

Rank-65869 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(64) is 1091047557

General information

Number of lines	11
Number of points	4353
Number of singular points	2
Number of Eckardt points	0
Number of double points	15
Number of single points	676
Number of points off lines	3660
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^{11}
Type of lines on points	$5, 4, 2^{15}, 1^{676}, 0^{3660}$

Singular Points

The surface has 2 singular points:

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

$$1 : P_{4163} = \mathbf{P}(1, 0, 0, 1) = \mathbf{P}(1, 0, 0, 1)$$

The 11 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array} \right]_{4096} = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array} \right]_{4096} = \mathbf{P}\mathbf{l}(0, 0, 1, 0, 0, 0)_2$$

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{270400} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{270400} = \mathbf{Pl}(0, 1, 1, 0, 0, 0)_{66} \\
\ell_2 &= \begin{bmatrix} 1 & 1 & 0 & \epsilon^9 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{12524545} = \begin{bmatrix} 1 & 1 & 0 & 47 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{12524545} = \mathbf{Pl}(0, 47, 1, 0, 0, 1)_{270638} \\
\ell_3 &= \begin{bmatrix} 1 & 1 & 0 & \epsilon^{18} \\ 0 & 0 & 1 & 0 \end{bmatrix}_{2937601} = \begin{bmatrix} 1 & 1 & 0 & 11 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{2937601} = \mathbf{Pl}(0, 11, 1, 0, 0, 1)_{270602} \\
\ell_4 &= \begin{bmatrix} 1 & 1 & 0 & \epsilon^{36} \\ 0 & 0 & 1 & 0 \end{bmatrix}_{9595201} = \begin{bmatrix} 1 & 1 & 0 & 36 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{9595201} = \mathbf{Pl}(0, 36, 1, 0, 0, 1)_{270627} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & \epsilon^9 & 0 \\ 0 & 1 & \epsilon^9 & \epsilon^9 \end{bmatrix}_{198622} = \begin{bmatrix} 1 & 0 & 47 & 0 \\ 0 & 1 & 47 & 47 \end{bmatrix}_{198622} = \mathbf{Pl}(10, 47, 1, 0, 1, 1)_{536649} \\
\ell_6 &= \begin{bmatrix} 1 & 0 & \epsilon^{18} & 0 \\ 0 & 1 & \epsilon^{18} & \epsilon^{18} \end{bmatrix}_{46486} = \begin{bmatrix} 1 & 0 & 11 & 0 \\ 0 & 1 & 11 & 11 \end{bmatrix}_{46486} = \mathbf{Pl}(37, 11, 1, 0, 1, 1)_{536676} \\
\ell_7 &= \begin{bmatrix} 1 & 0 & \epsilon^{36} & 0 \\ 0 & 1 & \epsilon^{36} & \epsilon^{36} \end{bmatrix}_{152136} = \begin{bmatrix} 1 & 0 & 36 & 0 \\ 0 & 1 & 36 & 36 \end{bmatrix}_{152136} = \mathbf{Pl}(46, 36, 1, 0, 1, 1)_{536685} \\
\ell_8 &= \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{45} & \epsilon^{54} \end{bmatrix}_{266981} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 37 & 10 \end{bmatrix}_{266981} = \mathbf{Pl}(47, 10, 10, 47, 1, 0)_{203541} \\
\ell_9 &= \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{27} & \epsilon^{45} \end{bmatrix}_{268718} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 46 & 37 \end{bmatrix}_{268718} = \mathbf{Pl}(11, 37, 37, 11, 1, 0)_{62322} \\
\ell_{10} &= \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{54} & \epsilon^{27} \end{bmatrix}_{269258} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 10 & 46 \end{bmatrix}_{269258} = \mathbf{Pl}(36, 46, 46, 36, 1, 0)_{162139}
\end{aligned}$$

Rank of lines: (4096, 270400, 12524545, 2937601, 9595201, 198622, 46486, 152136, 266981, 268718, 269258)

Rank of points on Klein quadric: (2, 66, 270638, 270602, 270627, 536649, 536676, 536685, 203541, 62322, 162139)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 15 Double points:

The double points on the surface are:

$$\begin{aligned}
P_{77} &= (10, 0, 1, 0) = \ell_0 \cap \ell_5 & P_{48111} &= (46, 46, 10, 1) = \ell_4 \cap \ell_9 \\
P_{104} &= (37, 0, 1, 0) = \ell_0 \cap \ell_6 & P_{152293} &= (36, 10, 36, 1) = \ell_5 \cap \ell_8 \\
P_{113} &= (46, 0, 1, 0) = \ell_0 \cap \ell_7 & P_{49894} &= (37, 10, 11, 1) = \ell_5 \cap \ell_9 \\
P_{4812} &= (10, 10, 0, 1) = \ell_2 \cap \ell_5 & P_{199088} &= (47, 37, 47, 1) = \ell_6 \cap \ell_9 \\
P_{156363} &= (10, 10, 37, 1) = \ell_2 \cap \ell_{10} & P_{154031} &= (46, 37, 36, 1) = \ell_6 \cap \ell_{10} \\
P_{6567} &= (37, 37, 0, 1) = \ell_3 \cap \ell_6 & P_{199627} &= (10, 46, 47, 1) = \ell_7 \cap \ell_8 \\
P_{194982} &= (37, 37, 46, 1) = \ell_3 \cap \ell_8 & P_{52172} &= (11, 46, 11, 1) = \ell_7 \cap \ell_{10} \\
P_{7152} &= (46, 46, 0, 1) = \ell_4 \cap \ell_7
\end{aligned}$$

Single Points

The surface has 676 single points:

The single points on the surface are:

0 : $P_0 = (1, 0, 0, 0)$ lies on line ℓ_0
 1 : $P_{68} = (1, 0, 1, 0)$ lies on line ℓ_0
 2 : $P_{69} = (2, 0, 1, 0)$ lies on line ℓ_0
 3 : $P_{70} = (3, 0, 1, 0)$ lies on line ℓ_0
 4 : $P_{71} = (4, 0, 1, 0)$ lies on line ℓ_0
 5 : $P_{72} = (5, 0, 1, 0)$ lies on line ℓ_0
 6 : $P_{73} = (6, 0, 1, 0)$ lies on line ℓ_0
 7 : $P_{74} = (7, 0, 1, 0)$ lies on line ℓ_0
 8 : $P_{75} = (8, 0, 1, 0)$ lies on line ℓ_0
 9 : $P_{76} = (9, 0, 1, 0)$ lies on line ℓ_0
 10 : $P_{78} = (11, 0, 1, 0)$ lies on line ℓ_0
 11 : $P_{79} = (12, 0, 1, 0)$ lies on line ℓ_0
 12 : $P_{80} = (13, 0, 1, 0)$ lies on line ℓ_0
 13 : $P_{81} = (14, 0, 1, 0)$ lies on line ℓ_0
 14 : $P_{82} = (15, 0, 1, 0)$ lies on line ℓ_0
 15 : $P_{83} = (16, 0, 1, 0)$ lies on line ℓ_0
 16 : $P_{84} = (17, 0, 1, 0)$ lies on line ℓ_0
 17 : $P_{85} = (18, 0, 1, 0)$ lies on line ℓ_0
 18 : $P_{86} = (19, 0, 1, 0)$ lies on line ℓ_0
 19 : $P_{87} = (20, 0, 1, 0)$ lies on line ℓ_0
 20 : $P_{88} = (21, 0, 1, 0)$ lies on line ℓ_0
 21 : $P_{89} = (22, 0, 1, 0)$ lies on line ℓ_0
 22 : $P_{90} = (23, 0, 1, 0)$ lies on line ℓ_0
 23 : $P_{91} = (24, 0, 1, 0)$ lies on line ℓ_0
 24 : $P_{92} = (25, 0, 1, 0)$ lies on line ℓ_0
 25 : $P_{93} = (26, 0, 1, 0)$ lies on line ℓ_0
 26 : $P_{94} = (27, 0, 1, 0)$ lies on line ℓ_0
 27 : $P_{95} = (28, 0, 1, 0)$ lies on line ℓ_0
 28 : $P_{96} = (29, 0, 1, 0)$ lies on line ℓ_0
 29 : $P_{97} = (30, 0, 1, 0)$ lies on line ℓ_0
 30 : $P_{98} = (31, 0, 1, 0)$ lies on line ℓ_0
 31 : $P_{99} = (32, 0, 1, 0)$ lies on line ℓ_0
 32 : $P_{100} = (33, 0, 1, 0)$ lies on line ℓ_0
 33 : $P_{101} = (34, 0, 1, 0)$ lies on line ℓ_0
 34 : $P_{102} = (35, 0, 1, 0)$ lies on line ℓ_0
 35 : $P_{103} = (36, 0, 1, 0)$ lies on line ℓ_0
 36 : $P_{105} = (38, 0, 1, 0)$ lies on line ℓ_0
 37 : $P_{106} = (39, 0, 1, 0)$ lies on line ℓ_0
 38 : $P_{107} = (40, 0, 1, 0)$ lies on line ℓ_0
 39 : $P_{108} = (41, 0, 1, 0)$ lies on line ℓ_0
 40 : $P_{109} = (42, 0, 1, 0)$ lies on line ℓ_0
 41 : $P_{110} = (43, 0, 1, 0)$ lies on line ℓ_0
 42 : $P_{111} = (44, 0, 1, 0)$ lies on line ℓ_0
 43 : $P_{112} = (45, 0, 1, 0)$ lies on line ℓ_0
 44 : $P_{114} = (47, 0, 1, 0)$ lies on line ℓ_0
 45 : $P_{115} = (48, 0, 1, 0)$ lies on line ℓ_0
 46 : $P_{116} = (49, 0, 1, 0)$ lies on line ℓ_0
 47 : $P_{117} = (50, 0, 1, 0)$ lies on line ℓ_0
 48 : $P_{118} = (51, 0, 1, 0)$ lies on line ℓ_0
 49 : $P_{119} = (52, 0, 1, 0)$ lies on line ℓ_0
 50 : $P_{120} = (53, 0, 1, 0)$ lies on line ℓ_0
 51 : $P_{121} = (54, 0, 1, 0)$ lies on line ℓ_0
 52 : $P_{122} = (55, 0, 1, 0)$ lies on line ℓ_0
 53 : $P_{123} = (56, 0, 1, 0)$ lies on line ℓ_0

