

Rank-487 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(64) is 1107828813

General information

Number of lines	7
Number of points	4289
Number of singular points	0
Number of Eckardt points	3
Number of double points	0
Number of single points	446
Number of points off lines	3840
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^7
Type of lines on points	$3^3, 1^{446}, 0^{3840}$

Singular Points

The surface has 0 singular points:

The 7 Lines

The lines and their Pluecker coordinates are:

$$\begin{aligned}\ell_0 &= \left[\begin{array}{cccc} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array} \right]_{8258} = \left[\begin{array}{cccc} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array} \right]_{8258} = \mathbf{Pl}(0, 0, 1, 1, 1, 1)_{544578} \\ \ell_1 &= \left[\begin{array}{cccc} 1 & 0 & \epsilon^{17} & \epsilon^{43} \\ 0 & 1 & \epsilon^{43} & \epsilon^{17} \end{array} \right]_{4751110} = \left[\begin{array}{cccc} 1 & 0 & 53 & 17 \\ 0 & 1 & 17 & 53 \end{array} \right]_{4751110} = \mathbf{Pl}(39, 20, 41, 23, 1, 1)_{711881}\end{aligned}$$

$$\begin{aligned}
\ell_2 &= \begin{bmatrix} 1 & 0 & \epsilon^{20} & \epsilon^{58} \\ 0 & 1 & \epsilon^{58} & \epsilon^{20} \end{bmatrix}_{984815} = \begin{bmatrix} 1 & 0 & 44 & 3 \\ 0 & 1 & 3 & 44 \end{bmatrix}_{984815} = \mathbf{Pl}(4, 24, 59, 51, 1, 1)_{780831} \\
\ell_3 &= \begin{bmatrix} 1 & 0 & \epsilon^{34} & \epsilon^{23} \\ 0 & 1 & \epsilon^{23} & \epsilon^{34} \end{bmatrix}_{10157615} = \begin{bmatrix} 1 & 0 & 9 & 38 \\ 0 & 1 & 38 & 9 \end{bmatrix}_{10157615} = \mathbf{Pl}(42, 55, 31, 50, 1, 1)_{671438} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & \epsilon^{10} & \epsilon^{29} \\ 0 & 1 & \epsilon^{29} & \epsilon^{10} \end{bmatrix}_{7456410} = \begin{bmatrix} 1 & 0 & 63 & 27 \\ 0 & 1 & 27 & 63 \end{bmatrix}_{7456410} = \mathbf{Pl}(2, 48, 34, 22, 1, 1)_{684565} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & \epsilon^{40} & \epsilon^{53} \\ 0 & 1 & \epsilon^{53} & \epsilon^{40} \end{bmatrix}_{1390675} = \begin{bmatrix} 1 & 0 & 14 & 5 \\ 0 & 1 & 5 & 14 \end{bmatrix}_{1390675} = \mathbf{Pl}(16, 6, 60, 29, 1, 1)_{784371} \\
\ell_6 &= \begin{bmatrix} 1 & 0 & \epsilon^5 & \epsilon^{46} \\ 0 & 1 & \epsilon^{46} & \epsilon^5 \end{bmatrix}_{11586315} = \begin{bmatrix} 1 & 0 & 32 & 43 \\ 0 & 1 & 43 & 32 \end{bmatrix}_{11586315} = \mathbf{Pl}(26, 13, 19, 28, 1, 1)_{624172}
\end{aligned}$$

Rank of lines: (8258, 4751110, 984815, 10157615, 7456410, 1390675, 11586315)

Rank of points on Klein quadric: (544578, 711881, 780831, 671438, 684565, 784371, 624172)

Eckardt Points

The surface has 3 Eckardt points:

- 0 : $P_{8907} = \mathbf{P}(\epsilon^{54}, \epsilon^{54}, 1, 1) = \mathbf{P}(10, 10, 1, 1)$,
- 1 : $P_{10662} = \mathbf{P}(\epsilon^{45}, \epsilon^{45}, 1, 1) = \mathbf{P}(37, 37, 1, 1)$,
- 2 : $P_{11247} = \mathbf{P}(\epsilon^{27}, \epsilon^{27}, 1, 1) = \mathbf{P}(46, 46, 1, 1)$.

