_{167613} = (60, 57, 39, 1)$ lies on line ℓ_4
 400 : $P_{168001} = (0, 0, 40, 1)$ lies on line ℓ_2
 401 : $P_{170561} = (0, 40, 40, 1)$ lies on line ℓ_7
 402 : $P_{170666} = (41, 41, 40, 1)$ lies on line ℓ_8
 403 : $P_{171628} = (43, 56, 40, 1)$ lies on line ℓ_3
 404 : $P_{171643} = (58, 56, 40, 1)$ lies on line ℓ_5
 405 : $P_{171651} = (2, 57, 40, 1)$ lies on line ℓ_6
 406 : $P_{171667} = (18, 57, 40, 1)$ lies on line ℓ_4
 407 : $P_{172097} = (0, 0, 41, 1)$ lies on line ℓ_2
 408 : $P_{174697} = (40, 40, 41, 1)$ lies on line ℓ_8
 409 : $P_{174721} = (0, 41, 41, 1)$ lies on line ℓ_7
 410 : $P_{175684} = (3, 56, 41, 1)$ lies on line ℓ_5
 411 : $P_{175700} = (19, 56, 41, 1)$ lies on line ℓ_3
 412 : $P_{175787} = (42, 57, 41, 1)$ lies on line ℓ_6
 413 : $P_{175804} = (59, 57, 41, 1)$ lies on line ℓ_4
 414 : $P_{176193} = (0, 0, 42, 1)$ lies on line ℓ_2
 415 : $P_{178881} = (0, 42, 42, 1)$ lies on line ℓ_7
 416 : $P_{178988} = (43, 43, 42, 1)$ lies on line ℓ_8
 417 : $P_{179818} = (41, 56, 42, 1)$ lies on line ℓ_5
 418 : $P_{179835} = (58, 56, 42, 1)$ lies on line ℓ_3
 419 : $P_{179844} = (3, 57, 42, 1)$ lies on line ℓ_6
 420 : $P_{179858} = (17, 57, 42, 1)$ lies on line ℓ_4
 421 : $P_{180289} = (0, 0, 43, 1)$ lies on line ℓ_2
 422 : $P_{183019} = (42, 42, 43, 1)$ lies on line ℓ_8
 423 : $P_{183041} = (0, 43, 43, 1)$ lies on line ℓ_7
 424 : $P_{183875} = (2, 56, 43, 1)$ lies on line ℓ_5
 425 : $P_{183889} = (16, 56, 43, 1)$ lies on line ℓ_3
 426 : $P_{183977} = (40, 57, 43, 1)$ lies on line ℓ_6
 427 : $P_{183996} = (59, 57, 43, 1)$ lies on line ℓ_4
 428 : $P_{184385} = (0, 0, 44, 1)$ lies on line ℓ_2
 429 : $P_{187201} = (0, 44, 44, 1)$ lies on line ℓ_7
 430 : $P_{187310} = (45, 45, 44, 1)$ lies on line ℓ_8
 431 : $P_{187978} = (9, 56, 44, 1)$ lies on line ℓ_5
 432 : $P_{187997} = (28, 56, 44, 1)$ lies on line ℓ_3
 433 : $P_{188069} = (36, 57, 44, 1)$ lies on line ℓ_6
 434 : $P_{188081} = (48, 57, 44, 1)$ lies on line ℓ_4
 435 : $P_{188481} = (0, 0, 45, 1)$ lies on line ℓ_2
 436 : $P_{191341} = (44, 44, 45, 1)$ lies on line ℓ_8
 437 : $P_{191361} = (0, 45, 45, 1)$ lies on line ℓ_7