54 : $P_{124} = (57, 0, 1, 0)$ lies on line ℓ_0
 55 : $P_{125} = (58, 0, 1, 0)$ lies on line ℓ_0
 56 : $P_{126} = (59, 0, 1, 0)$ lies on line ℓ_0
 57 : $P_{127} = (60, 0, 1, 0)$ lies on line ℓ_0
 58 : $P_{128} = (61, 0, 1, 0)$ lies on line ℓ_0
 59 : $P_{129} = (62, 0, 1, 0)$ lies on line ℓ_0
 60 : $P_{130} = (63, 0, 1, 0)$ lies on line ℓ_0
 61 : $P_{818} = (47, 11, 1, 0)$ lies on line ℓ_8
 62 : $P_{2382} = (11, 36, 1, 0)$ lies on line ℓ_9
 63 : $P_{3111} = (36, 47, 1, 0)$ lies on line ℓ_{10}
 64 : $P_{8259} = (1, 0, 1, 1)$ lies on line ℓ_1
 65 : $P_{8897} = (0, 10, 1, 1)$ lies on line ℓ_5
 66 : $P_{8907} = (10, 10, 1, 1)$ lies on line ℓ_2
 67 : $P_{9007} = (46, 11, 1, 1)$ lies on line ℓ_8
 68 : $P_{10571} = (10, 36, 1, 1)$ lies on line ℓ_9
 69 : $P_{10625} = (0, 37, 1, 1)$ lies on line ℓ_6
 70 : $P_{10662} = (37, 37, 1, 1)$ lies on line ℓ_3
 71 : $P_{11201} = (0, 46, 1, 1)$ lies on line ℓ_7
 72 : $P_{11247} = (46, 46, 1, 1)$ lies on line ℓ_4
 73 : $P_{11302} = (37, 47, 1, 1)$ lies on line ℓ_{10}
 74 : $P_{12354} = (1, 0, 2, 1)$ lies on line ℓ_1
 75 : $P_{13003} = (10, 10, 2, 1)$ lies on line ℓ_2
 76 : $P_{13023} = (30, 10, 2, 1)$ lies on line ℓ_5
 77 : $P_{13823} = (62, 22, 2, 1)$ lies on line ℓ_8
 78 : $P_{14735} = (14, 37, 2, 1)$ lies on line ℓ_6
 79 : $P_{14758} = (37, 37, 2, 1)$ lies on line ℓ_3
 80 : $P_{15000} = (23, 41, 2, 1)$ lies on line ℓ_9
 81 : $P_{15316} = (19, 46, 2, 1)$ lies on line ℓ_7
 82 : $P_{15343} = (46, 46, 2, 1)$ lies on line ℓ_4
 83 : $P_{16425} = (40, 63, 2, 1)$ lies on line ℓ_{10}
 84 : $P_{16450} = (1, 0, 3, 1)$ lies on line ℓ_1
 85 : $P_{17099} = (10, 10, 3, 1)$ lies on line ℓ_2
 86 : $P_{17109} = (20, 10, 3, 1)$ lies on line ℓ_5
 87 : $P_{17309} = (28, 13, 3, 1)$ lies on line ℓ_9
 88 : $P_{17485} = (12, 16, 3, 1)$ lies on line ℓ_{10}
 89 : $P_{18322} = (17, 29, 3, 1)$ lies on line ℓ_8
 90 : $P_{18854} = (37, 37, 3, 1)$ lies on line ℓ_3
 91 : $P_{18860} = (43, 37, 3, 1)$ lies on line ℓ_6
 92 : $P_{19439} = (46, 46, 3, 1)$ lies on line ℓ_4
 93 : $P_{19454} = (61, 46, 3, 1)$ lies on line ℓ_7
 94 : $P_{20546} = (1, 0, 4, 1)$ lies on line ℓ_1
 95 : $P_{21195} = (10, 10, 4, 1)$ lies on line ℓ_2
 96 : $P_{21219} = (34, 10, 4, 1)$ lies on line ℓ_5
 97 : $P_{22579} = (50, 31, 4, 1)$ lies on line ℓ_{10}
 98 : $P_{22931} = (18, 37, 4, 1)$ lies on line ℓ_6
 99 : $P_{22950} = (37, 37, 4, 1)$ lies on line ℓ_3
 100 : $P_{23391} = (30, 44, 4, 1)$ lies on line ℓ_8
 101 : $P_{23535} = (46, 46, 4, 1)$ lies on line ℓ_4
 102 : $P_{23542} = (53, 46, 4, 1)$ lies on line ℓ_7
 103 : $P_{23854} = (45, 51, 4, 1)$ lies on line ℓ_9
 104 : $P_{24642} = (1, 0, 5, 1)$ lies on line ℓ_1
 105 : $P_{25291} = (10, 10, 5, 1)$ lies on line ℓ_2
 106 : $P_{25321} = (40, 10, 5, 1)$ lies on line ℓ_5
 107 : $P_{26151} = (38, 23, 5, 1)$ lies on line ℓ_9

108 : $P_{27046} = (37, 37, 5, 1)$ lies on line ℓ_3
 109 : $P_{27064} = (55, 37, 5, 1)$ lies on line ℓ_6
 110 : $P_{27186} = (49, 39, 5, 1)$ lies on line ℓ_8
 111 : $P_{27612} = (27, 46, 5, 1)$ lies on line ℓ_7
 112 : $P_{27631} = (46, 46, 5, 1)$ lies on line ℓ_4
 113 : $P_{27735} = (22, 48, 5, 1)$ lies on line ℓ_{10}
 114 : $P_{28738} = (1, 0, 6, 1)$ lies on line ℓ_1
 115 : $P_{29387} = (10, 10, 6, 1)$ lies on line ℓ_2
 116 : $P_{29431} = (54, 10, 6, 1)$ lies on line ℓ_5
 117 : $P_{30460} = (59, 26, 6, 1)$ lies on line ℓ_9
 118 : $P_{30812} = (27, 32, 6, 1)$ lies on line ℓ_{10}
 119 : $P_{31142} = (37, 37, 6, 1)$ lies on line ℓ_3
 120 : $P_{31162} = (57, 37, 6, 1)$ lies on line ℓ_6
 121 : $P_{31689} = (8, 46, 6, 1)$ lies on line ℓ_7
 122 : $P_{31727} = (46, 46, 6, 1)$ lies on line ℓ_4
 123 : $P_{32482} = (33, 58, 6, 1)$ lies on line ℓ_8
 124 : $P_{32834} = (1, 0, 7, 1)$ lies on line ℓ_1
 125 : $P_{33483} = (10, 10, 7, 1)$ lies on line ℓ_2
 126 : $P_{33533} = (60, 10, 7, 1)$ lies on line ℓ_5
 127 : $P_{33856} = (63, 15, 7, 1)$ lies on line ℓ_{10}
 128 : $P_{35229} = (28, 37, 7, 1)$ lies on line ℓ_6
 129 : $P_{35238} = (37, 37, 7, 1)$ lies on line ℓ_3
 130 : $P_{35815} = (38, 46, 7, 1)$ lies on line ℓ_7
 131 : $P_{35823} = (46, 46, 7, 1)$ lies on line ℓ_4
 132 : $P_{35983} = (14, 49, 7, 1)$ lies on line ℓ_8
 133 : $P_{36849} = (48, 62, 7, 1)$ lies on line ℓ_9
 134 : $P_{36930} = (1, 0, 8, 1)$ lies on line ℓ_1
 135 : $P_{37433} = (56, 7, 8, 1)$ lies on line ℓ_9
 136 : $P_{37579} = (10, 10, 8, 1)$ lies on line ℓ_2
 137 : $P_{37628} = (59, 10, 8, 1)$ lies on line ℓ_5
 138 : $P_{39334} = (37, 37, 8, 1)$ lies on line ℓ_3
 139 : $P_{39339} = (42, 37, 8, 1)$ lies on line ℓ_6
 140 : $P_{39897} = (24, 46, 8, 1)$ lies on line ℓ_7
 141 : $P_{39919} = (46, 46, 8, 1)$ lies on line ℓ_4
 142 : $P_{40640} = (63, 57, 8, 1)$ lies on line ℓ_8
 143 : $P_{40903} = (6, 62, 8, 1)$ lies on line ℓ_{10}
 144 : $P_{41026} = (1, 0, 9, 1)$ lies on line ℓ_1
 145 : $P_{41675} = (10, 10, 9, 1)$ lies on line ℓ_2
 146 : $P_{41714} = (49, 10, 9, 1)$ lies on line ℓ_5
 147 : $P_{42147} = (34, 17, 9, 1)$ lies on line ℓ_{10}
 148 : $P_{43316} = (51, 35, 9, 1)$ lies on line ℓ_9
 149 : $P_{43408} = (15, 37, 9, 1)$ lies on line ℓ_6
 150 : $P_{43430} = (37, 37, 9, 1)$ lies on line ℓ_3
 151 : $P_{44015} = (46, 46, 9, 1)$ lies on line ℓ_4
 152 : $P_{44023} = (54, 46, 9, 1)$ lies on line ℓ_7
 153 : $P_{44241} = (16, 50, 9, 1)$ lies on line ℓ_8
 154 : $P_{45122} = (1, 0, 10, 1)$ lies on line ℓ_1
 155 : $P_{45232} = (47, 1, 10, 1)$ lies on line ℓ_{10}
 156 : $P_{45771} = (10, 10, 10, 1)$ lies on line ℓ_2
 157 : $P_{45808} = (47, 10, 10, 1)$ lies on line ℓ_5
 158 : $P_{47490} = (1, 37, 10, 1)$ lies on line ℓ_6
 159 : $P_{47526} = (37, 37, 10, 1)$ lies on line ℓ_3
 160 : $P_{48102} = (37, 46, 10, 1)$ lies on line ℓ_7
 161 : $P_{48129} = (0, 47, 10, 1)$ lies on line ℓ_8
 162 : $P_{49218} = (1, 0, 11, 1)$ lies on line ℓ_1
 163 : $P_{49867} = (10, 10, 11, 1)$ lies on line ℓ_2
 164 : $P_{51568} = (47, 36, 11, 1)$ lies on line ℓ_8
 165 : $P_{51621} = (36, 37, 11, 1)$ lies on line ℓ_6
 166 : $P_{51622} = (37, 37, 11, 1)$ lies on line ℓ_3
 167 : $P_{52207} = (46, 46, 11, 1)$ lies on line ℓ_4
 168 : $P_{53314} = (1, 0, 12, 1)$ lies on line ℓ_1
 169 : $P_{53963} = (10, 10, 12, 1)$ lies on line ℓ_2
 170 : $P_{53972} = (19, 10, 12, 1)$ lies on line ℓ_5
 171 : $P_{54689} = (32, 21, 12, 1)$ lies on line ℓ_8
 172 : $P_{55478} = (53, 33, 12, 1)$ lies on line ℓ_{10}
 173 : $P_{55710} = (29, 37, 12, 1)$ lies on line ℓ_6
 174 : $P_{55718} = (37, 37, 12, 1)$ lies on line ℓ_3
 175 : $P_{56260} = (3, 46, 12, 1)$ lies on line ℓ_7
 176 : $P_{56303} = (46, 46, 12, 1)$ lies on line ℓ_4
 177 : $P_{56661} = (20, 52, 12, 1)$ lies on line ℓ_9
 178 : $P_{57410} = (1, 0, 13, 1)$ lies on line ℓ_1
 179 : $P_{58059} = (10, 10, 13, 1)$ lies on line ℓ_2
 180 : $P_{58074} = (25, 10, 13, 1)$ lies on line ℓ_5
 181 : $P_{58322} = (17, 14, 13, 1)$ lies on line ℓ_{10}
 182 : $P_{58464} = (31, 16, 13, 1)$ lies on line ℓ_9
 183 : $P_{59344} = (15, 30, 13, 1)$ lies on line ℓ_8
 184 : $P_{59814} = (37, 37, 13, 1)$ lies on line ℓ_3
 185 : $P_{59833} = (56, 37, 13, 1)$ lies on line ℓ_6
 186 : $P_{60398} = (45, 46, 13, 1)$ lies on line ℓ_7
 187 : $P_{60399} = (46, 46, 13, 1)$ lies on line ℓ_4
 188 : $P_{61506} = (1, 0, 14, 1)$ lies on line ℓ_1
 189 : $P_{61728} = (31, 3, 14, 1)$ lies on line ℓ_8
 190 : $P_{62152} = (7, 10, 14, 1)$ lies on line ℓ_5
 191 : $P_{62155} = (10, 10, 14, 1)$ lies on line ℓ_2
 192 : $P_{63363} = (2, 29, 14, 1)$ lies on line ℓ_9
 193 : $P_{63453} = (28, 30, 14, 1)$ lies on line ℓ_{10}
 194 : $P_{63910} = (37, 37, 14, 1)$ lies on line ℓ_3
 195 : $P_{63927} = (54, 37, 14, 1)$ lies on line ℓ_6
 196 : $P_{64495} = (46, 46, 14, 1)$ lies on line ℓ_4
 197 : $P_{64511} = (62, 46, 14, 1)$ lies on line ℓ_7
 198 : $P_{65602} = (1, 0, 15, 1)$ lies on line ℓ_1
 199 : $P_{66161} = (48, 8, 15, 1)$ lies on line ℓ_8
 200 : $P_{66251} = (10, 10, 15, 1)$ lies on line ℓ_2
 201 : $P_{66254} = (13, 10, 15, 1)$ lies on line ℓ_5
 202 : $P_{67988} = (19, 37, 15, 1)$ lies on line ℓ_6
 203 : $P_{68006} = (37, 37, 15, 1)$ lies on line ℓ_3
 204 : $P_{68561} = (16, 46, 15, 1)$ lies on line ℓ_7
 205 : $P_{68591} = (46, 46, 15, 1)$ lies on line ℓ_4
 206 : $P_{68793} = (56, 49, 15, 1)$ lies on line ℓ_{10}
 207 : $P_{69258} = (9, 57, 15, 1)$ lies on line ℓ_9
 208 : $P_{69698} = (1, 0, 16, 1)$ lies on line ℓ_1
 209 : $P_{70346} = (9, 10, 16, 1)$ lies on line ℓ_5
 210 : $P_{70347} = (10, 10, 16, 1)$ lies on line ℓ_2
 211 : $P_{70611} = (18, 14, 16, 1)$ lies on line ℓ_9
 212 : $P_{70941} = (28, 19, 16, 1)$ lies on line ℓ_8
 213 : $P_{71568} = (15, 29, 16, 1)$ lies on line ℓ_{10}
 214 : $P_{72102} = (37, 37, 16, 1)$ lies on line ℓ_3
 215 : $P_{72124} = (59, 37, 16, 1)$ lies on line ℓ_6