438 : $P_{192102} = (37, 56, 45, 1)$ lies on line ℓ_5
 439 : $P_{192114} = (49, 56, 45, 1)$ lies on line ℓ_3
 440 : $P_{192137} = (8, 57, 45, 1)$ lies on line ℓ_4
 441 : $P_{192158} = (29, 57, 45, 1)$ lies on line ℓ_6
 442 : $P_{192577} = (0, 0, 46, 1)$ lies on line ℓ_2
 443 : $P_{195521} = (0, 46, 46, 1)$ lies on line ℓ_7
 444 : $P_{195632} = (47, 47, 46, 1)$ lies on line ℓ_8
 445 : $P_{196176} = (15, 56, 46, 1)$ lies on line ℓ_5
 446 : $P_{196185} = (24, 56, 46, 1)$ lies on line ℓ_3
 447 : $P_{196258} = (33, 57, 46, 1)$ lies on line ℓ_4
 448 : $P_{196280} = (55, 57, 46, 1)$ lies on line ℓ_6
 449 : $P_{196673} = (0, 0, 47, 1)$ lies on line ℓ_2
 450 : $P_{199663} = (46, 46, 47, 1)$ lies on line ℓ_8
 451 : $P_{199681} = (0, 47, 47, 1)$ lies on line ℓ_7
 452 : $P_{200289} = (32, 56, 47, 1)$ lies on line ℓ_3
 453 : $P_{200311} = (54, 56, 47, 1)$ lies on line ℓ_5
 454 : $P_{200335} = (14, 57, 47, 1)$ lies on line ℓ_6
 455 : $P_{200346} = (25, 57, 47, 1)$ lies on line ℓ_4
 456 : $P_{200769} = (0, 0, 48, 1)$ lies on line ℓ_2
 457 : $P_{203841} = (0, 48, 48, 1)$ lies on line ℓ_7
 458 : $P_{203954} = (49, 49, 48, 1)$ lies on line ℓ_8
 459 : $P_{204390} = (37, 56, 48, 1)$ lies on line ℓ_3
 460 : $P_{204397} = (44, 56, 48, 1)$ lies on line ℓ_5
 461 : $P_{204437} = (20, 57, 48, 1)$ lies on line ℓ_6
 462 : $P_{204445} = (28, 57, 48, 1)$ lies on line ℓ_4
 463 : $P_{204865} = (0, 0, 49, 1)$ lies on line ℓ_2
 464 : $P_{207985} = (48, 48, 49, 1)$ lies on line ℓ_8
 465 : $P_{208001} = (0, 49, 49, 1)$ lies on line ℓ_7
 466 : $P_{208470} = (21, 56, 49, 1)$ lies on line ℓ_5
 467 : $P_{208478} = (29, 56, 49, 1)$ lies on line ℓ_3
 468 : $P_{208549} = (36, 57, 49, 1)$ lies on line ℓ_4
 469 : $P_{208558} = (45, 57, 49, 1)$ lies on line ℓ_6
 470 : $P_{208961} = (0, 0, 50, 1)$ lies on line ℓ_2
 471 : $P_{212161} = (0, 50, 50, 1)$ lies on line ℓ_7
 472 : $P_{212276} = (51, 51, 50, 1)$ lies on line ℓ_8
 473 : $P_{212597} = (52, 56, 50, 1)$ lies on line ℓ_3
 474 : $P_{212608} = (63, 56, 50, 1)$ lies on line ℓ_5
 475 : $P_{212616} = (7, 57, 50, 1)$ lies on line ℓ_6
 476 : $P_{212622} = (13, 57, 50, 1)$ lies on line ℓ_4
 477 : $P_{213057} = (0, 0, 51, 1)$ lies on line ℓ_2
 478 : $P_{216307} = (50, 50, 51, 1)$ lies on line ℓ_8
 479 : $P_{216321} = (0, 51, 51, 1)$ lies on line ℓ_7
 480 : $P_{216647} = (6, 56, 51, 1)$ lies on line ℓ_5
 481 : $P_{216653} = (12, 56, 51, 1)$ lies on line ℓ_3
 482 : $P_{216758} = (53, 57, 51, 1)$ lies on line ℓ_4
 483 : $P_{216767} = (62, 57, 51, 1)$ lies on line ℓ_6
 484 : $P_{217153} = (0, 0, 52, 1)$ lies on line ℓ_2
 485 : $P_{220481} = (0, 52, 52, 1)$ lies on line ℓ_7
 486 : $P_{220598} = (53, 53, 52, 1)$ lies on line ℓ_8
 487 : $P_{220744} = (7, 56, 52, 1)$ lies on line ℓ_3
 488 : $P_{220747} = (10, 56, 52, 1)$ lies on line ℓ_5
 489 : $P_{220851} = (50, 57, 52, 1)$ lies on line ℓ_6
 490 : $P_{220863} = (62, 57, 52, 1)$ lies on line ℓ_4
 491 : $P_{221249} = (0, 0, 53, 1)$ lies on line ℓ_2