216 : $P_{72676} = (35, 46, 16, 1)$ lies on line ℓ_7
 217 : $P_{72687} = (46, 46, 16, 1)$ lies on line ℓ_4
 218 : $P_{73794} = (1, 0, 17, 1)$ lies on line ℓ_1
 219 : $P_{74436} = (3, 10, 17, 1)$ lies on line ℓ_5
 220 : $P_{74443} = (10, 10, 17, 1)$ lies on line ℓ_2
 221 : $P_{75380} = (51, 24, 17, 1)$ lies on line ℓ_8
 222 : $P_{76191} = (30, 37, 17, 1)$ lies on line ℓ_6
 223 : $P_{76198} = (37, 37, 17, 1)$ lies on line ℓ_3
 224 : $P_{76506} = (25, 42, 17, 1)$ lies on line ℓ_9
 225 : $P_{76750} = (13, 46, 17, 1)$ lies on line ℓ_7
 226 : $P_{76783} = (46, 46, 17, 1)$ lies on line ℓ_4
 227 : $P_{77036} = (43, 50, 17, 1)$ lies on line ℓ_{10}
 228 : $P_{77890} = (1, 0, 18, 1)$ lies on line ℓ_1
 229 : $P_{78244} = (35, 5, 18, 1)$ lies on line ℓ_8
 230 : $P_{78539} = (10, 10, 18, 1)$ lies on line ℓ_2
 231 : $P_{78558} = (29, 10, 18, 1)$ lies on line ℓ_5
 232 : $P_{80103} = (38, 34, 18, 1)$ lies on line ℓ_{10}
 233 : $P_{80273} = (16, 37, 18, 1)$ lies on line ℓ_6
 234 : $P_{80294} = (37, 37, 18, 1)$ lies on line ℓ_3
 235 : $P_{80389} = (4, 39, 18, 1)$ lies on line ℓ_9
 236 : $P_{80863} = (30, 46, 18, 1)$ lies on line ℓ_7
 237 : $P_{80879} = (46, 46, 18, 1)$ lies on line ℓ_4
 238 : $P_{81986} = (1, 0, 19, 1)$ lies on line ℓ_1
 239 : $P_{82192} = (15, 3, 19, 1)$ lies on line ℓ_9
 240 : $P_{82635} = (10, 10, 19, 1)$ lies on line ℓ_2
 241 : $P_{82648} = (23, 10, 19, 1)$ lies on line ℓ_5
 242 : $P_{82819} = (2, 13, 19, 1)$ lies on line ℓ_{10}
 243 : $P_{82893} = (12, 14, 19, 1)$ lies on line ℓ_8
 244 : $P_{84390} = (37, 37, 19, 1)$ lies on line ℓ_3
 245 : $P_{84406} = (53, 37, 19, 1)$ lies on line ℓ_6
 246 : $P_{84975} = (46, 46, 19, 1)$ lies on line ℓ_4
 247 : $P_{84977} = (48, 46, 19, 1)$ lies on line ℓ_7
 248 : $P_{86082} = (1, 0, 20, 1)$ lies on line ℓ_1
 249 : $P_{86269} = (60, 2, 20, 1)$ lies on line ℓ_{10}
 250 : $P_{86731} = (10, 10, 20, 1)$ lies on line ℓ_2
 251 : $P_{86754} = (33, 10, 20, 1)$ lies on line ℓ_5
 252 : $P_{88461} = (12, 37, 20, 1)$ lies on line ℓ_6
 253 : $P_{88486} = (37, 37, 20, 1)$ lies on line ℓ_3
 254 : $P_{89071} = (46, 46, 20, 1)$ lies on line ℓ_4
 255 : $P_{89081} = (56, 46, 20, 1)$ lies on line ℓ_7
 256 : $P_{90047} = (62, 61, 20, 1)$ lies on line ℓ_9
 257 : $P_{90116} = (3, 63, 20, 1)$ lies on line ℓ_8
 258 : $P_{90178} = (1, 0, 21, 1)$ lies on line ℓ_1
 259 : $P_{90827} = (10, 10, 21, 1)$ lies on line ℓ_2
 260 : $P_{90860} = (43, 10, 21, 1)$ lies on line ℓ_5
 261 : $P_{91830} = (53, 25, 21, 1)$ lies on line ℓ_9
 262 : $P_{92582} = (37, 37, 21, 1)$ lies on line ℓ_3
 263 : $P_{92586} = (41, 37, 21, 1)$ lies on line ℓ_6
 264 : $P_{93081} = (24, 45, 21, 1)$ lies on line ℓ_{10}
 265 : $P_{93143} = (22, 46, 21, 1)$ lies on line ℓ_7
 266 : $P_{93167} = (46, 46, 21, 1)$ lies on line ℓ_4
 267 : $P_{93549} = (44, 52, 21, 1)$ lies on line ℓ_8
 268 : $P_{94274} = (1, 0, 22, 1)$ lies on line ℓ_1
 269 : $P_{94923} = (10, 10, 22, 1)$ lies on line ℓ_2

270 : $P_{94966} = (53, 10, 22, 1)$ lies on line ℓ_5
 271 : $P_{95593} = (40, 20, 22, 1)$ lies on line ℓ_9
 272 : $P_{96678} = (37, 37, 22, 1)$ lies on line ℓ_3
 273 : $P_{96680} = (39, 37, 22, 1)$ lies on line ℓ_6
 274 : $P_{96957} = (60, 41, 22, 1)$ lies on line ℓ_8
 275 : $P_{97222} = (5, 46, 22, 1)$ lies on line ℓ_7
 276 : $P_{97263} = (46, 46, 22, 1)$ lies on line ℓ_4
 277 : $P_{98198} = (21, 61, 22, 1)$ lies on line ℓ_{10}
 278 : $P_{98370} = (1, 0, 23, 1)$ lies on line ℓ_1
 279 : $P_{99019} = (10, 10, 23, 1)$ lies on line ℓ_2
 280 : $P_{99072} = (63, 10, 23, 1)$ lies on line ℓ_5
 281 : $P_{99570} = (49, 18, 23, 1)$ lies on line ℓ_{10}
 282 : $P_{100564} = (19, 34, 23, 1)$ lies on line ℓ_8
 283 : $P_{100739} = (2, 37, 23, 1)$ lies on line ℓ_6
 284 : $P_{100774} = (37, 37, 23, 1)$ lies on line ℓ_3
 285 : $P_{101356} = (43, 46, 23, 1)$ lies on line ℓ_7
 286 : $P_{101359} = (46, 46, 23, 1)$ lies on line ℓ_4
 287 : $P_{101476} = (35, 48, 23, 1)$ lies on line ℓ_9
 288 : $P_{102466} = (1, 0, 24, 1)$ lies on line ℓ_1
 289 : $P_{103084} = (43, 9, 24, 1)$ lies on line ℓ_9
 290 : $P_{103115} = (10, 10, 24, 1)$ lies on line ℓ_2
 291 : $P_{103161} = (56, 10, 24, 1)$ lies on line ℓ_5
 292 : $P_{104713} = (8, 35, 24, 1)$ lies on line ℓ_{10}
 293 : $P_{104870} = (37, 37, 24, 1)$ lies on line ℓ_3
 294 : $P_{104885} = (52, 37, 24, 1)$ lies on line ℓ_6
 295 : $P_{105187} = (34, 42, 24, 1)$ lies on line ℓ_8
 296 : $P_{105430} = (21, 46, 24, 1)$ lies on line ℓ_7
 297 : $P_{105455} = (46, 46, 24, 1)$ lies on line ℓ_4
 298 : $P_{106562} = (1, 0, 25, 1)$ lies on line ℓ_1
 299 : $P_{107211} = (10, 10, 25, 1)$ lies on line ℓ_2
 300 : $P_{107251} = (50, 10, 25, 1)$ lies on line ℓ_5
 301 : $P_{107373} = (44, 12, 25, 1)$ lies on line ℓ_{10}
 302 : $P_{108686} = (13, 33, 25, 1)$ lies on line ℓ_8
 303 : $P_{108946} = (17, 37, 25, 1)$ lies on line ℓ_6
 304 : $P_{108966} = (37, 37, 25, 1)$ lies on line ℓ_3
 305 : $P_{109473} = (32, 45, 25, 1)$ lies on line ℓ_9
 306 : $P_{109551} = (46, 46, 25, 1)$ lies on line ℓ_4
 307 : $P_{109564} = (59, 46, 25, 1)$ lies on line ℓ_7
 308 : $P_{110658} = (1, 0, 26, 1)$ lies on line ℓ_1
 309 : $P_{111307} = (10, 10, 26, 1)$ lies on line ℓ_2
 310 : $P_{111341} = (44, 10, 26, 1)$ lies on line ℓ_5
 311 : $P_{112482} = (33, 28, 26, 1)$ lies on line ℓ_{10}
 312 : $P_{112766} = (61, 32, 26, 1)$ lies on line ℓ_9
 313 : $P_{113056} = (31, 37, 26, 1)$ lies on line ℓ_6
 314 : $P_{113062} = (37, 37, 26, 1)$ lies on line ℓ_3
 315 : $P_{113641} = (40, 46, 26, 1)$ lies on line ℓ_7
 316 : $P_{113647} = (46, 46, 26, 1)$ lies on line ℓ_4
 317 : $P_{114526} = (29, 60, 26, 1)$ lies on line ℓ_8
 318 : $P_{114754} = (1, 0, 27, 1)$ lies on line ℓ_1
 319 : $P_{115063} = (54, 4, 27, 1)$ lies on line ℓ_9
 320 : $P_{115403} = (10, 10, 27, 1)$ lies on line ℓ_2
 321 : $P_{115431} = (38, 10, 27, 1)$ lies on line ℓ_5
 322 : $P_{117158} = (37, 37, 27, 1)$ lies on line ℓ_3
 323 : $P_{117179} = (58, 37, 27, 1)$ lies on line ℓ_6

324 : $P_{117703} = (6, 46, 27, 1)$ lies on line ℓ_7
 325 : $P_{117743} = (46, 46, 27, 1)$ lies on line ℓ_4
 326 : $P_{118022} = (5, 51, 27, 1)$ lies on line ℓ_{10}
 327 : $P_{118323} = (50, 55, 27, 1)$ lies on line ℓ_8
 328 : $P_{118850} = (1, 0, 28, 1)$ lies on line ℓ_1
 329 : $P_{119294} = (61, 6, 28, 1)$ lies on line ℓ_8
 330 : $P_{119499} = (10, 10, 28, 1)$ lies on line ℓ_2
 331 : $P_{119505} = (16, 10, 28, 1)$ lies on line ℓ_5
 332 : $P_{121220} = (3, 37, 28, 1)$ lies on line ℓ_6
 333 : $P_{121254} = (37, 37, 28, 1)$ lies on line ℓ_3
 334 : $P_{121807} = (14, 46, 28, 1)$ lies on line ℓ_7
 335 : $P_{121839} = (46, 46, 28, 1)$ lies on line ℓ_4
 336 : $P_{122568} = (7, 58, 28, 1)$ lies on line ℓ_9
 337 : $P_{122748} = (59, 60, 28, 1)$ lies on line ℓ_{10}
 338 : $P_{122946} = (1, 0, 29, 1)$ lies on line ℓ_1
 339 : $P_{123595} = (10, 10, 29, 1)$ lies on line ℓ_2
 340 : $P_{123611} = (26, 10, 29, 1)$ lies on line ℓ_5
 341 : $P_{123795} = (18, 13, 29, 1)$ lies on line ℓ_8
 342 : $P_{124192} = (31, 19, 29, 1)$ lies on line ℓ_{10}
 343 : $P_{124877} = (12, 30, 29, 1)$ lies on line ℓ_9
 344 : $P_{125350} = (37, 37, 29, 1)$ lies on line ℓ_3
 345 : $P_{125351} = (38, 37, 29, 1)$ lies on line ℓ_6
 346 : $P_{125921} = (32, 46, 29, 1)$ lies on line ℓ_7
 347 : $P_{125935} = (46, 46, 29, 1)$ lies on line ℓ_4
 348 : $P_{127042} = (1, 0, 30, 1)$ lies on line ℓ_1
 349 : $P_{127251} = (18, 3, 30, 1)$ lies on line ℓ_{10}
 350 : $P_{127685} = (4, 10, 30, 1)$ lies on line ℓ_5
 351 : $P_{127691} = (10, 10, 30, 1)$ lies on line ℓ_2
 352 : $P_{128067} = (2, 16, 30, 1)$ lies on line ℓ_8
 353 : $P_{128274} = (17, 19, 30, 1)$ lies on line ℓ_9
 354 : $P_{129446} = (37, 37, 30, 1)$ lies on line ℓ_3
 355 : $P_{129449} = (40, 37, 30, 1)$ lies on line ℓ_6
 356 : $P_{130031} = (46, 46, 30, 1)$ lies on line ℓ_4
 357 : $P_{130036} = (51, 46, 30, 1)$ lies on line ℓ_7
 358 : $P_{131138} = (1, 0, 31, 1)$ lies on line ℓ_1
 359 : $P_{131787} = (10, 10, 31, 1)$ lies on line ℓ_2
 360 : $P_{131791} = (14, 10, 31, 1)$ lies on line ℓ_5
 361 : $P_{132910} = (45, 27, 31, 1)$ lies on line ℓ_8
 362 : $P_{133518} = (13, 37, 31, 1)$ lies on line ℓ_6
 363 : $P_{133542} = (37, 37, 31, 1)$ lies on line ℓ_3
 364 : $P_{134007} = (54, 44, 31, 1)$ lies on line ℓ_{10}
 365 : $P_{134110} = (29, 46, 31, 1)$ lies on line ℓ_7
 366 : $P_{134127} = (46, 46, 31, 1)$ lies on line ℓ_4
 367 : $P_{134683} = (26, 55, 31, 1)$ lies on line ℓ_9
 368 : $P_{135234} = (1, 0, 32, 1)$ lies on line ℓ_1
 369 : $P_{135883} = (10, 10, 32, 1)$ lies on line ℓ_2
 370 : $P_{135885} = (12, 10, 32, 1)$ lies on line ℓ_5
 371 : $P_{137064} = (39, 28, 32, 1)$ lies on line ℓ_9
 372 : $P_{137626} = (25, 37, 32, 1)$ lies on line ℓ_6
 373 : $P_{137638} = (37, 37, 32, 1)$ lies on line ℓ_3
 374 : $P_{137724} = (59, 38, 32, 1)$ lies on line ℓ_8
 375 : $P_{138223} = (46, 46, 32, 1)$ lies on line ℓ_4
 376 : $P_{138229} = (52, 46, 32, 1)$ lies on line ℓ_7
 377 : $P_{138974} = (29, 58, 32, 1)$ lies on line ℓ_{10}

378 : $P_{139330} = (1, 0, 33, 1)$ lies on line ℓ_1
 379 : $P_{139975} = (6, 10, 33, 1)$ lies on line ℓ_5
 380 : $P_{139979} = (10, 10, 33, 1)$ lies on line ℓ_2
 381 : $P_{140730} = (57, 21, 33, 1)$ lies on line ℓ_{10}
 382 : $P_{141734} = (37, 37, 33, 1)$ lies on line ℓ_3
 383 : $P_{141757} = (60, 37, 33, 1)$ lies on line ℓ_6
 384 : $P_{142229} = (20, 45, 33, 1)$ lies on line ℓ_8
 385 : $P_{142299} = (26, 46, 33, 1)$ lies on line ℓ_7
 386 : $P_{142319} = (46, 46, 33, 1)$ lies on line ℓ_4
 387 : $P_{142957} = (44, 56, 33, 1)$ lies on line ℓ_9
 388 : $P_{143426} = (1, 0, 34, 1)$ lies on line ℓ_1
 389 : $P_{143797} = (52, 5, 34, 1)$ lies on line ℓ_{10}
 390 : $P_{144075} = (10, 10, 34, 1)$ lies on line ℓ_2
 391 : $P_{144089} = (24, 10, 34, 1)$ lies on line ℓ_5
 392 : $P_{145830} = (37, 37, 34, 1)$ lies on line ℓ_3
 393 : $P_{145843} = (50, 37, 34, 1)$ lies on line ℓ_6
 394 : $P_{146378} = (9, 46, 34, 1)$ lies on line ℓ_7
 395 : $P_{146415} = (46, 46, 34, 1)$ lies on line ℓ_4
 396 : $P_{146501} = (4, 48, 34, 1)$ lies on line ℓ_8
 397 : $P_{146866} = (49, 53, 34, 1)$ lies on line ℓ_9
 398 : $P_{147522} = (1, 0, 35, 1)$ lies on line ℓ_1
 399 : $P_{148171} = (10, 10, 35, 1)$ lies on line ℓ_2
 400 : $P_{148179} = (18, 10, 35, 1)$ lies on line ℓ_5
 401 : $P_{148667} = (58, 17, 35, 1)$ lies on line ℓ_9
 402 : $P_{149912} = (23, 37, 35, 1)$ lies on line ℓ_6
 403 : $P_{149926} = (37, 37, 35, 1)$ lies on line ℓ_3
 404 : $P_{150225} = (16, 42, 35, 1)$ lies on line ℓ_{10}
 405 : $P_{150504} = (39, 46, 35, 1)$ lies on line ℓ_7
 406 : $P_{150511} = (46, 46, 35, 1)$ lies on line ℓ_4
 407 : $P_{151340} = (43, 59, 35, 1)$ lies on line ℓ_8
 408 : $P_{151618} = (1, 0, 36, 1)$ lies on line ℓ_1
 409 : $P_{152267} = (10, 10, 36, 1)$ lies on line ℓ_2
 410 : $P_{154022} = (37, 37, 36, 1)$ lies on line ℓ_3
 411 : $P_{154607} = (46, 46, 36, 1)$ lies on line ℓ_4
 412 : $P_{154608} = (47, 46, 36, 1)$ lies on line ℓ_7
 413 : $P_{154636} = (11, 47, 36, 1)$ lies on line ℓ_9
 414 : $P_{155714} = (1, 0, 37, 1)$ lies on line ℓ_1
 415 : $P_{155788} = (11, 1, 37, 1)$ lies on line ℓ_8
 416 : $P_{156399} = (46, 10, 37, 1)$ lies on line ℓ_5
 417 : $P_{156417} = (0, 11, 37, 1)$ lies on line ℓ_9
 418 : $P_{158092} = (11, 37, 37, 1)$ lies on line ℓ_6
 419 : $P_{158118} = (37, 37, 37, 1)$ lies on line ℓ_3
 420 : $P_{158658} = (1, 46, 37, 1)$ lies on line ℓ_7
 421 : $P_{158703} = (46, 46, 37, 1)$ lies on line ℓ_4
 422 : $P_{159810} = (1, 0, 38, 1)$ lies on line ℓ_1
 423 : $P_{160222} = (29, 6, 38, 1)$ lies on line ℓ_9
 424 : $P_{160459} = (10, 10, 38, 1)$ lies on line ℓ_2
 425 : $P_{160497} = (48, 10, 38, 1)$ lies on line ℓ_5
 426 : $P_{161480} = (7, 26, 38, 1)$ lies on line ℓ_{10}
 427 : $P_{161628} = (27, 28, 38, 1)$ lies on line ℓ_8
 428 : $P_{162182} = (5, 37, 38, 1)$ lies on line ℓ_6
 429 : $P_{162214} = (37, 37, 38, 1)$ lies on line ℓ_3
 430 : $P_{162771} = (18, 46, 38, 1)$ lies on line ℓ_7
 431 : $P_{162799} = (46, 46, 38, 1)$ lies on line ℓ_4