 492 : $P_{224629} = (52, 52, 53, 1)$ lies on line ℓ_8
 493 : $P_{224641} = (0, 53, 53, 1)$ lies on line ℓ_7
 494 : $P_{224884} = (51, 56, 53, 1)$ lies on line ℓ_5
 495 : $P_{224896} = (63, 56, 53, 1)$ lies on line ℓ_3
 496 : $P_{224903} = (6, 57, 53, 1)$ lies on line ℓ_4
 497 : $P_{224908} = (11, 57, 53, 1)$ lies on line ℓ_6
 498 : $P_{225345} = (0, 0, 54, 1)$ lies on line ℓ_2
 499 : $P_{228801} = (0, 54, 54, 1)$ lies on line ℓ_7
 500 : $P_{228920} = (55, 55, 54, 1)$ lies on line ℓ_8
 501 : $P_{228951} = (22, 56, 54, 1)$ lies on line ℓ_3
 502 : $P_{228954} = (25, 56, 54, 1)$ lies on line ℓ_5
 503 : $P_{229026} = (33, 57, 54, 1)$ lies on line ℓ_6
 504 : $P_{229040} = (47, 57, 54, 1)$ lies on line ℓ_4
 505 : $P_{229441} = (0, 0, 55, 1)$ lies on line ℓ_2
 506 : $P_{232951} = (54, 54, 55, 1)$ lies on line ℓ_8
 507 : $P_{232961} = (0, 55, 55, 1)$ lies on line ℓ_7
 508 : $P_{233057} = (32, 56, 55, 1)$ lies on line ℓ_5
 509 : $P_{233071} = (46, 56, 55, 1)$ lies on line ℓ_3
 510 : $P_{233112} = (23, 57, 55, 1)$ lies on line ℓ_4
 511 : $P_{233113} = (24, 57, 55, 1)$ lies on line ℓ_6
 512 : $P_{233537} = (0, 0, 56, 1)$ lies on line ℓ_2
 513 : $P_{237122} = (1, 56, 56, 1)$ lies on line ℓ_5
 514 : $P_{237633} = (0, 0, 57, 1)$ lies on line ℓ_2
 515 : $P_{241282} = (1, 57, 57, 1)$ lies on line ℓ_4
 516 : $P_{241729} = (0, 0, 58, 1)$ lies on line ℓ_2
 517 : $P_{245330} = (17, 56, 58, 1)$ lies on line ℓ_3
 518 : $P_{245331} = (18, 56, 58, 1)$ lies on line ℓ_5
 519 : $P_{245417} = (40, 57, 58, 1)$ lies on line ℓ_4
 520 : $P_{245419} = (42, 57, 58, 1)$ lies on line ℓ_6
 521 : $P_{245441} = (0, 58, 58, 1)$ lies on line ℓ_7
 522 : $P_{245564} = (59, 59, 58, 1)$ lies on line ℓ_8
 523 : $P_{245825} = (0, 0, 59, 1)$ lies on line ℓ_2
 524 : $P_{249450} = (41, 56, 59, 1)$ lies on line ℓ_3
 525 : $P_{249452} = (43, 56, 59, 1)$ lies on line ℓ_5
 526 : $P_{249489} = (16, 57, 59, 1)$ lies on line ℓ_4
 527 : $P_{249492} = (19, 57, 59, 1)$ lies on line ℓ_6
 528 : $P_{249595} = (58, 58, 59, 1)$ lies on line ℓ_8
 529 : $P_{249601} = (0, 59, 59, 1)$ lies on line ℓ_7
 530 : $P_{249921} = (0, 0, 60, 1)$ lies on line ℓ_2
 531 : $P_{253539} = (34, 56, 60, 1)$ lies on line ℓ_3
 532 : $P_{253544} = (39, 56, 60, 1)$ lies on line ℓ_5
 533 : $P_{253596} = (27, 57, 60, 1)$ lies on line ℓ_4
 534 : $P_{253600} = (31, 57, 60, 1)$ lies on line ℓ_6
 535 : $P_{253761} = (0, 60, 60, 1)$ lies on line ℓ_7
 536 : $P_{253886} = (61, 61, 60, 1)$ lies on line ℓ_8
 537 : $P_{254017} = (0, 0, 61, 1)$ lies on line ℓ_2
 538 : $P_{257627} = (26, 56, 61, 1)$ lies on line ℓ_3
 539 : $P_{257631} = (30, 56, 61, 1)$ lies on line ℓ_5
 540 : $P_{257700} = (35, 57, 61, 1)$ lies on line ℓ_4
 541 : $P_{257703} = (38, 57, 61, 1)$ lies on line ℓ_6
 542 : $P_{257917} = (60, 60, 61, 1)$ lies on line ℓ_8
 543 : $P_{257921} = (0, 61, 61, 1)$ lies on line ℓ_7
 544 : $P_{258113} = (0, 0, 62, 1)$ lies on line ℓ_2
 545 : $P_{261748} = (51, 56, 62, 1)$ lies on line ℓ_3