432 : $P_{163906} = (1, 0, 39, 1)$ lies on line ℓ_1
 433 : $P_{164555} = (10, 10, 39, 1)$ lies on line ℓ_2
 434 : $P_{164603} = (58, 10, 39, 1)$ lies on line ℓ_5
 435 : $P_{165429} = (52, 23, 39, 1)$ lies on line ℓ_8
 436 : $P_{166103} = (22, 34, 39, 1)$ lies on line ℓ_9
 437 : $P_{166305} = (32, 37, 39, 1)$ lies on line ℓ_6
 438 : $P_{166310} = (37, 37, 39, 1)$ lies on line ℓ_3
 439 : $P_{166895} = (46, 46, 39, 1)$ lies on line ℓ_4
 440 : $P_{166909} = (60, 46, 39, 1)$ lies on line ℓ_7
 441 : $P_{167332} = (35, 53, 39, 1)$ lies on line ℓ_{10}
 442 : $P_{168002} = (1, 0, 40, 1)$ lies on line ℓ_1
 443 : $P_{168283} = (26, 4, 40, 1)$ lies on line ℓ_{10}
 444 : $P_{168651} = (10, 10, 40, 1)$ lies on line ℓ_2
 445 : $P_{168702} = (61, 10, 40, 1)$ lies on line ℓ_5
 446 : $P_{169759} = (30, 27, 40, 1)$ lies on line ℓ_9
 447 : $P_{169990} = (5, 31, 40, 1)$ lies on line ℓ_8
 448 : $P_{170391} = (22, 37, 40, 1)$ lies on line ℓ_6
 449 : $P_{170406} = (37, 37, 40, 1)$ lies on line ℓ_3
 450 : $P_{170947} = (2, 46, 40, 1)$ lies on line ℓ_7
 451 : $P_{170991} = (46, 46, 40, 1)$ lies on line ℓ_4
 452 : $P_{172098} = (1, 0, 41, 1)$ lies on line ℓ_1
 453 : $P_{172747} = (10, 10, 41, 1)$ lies on line ℓ_2
 454 : $P_{172792} = (55, 10, 41, 1)$ lies on line ℓ_5
 455 : $P_{173419} = (42, 20, 41, 1)$ lies on line ℓ_8
 456 : $P_{174502} = (37, 37, 41, 1)$ lies on line ℓ_3
 457 : $P_{174516} = (51, 37, 41, 1)$ lies on line ℓ_6
 458 : $P_{174911} = (62, 43, 41, 1)$ lies on line ℓ_{10}
 459 : $P_{175085} = (44, 46, 41, 1)$ lies on line ℓ_7
 460 : $P_{175087} = (46, 46, 41, 1)$ lies on line ℓ_4
 461 : $P_{176150} = (21, 63, 41, 1)$ lies on line ℓ_9
 462 : $P_{176194} = (1, 0, 42, 1)$ lies on line ℓ_1
 463 : $P_{176827} = (58, 9, 42, 1)$ lies on line ℓ_8
 464 : $P_{176843} = (10, 10, 42, 1)$ lies on line ℓ_2
 465 : $P_{176874} = (41, 10, 42, 1)$ lies on line ℓ_5
 466 : $P_{178598} = (37, 37, 42, 1)$ lies on line ℓ_3
 467 : $P_{178622} = (61, 37, 42, 1)$ lies on line ℓ_6
 468 : $P_{179183} = (46, 46, 42, 1)$ lies on line ℓ_4
 469 : $P_{179200} = (63, 46, 42, 1)$ lies on line ℓ_7
 470 : $P_{179401} = (8, 50, 42, 1)$ lies on line ℓ_9
 471 : $P_{180020} = (51, 59, 42, 1)$ lies on line ℓ_{10}
 472 : $P_{180290} = (1, 0, 43, 1)$ lies on line ℓ_1
 473 : $P_{180438} = (21, 2, 43, 1)$ lies on line ℓ_8
 474 : $P_{180939} = (10, 10, 43, 1)$ lies on line ℓ_2
 475 : $P_{180964} = (35, 10, 43, 1)$ lies on line ℓ_5
 476 : $P_{181592} = (23, 20, 43, 1)$ lies on line ℓ_{10}
 477 : $P_{181700} = (3, 22, 43, 1)$ lies on line ℓ_9
 478 : $P_{182681} = (24, 37, 43, 1)$ lies on line ℓ_6
 479 : $P_{182694} = (37, 37, 43, 1)$ lies on line ℓ_3
 480 : $P_{183250} = (17, 46, 43, 1)$ lies on line ℓ_7
 481 : $P_{183279} = (46, 46, 43, 1)$ lies on line ℓ_4
 482 : $P_{184386} = (1, 0, 44, 1)$ lies on line ℓ_1
 483 : $P_{185035} = (10, 10, 44, 1)$ lies on line ℓ_2
 484 : $P_{185046} = (21, 10, 44, 1)$ lies on line ℓ_5
 485 : $P_{186154} = (41, 27, 44, 1)$ lies on line ℓ_{10}

486 : $P_{186786} = (33, 37, 44, 1)$ lies on line ℓ_6
 487 : $P_{186790} = (37, 37, 44, 1)$ lies on line ℓ_3
 488 : $P_{186995} = (50, 40, 44, 1)$ lies on line ℓ_9
 489 : $P_{187354} = (25, 46, 44, 1)$ lies on line ℓ_7
 490 : $P_{187375} = (46, 46, 44, 1)$ lies on line ℓ_4
 491 : $P_{187675} = (26, 51, 44, 1)$ lies on line ℓ_8
 492 : $P_{188482} = (1, 0, 45, 1)$ lies on line ℓ_1
 493 : $P_{189131} = (10, 10, 45, 1)$ lies on line ℓ_2
 494 : $P_{189152} = (31, 10, 45, 1)$ lies on line ℓ_5
 495 : $P_{189306} = (57, 12, 45, 1)$ lies on line ℓ_9
 496 : $P_{190853} = (4, 37, 45, 1)$ lies on line ℓ_6
 497 : $P_{190886} = (37, 37, 45, 1)$ lies on line ℓ_3
 498 : $P_{191471} = (46, 46, 45, 1)$ lies on line ℓ_4
 499 : $P_{191480} = (55, 46, 45, 1)$ lies on line ℓ_7
 500 : $P_{191822} = (13, 52, 45, 1)$ lies on line ℓ_{10}
 501 : $P_{192118} = (53, 56, 45, 1)$ lies on line ℓ_8
 502 : $P_{192578} = (1, 0, 46, 1)$ lies on line ℓ_1
 503 : $P_{192677} = (36, 1, 46, 1)$ lies on line ℓ_9
 504 : $P_{193218} = (1, 10, 46, 1)$ lies on line ℓ_5
 505 : $P_{193227} = (10, 10, 46, 1)$ lies on line ℓ_2
 506 : $P_{194881} = (0, 36, 46, 1)$ lies on line ℓ_{10}
 507 : $P_{194955} = (10, 37, 46, 1)$ lies on line ℓ_6
 508 : $P_{195557} = (36, 46, 46, 1)$ lies on line ℓ_7
 509 : $P_{195567} = (46, 46, 46, 1)$ lies on line ℓ_4
 510 : $P_{196674} = (1, 0, 47, 1)$ lies on line ℓ_1
 511 : $P_{197323} = (10, 10, 47, 1)$ lies on line ℓ_2
 512 : $P_{197324} = (11, 10, 47, 1)$ lies on line ℓ_5
 513 : $P_{197413} = (36, 11, 47, 1)$ lies on line ℓ_{10}
 514 : $P_{199078} = (37, 37, 47, 1)$ lies on line ℓ_3
 515 : $P_{199663} = (46, 46, 47, 1)$ lies on line ℓ_4
 516 : $P_{200770} = (1, 0, 48, 1)$ lies on line ℓ_1
 517 : $P_{201419} = (10, 10, 48, 1)$ lies on line ℓ_2
 518 : $P_{201424} = (15, 10, 48, 1)$ lies on line ℓ_5
 519 : $P_{201973} = (52, 18, 48, 1)$ lies on line ℓ_9
 520 : $P_{203144} = (7, 37, 48, 1)$ lies on line ℓ_6
 521 : $P_{203174} = (37, 37, 48, 1)$ lies on line ℓ_3
 522 : $P_{203284} = (19, 39, 48, 1)$ lies on line ℓ_{10}
 523 : $P_{203759} = (46, 46, 48, 1)$ lies on line ℓ_4
 524 : $P_{203770} = (57, 46, 48, 1)$ lies on line ℓ_7
 525 : $P_{204199} = (38, 53, 48, 1)$ lies on line ℓ_8
 526 : $P_{204866} = (1, 0, 49, 1)$ lies on line ℓ_1
 527 : $P_{205432} = (55, 8, 49, 1)$ lies on line ℓ_{10}
 528 : $P_{205510} = (5, 10, 49, 1)$ lies on line ℓ_5
 529 : $P_{205515} = (10, 10, 49, 1)$ lies on line ℓ_2
 530 : $P_{207267} = (34, 37, 49, 1)$ lies on line ℓ_6
 531 : $P_{207270} = (37, 37, 49, 1)$ lies on line ℓ_3
 532 : $P_{207832} = (23, 46, 49, 1)$ lies on line ℓ_7
 533 : $P_{207855} = (46, 46, 49, 1)$ lies on line ℓ_4
 534 : $P_{208384} = (63, 54, 49, 1)$ lies on line ℓ_9
 535 : $P_{208842} = (9, 62, 49, 1)$ lies on line ℓ_8
 536 : $P_{208962} = (1, 0, 50, 1)$ lies on line ℓ_1
 537 : $P_{209611} = (10, 10, 50, 1)$ lies on line ℓ_2
 538 : $P_{209628} = (27, 10, 50, 1)$ lies on line ℓ_5
 539 : $P_{210555} = (58, 24, 50, 1)$ lies on line ℓ_{10}

540 : $P_{211226} = (25, 35, 50, 1)$ lies on line ℓ_8
 541 : $P_{211366} = (37, 37, 50, 1)$ lies on line ℓ_3
 542 : $P_{211373} = (44, 37, 50, 1)$ lies on line ℓ_6
 543 : $P_{211909} = (4, 46, 50, 1)$ lies on line ℓ_7
 544 : $P_{211951} = (46, 46, 50, 1)$ lies on line ℓ_4
 545 : $P_{212771} = (34, 59, 50, 1)$ lies on line ℓ_9
 546 : $P_{213058} = (1, 0, 51, 1)$ lies on line ℓ_1
 547 : $P_{213707} = (10, 10, 51, 1)$ lies on line ℓ_2
 548 : $P_{213714} = (17, 10, 51, 1)$ lies on line ℓ_5
 549 : $P_{215082} = (41, 31, 51, 1)$ lies on line ℓ_9
 550 : $P_{215434} = (9, 37, 51, 1)$ lies on line ℓ_6
 551 : $P_{215462} = (37, 37, 51, 1)$ lies on line ℓ_3
 552 : $P_{215671} = (54, 40, 51, 1)$ lies on line ℓ_8
 553 : $P_{216043} = (42, 46, 51, 1)$ lies on line ℓ_7
 554 : $P_{216047} = (46, 46, 51, 1)$ lies on line ℓ_4
 555 : $P_{216607} = (30, 55, 51, 1)$ lies on line ℓ_{10}
 556 : $P_{217154} = (1, 0, 52, 1)$ lies on line ℓ_1
 557 : $P_{217803} = (10, 10, 52, 1)$ lies on line ℓ_2
 558 : $P_{217832} = (39, 10, 52, 1)$ lies on line ℓ_5
 559 : $P_{218810} = (57, 25, 52, 1)$ lies on line ℓ_8
 560 : $P_{219289} = (24, 33, 52, 1)$ lies on line ℓ_9
 561 : $P_{219558} = (37, 37, 52, 1)$ lies on line ℓ_3
 562 : $P_{219569} = (48, 37, 52, 1)$ lies on line ℓ_6
 563 : $P_{220131} = (34, 46, 52, 1)$ lies on line ℓ_7
 564 : $P_{220143} = (46, 46, 52, 1)$ lies on line ℓ_4
 565 : $P_{220769} = (32, 56, 52, 1)$ lies on line ℓ_{10}
 566 : $P_{221250} = (1, 0, 53, 1)$ lies on line ℓ_1
 567 : $P_{221588} = (19, 5, 53, 1)$ lies on line ℓ_9
 568 : $P_{221899} = (10, 10, 53, 1)$ lies on line ℓ_2
 569 : $P_{221934} = (45, 10, 53, 1)$ lies on line ℓ_5
 570 : $P_{222423} = (22, 18, 53, 1)$ lies on line ℓ_8
 571 : $P_{222725} = (4, 23, 53, 1)$ lies on line ℓ_{10}
 572 : $P_{223638} = (21, 37, 53, 1)$ lies on line ℓ_6
 573 : $P_{223654} = (37, 37, 53, 1)$ lies on line ℓ_3
 574 : $P_{224205} = (12, 46, 53, 1)$ lies on line ℓ_7
 575 : $P_{224239} = (46, 46, 53, 1)$ lies on line ℓ_4
 576 : $P_{225346} = (1, 0, 54, 1)$ lies on line ℓ_1
 577 : $P_{225802} = (9, 7, 54, 1)$ lies on line ℓ_{10}
 578 : $P_{225871} = (14, 8, 54, 1)$ lies on line ℓ_9
 579 : $P_{225995} = (10, 10, 54, 1)$ lies on line ℓ_2
 580 : $P_{226036} = (51, 10, 54, 1)$ lies on line ℓ_5
 581 : $P_{226311} = (6, 15, 54, 1)$ lies on line ℓ_8
 582 : $P_{227740} = (27, 37, 54, 1)$ lies on line ℓ_6
 583 : $P_{227750} = (37, 37, 54, 1)$ lies on line ℓ_3
 584 : $P_{228320} = (31, 46, 54, 1)$ lies on line ℓ_7
 585 : $P_{228335} = (46, 46, 54, 1)$ lies on line ℓ_4
 586 : $P_{229442} = (1, 0, 55, 1)$ lies on line ℓ_1
 587 : $P_{229738} = (41, 4, 55, 1)$ lies on line ℓ_8
 588 : $P_{230091} = (10, 10, 55, 1)$ lies on line ℓ_2
 589 : $P_{230138} = (57, 10, 55, 1)$ lies on line ℓ_5
 590 : $P_{231846} = (37, 37, 55, 1)$ lies on line ℓ_3
 591 : $P_{231871} = (62, 37, 55, 1)$ lies on line ℓ_6
 592 : $P_{232046} = (45, 40, 55, 1)$ lies on line ℓ_{10}
 593 : $P_{232262} = (5, 44, 55, 1)$ lies on line ℓ_9