546 : $P_{261749} = (52, 56, 62, 1)$ lies on line ℓ_5
 547 : $P_{261771} = (10, 57, 62, 1)$ lies on line ℓ_4
 548 : $P_{261773} = (12, 57, 62, 1)$ lies on line ℓ_6
 549 : $P_{262081} = (0, 62, 62, 1)$ lies on line ℓ_7
 550 : $P_{262208} = (63, 63, 62, 1)$ lies on line ℓ_8
 551 : $P_{262209} = (0, 0, 63, 1)$ lies on line ℓ_2
 552 : $P_{265804} = (11, 56, 63, 1)$ lies on line ℓ_3

553 : $P_{265806} = (13, 56, 63, 1)$ lies on line ℓ_5
 554 : $P_{265907} = (50, 57, 63, 1)$ lies on line ℓ_4
 555 : $P_{265910} = (53, 57, 63, 1)$ lies on line ℓ_6
 556 : $P_{266239} = (62, 62, 63, 1)$ lies on line ℓ_8
 557 : $P_{266241} = (0, 63, 63, 1)$ lies on line ℓ_7

The single points on the surface are:

Points on surface but on no line

The surface has 3720 points not on any line:
Too many to print.

Line Intersection Graph

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

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6
in point	P_2	P_{123}	P_{123}	P_{124}	P_{124}

Line 1 intersects

Line	ℓ_2	ℓ_4	ℓ_5	ℓ_7
in point	P_3	P_{7810}	P_{7746}	P_3

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_7	ℓ_8
in point	P_2	P_3	P_3	P_{8258}

Line 3 intersects

Line	ℓ_0	ℓ_4	ℓ_5	ℓ_7	ℓ_8
in point	P_{123}	P_{123}	P_{241273}	P_{237121}	P_{241273}

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_6	ℓ_8
in point	P_{123}	P_{7810}	P_{123}	P_{237242}	P_{237242}

Line 5 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_6	ℓ_8
in point	P_{124}	P_{7746}	P_{241273}	P_{124}	P_{241273}

Line 6 intersects

Line	ℓ_0	ℓ_4	ℓ_5	ℓ_7	ℓ_8
in point	P_{124}	P_{237242}	P_{124}	P_{241281}	P_{237242}

Line 7 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_6
in point	P_3	P_3	P_{237121}	P_{241281}

Line 8 intersects

Line	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6
in point	P_{8258}	P_{241273}	P_{237242}	P_{241273}	P_{237242}

The surface has 4289 points:
Too many to print.