594 : $P_{232431} = (46, 46, 55, 1)$ lies on line ℓ_4
 595 : $P_{232434} = (49, 46, 55, 1)$ lies on line ℓ_7
 596 : $P_{233538} = (1, 0, 56, 1)$ lies on line ℓ_1
 597 : $P_{234187} = (10, 10, 56, 1)$ lies on line ℓ_2
 598 : $P_{234239} = (62, 10, 56, 1)$ lies on line ℓ_5
 599 : $P_{234329} = (24, 12, 56, 1)$ lies on line ℓ_8
 600 : $P_{234894} = (13, 21, 56, 1)$ lies on line ℓ_9
 601 : $P_{235157} = (20, 25, 56, 1)$ lies on line ℓ_{10}
 602 : $P_{235913} = (8, 37, 56, 1)$ lies on line ℓ_6
 603 : $P_{235942} = (37, 37, 56, 1)$ lies on line ℓ_3
 604 : $P_{236496} = (15, 46, 56, 1)$ lies on line ℓ_7
 605 : $P_{236527} = (46, 46, 56, 1)$ lies on line ℓ_4
 606 : $P_{237634} = (1, 0, 57, 1)$ lies on line ℓ_1
 607 : $P_{238136} = (55, 7, 57, 1)$ lies on line ℓ_8
 608 : $P_{238283} = (10, 10, 57, 1)$ lies on line ℓ_2
 609 : $P_{238325} = (52, 10, 57, 1)$ lies on line ℓ_5
 610 : $P_{240038} = (37, 37, 57, 1)$ lies on line ℓ_3
 611 : $P_{240046} = (45, 37, 57, 1)$ lies on line ℓ_6
 612 : $P_{240610} = (33, 46, 57, 1)$ lies on line ℓ_7
 613 : $P_{240623} = (46, 46, 57, 1)$ lies on line ℓ_4
 614 : $P_{240775} = (6, 49, 57, 1)$ lies on line ℓ_9
 615 : $P_{241137} = (48, 54, 57, 1)$ lies on line ℓ_{10}
 616 : $P_{241730} = (1, 0, 58, 1)$ lies on line ℓ_1
 617 : $P_{242379} = (10, 10, 58, 1)$ lies on line ℓ_2
 618 : $P_{242411} = (42, 10, 58, 1)$ lies on line ℓ_5
 619 : $P_{243432} = (39, 26, 58, 1)$ lies on line ℓ_8
 620 : $P_{244132} = (35, 37, 58, 1)$ lies on line ℓ_6
 621 : $P_{244134} = (37, 37, 58, 1)$ lies on line ℓ_3
 622 : $P_{244222} = (61, 38, 58, 1)$ lies on line ℓ_{10}
 623 : $P_{244719} = (46, 46, 58, 1)$ lies on line ℓ_4
 624 : $P_{244723} = (50, 46, 58, 1)$ lies on line ℓ_7
 625 : $P_{245596} = (27, 60, 58, 1)$ lies on line ℓ_9
 626 : $P_{245826} = (1, 0, 59, 1)$ lies on line ℓ_1
 627 : $P_{246426} = (25, 9, 59, 1)$ lies on line ℓ_{10}
 628 : $P_{246475} = (10, 10, 59, 1)$ lies on line ℓ_2
 629 : $P_{246497} = (32, 10, 59, 1)$ lies on line ℓ_5
 630 : $P_{246921} = (8, 17, 59, 1)$ lies on line ℓ_8
 631 : $P_{247377} = (16, 24, 59, 1)$ lies on line ℓ_9
 632 : $P_{248199} = (6, 37, 59, 1)$ lies on line ℓ_6
 633 : $P_{248230} = (37, 37, 59, 1)$ lies on line ℓ_3
 634 : $P_{248797} = (28, 46, 59, 1)$ lies on line ℓ_7
 635 : $P_{248815} = (46, 46, 59, 1)$ lies on line ℓ_4
 636 : $P_{249922} = (1, 0, 60, 1)$ lies on line ℓ_1
 637 : $P_{250344} = (39, 6, 60, 1)$ lies on line ℓ_{10}
 638 : $P_{250571} = (10, 10, 60, 1)$ lies on line ℓ_2
 639 : $P_{250583} = (22, 10, 60, 1)$ lies on line ℓ_5
 640 : $P_{251976} = (7, 32, 60, 1)$ lies on line ℓ_8
 641 : $P_{252326} = (37, 37, 60, 1)$ lies on line ℓ_3
 642 : $P_{252352} = (63, 37, 60, 1)$ lies on line ℓ_6
 643 : $P_{252386} = (33, 38, 60, 1)$ lies on line ℓ_9
 644 : $P_{252885} = (20, 46, 60, 1)$ lies on line ℓ_7
 645 : $P_{252911} = (46, 46, 60, 1)$ lies on line ℓ_4
 646 : $P_{254018} = (1, 0, 61, 1)$ lies on line ℓ_1
 647 : $P_{254187} = (42, 2, 61, 1)$ lies on line ℓ_9

648 : $P_{254667} = (10, 10, 61, 1)$ lies on line ℓ_2
 649 : $P_{254685} = (28, 10, 61, 1)$ lies on line ℓ_5
 650 : $P_{256411} = (26, 37, 61, 1)$ lies on line ℓ_6
 651 : $P_{256422} = (37, 37, 61, 1)$ lies on line ℓ_3
 652 : $P_{256644} = (3, 41, 61, 1)$ lies on line ℓ_{10}
 653 : $P_{256809} = (40, 43, 61, 1)$ lies on line ℓ_8
 654 : $P_{257007} = (46, 46, 61, 1)$ lies on line ℓ_4
 655 : $P_{257019} = (58, 46, 61, 1)$ lies on line ℓ_7
 656 : $P_{258114} = (1, 0, 62, 1)$ lies on line ℓ_1
 657 : $P_{258755} = (2, 10, 62, 1)$ lies on line ℓ_5
 658 : $P_{258763} = (10, 10, 62, 1)$ lies on line ℓ_2
 659 : $P_{259128} = (55, 15, 62, 1)$ lies on line ℓ_9
 660 : $P_{260501} = (20, 37, 62, 1)$ lies on line ℓ_6
 661 : $P_{260518} = (37, 37, 62, 1)$ lies on line ℓ_3
 662 : $P_{261098} = (41, 46, 62, 1)$ lies on line ℓ_7
 663 : $P_{261103} = (46, 46, 62, 1)$ lies on line ℓ_4
 664 : $P_{261625} = (56, 54, 62, 1)$ lies on line ℓ_8
 665 : $P_{261775} = (14, 57, 62, 1)$ lies on line ℓ_{10}
 666 : $P_{262210} = (1, 0, 63, 1)$ lies on line ℓ_1
 667 : $P_{262857} = (8, 10, 63, 1)$ lies on line ℓ_5
 668 : $P_{262859} = (10, 10, 63, 1)$ lies on line ℓ_2
 669 : $P_{263659} = (42, 22, 63, 1)$ lies on line ℓ_{10}
 670 : $P_{264614} = (37, 37, 63, 1)$ lies on line ℓ_3
 671 : $P_{264626} = (49, 37, 63, 1)$ lies on line ℓ_6
 672 : $P_{265021} = (60, 43, 63, 1)$ lies on line ℓ_9
 673 : $P_{265160} = (7, 46, 63, 1)$ lies on line ℓ_7
 674 : $P_{265199} = (46, 46, 63, 1)$ lies on line ℓ_4
 675 : $P_{266136} = (23, 61, 63, 1)$ lies on line ℓ_8

The single points on the surface are:

Points on surface but on no line

The surface has 3660 points not on any line:
 Too many to print.

Line Intersection Graph

	0	1	2	3	4	5	6	7	8	9	10
0	0	1	1	1	1	1	1	1	0	0	0
1	1	0	1	1	1	0	0	0	1	1	1
2	1	1	0	1	1	1	0	0	0	0	1
3	1	1	1	0	1	0	1	0	1	0	0
4	1	1	1	1	0	0	0	1	0	1	0
5	1	0	1	0	0	0	0	0	1	1	0
6	1	0	0	1	0	0	0	0	0	1	1
7	1	0	0	0	1	0	0	0	1	0	1
8	0	1	0	1	0	1	0	1	0	1	1
9	0	1	0	0	1	1	1	0	1	0	1
10	0	1	1	0	0	0	1	1	1	1	0

Neighbor sets in the line intersection graph:

Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7
in point	P_2	P_2	P_2	P_2	P_{77}	P_{104}	P_{113}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_8	ℓ_9	ℓ_{10}
in point	P_2	P_2	P_2	P_2	P_{4163}	P_{4163}	P_{4163}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_{10}
in point	P_2	P_2	P_2	P_2	P_{4812}	P_{156363}

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_4	ℓ_6	ℓ_8
in point	P_2	P_2	P_2	P_2	P_{6567}	P_{194982}

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_7	ℓ_9
in point	P_2	P_2	P_2	P_2	P_{7152}	P_{48111}

Line 5 intersects

Line	ℓ_0	ℓ_2	ℓ_8	ℓ_9
in point	P_{77}	P_{4812}	P_{152293}	P_{49894}

Line 6 intersects

Line	ℓ_0	ℓ_3	ℓ_9	ℓ_{10}
in point	P_{104}	P_{6567}	P_{199088}	P_{154031}

Line 7 intersects

Line	ℓ_0	ℓ_4	ℓ_8	ℓ_{10}
in point	P_{113}	P_{7152}	P_{199627}	P_{52172}

Line 8 intersects

Line	ℓ_1	ℓ_3	ℓ_5	ℓ_7	ℓ_9	ℓ_{10}
in point	P_{4163}	P_{194982}	P_{152293}	P_{199627}	P_{4163}	P_{4163}

Line 9 intersects

Line	ℓ_1	ℓ_4	ℓ_5	ℓ_6	ℓ_8	ℓ_{10}
in point	P_{4163}	P_{48111}	P_{49894}	P_{199088}	P_{4163}	P_{4163}

Line 10 intersects

Line	ℓ_1	ℓ_2	ℓ_6	ℓ_7	ℓ_8	ℓ_9
in point	P_{4163}	P_{156363}	P_{154031}	P_{52172}	P_{4163}	P_{4163}

The surface has 4353 points:

Too many to print.