Double Points

The surface has 0 Double points:

The double points on the surface are:

Single Points

The surface has 446 single points:

The single points on the surface are:

- | | |
|--|--|
| 0 : $P_4 = (1, 1, 1, 1)$ lies on line ℓ_0 | 17 : $P_{8517} = (4, 4, 1, 1)$ lies on line ℓ_0 |
| 1 : $P_5 = (1, 1, 0, 0)$ lies on line ℓ_0 | 18 : $P_{8582} = (5, 5, 1, 1)$ lies on line ℓ_0 |
| 2 : $P_{682} = (39, 9, 1, 0)$ lies on line ℓ_1 | 19 : $P_{8647} = (6, 6, 1, 1)$ lies on line ℓ_0 |
| 3 : $P_{967} = (4, 14, 1, 0)$ lies on line ℓ_2 | 20 : $P_{8712} = (7, 7, 1, 1)$ lies on line ℓ_0 |
| 4 : $P_{2157} = (42, 32, 1, 0)$ lies on line ℓ_3 | 21 : $P_{8777} = (8, 8, 1, 1)$ lies on line ℓ_0 |
| 5 : $P_{2885} = (2, 44, 1, 0)$ lies on line ℓ_4 | 22 : $P_{8842} = (9, 9, 1, 1)$ lies on line ℓ_0 |
| 6 : $P_{3475} = (16, 53, 1, 0)$ lies on line ℓ_5 | 23 : $P_{8972} = (11, 11, 1, 1)$ lies on line ℓ_0 |
| 7 : $P_{4125} = (26, 63, 1, 0)$ lies on line ℓ_6 | 24 : $P_{9037} = (12, 12, 1, 1)$ lies on line ℓ_0 |
| 8 : $P_{4334} = (44, 2, 0, 1)$ lies on line ℓ_4 | 25 : $P_{9102} = (13, 13, 1, 1)$ lies on line ℓ_0 |
| 9 : $P_{4432} = (14, 4, 0, 1)$ lies on line ℓ_2 | 26 : $P_{9167} = (14, 14, 1, 1)$ lies on line ℓ_0 |
| 10 : $P_{5239} = (53, 16, 0, 1)$ lies on line ℓ_5 | 27 : $P_{9232} = (15, 15, 1, 1)$ lies on line ℓ_0 |
| 11 : $P_{5889} = (63, 26, 0, 1)$ lies on line ℓ_6 | 28 : $P_{9297} = (16, 16, 1, 1)$ lies on line ℓ_0 |
| 12 : $P_{6667} = (9, 39, 0, 1)$ lies on line ℓ_1 | 29 : $P_{9362} = (17, 17, 1, 1)$ lies on line ℓ_0 |
| 13 : $P_{6882} = (32, 42, 0, 1)$ lies on line ℓ_3 | 30 : $P_{9427} = (18, 18, 1, 1)$ lies on line ℓ_0 |
| 14 : $P_{8258} = (0, 0, 1, 1)$ lies on line ℓ_0 | 31 : $P_{9492} = (19, 19, 1, 1)$ lies on line ℓ_0 |
| 15 : $P_{8387} = (2, 2, 1, 1)$ lies on line ℓ_0 | 32 : $P_{9557} = (20, 20, 1, 1)$ lies on line ℓ_0 |
| 16 : $P_{8452} = (3, 3, 1, 1)$ lies on line ℓ_0 | 33 : $P_{9622} = (21, 21, 1, 1)$ lies on line ℓ_0 |

- 34 : $P_{9687} = (22, 22, 1, 1)$ lies on line ℓ_0
 35 : $P_{9752} = (23, 23, 1, 1)$ lies on line ℓ_0
 36 : $P_{9817} = (24, 24, 1, 1)$ lies on line ℓ_0
 37 : $P_{9882} = (25, 25, 1, 1)$ lies on line ℓ_0
 38 : $P_{9947} = (26, 26, 1, 1)$ lies on line ℓ_0
 39 : $P_{10012} = (27, 27, 1, 1)$ lies on line ℓ_0
 40 : $P_{10077} = (28, 28, 1, 1)$ lies on line ℓ_0
 41 : $P_{10142} = (29, 29, 1, 1)$ lies on line ℓ_0
 42 : $P_{10207} = (30, 30, 1, 1)$ lies on line ℓ_0
 43 : $P_{10272} = (31, 31, 1, 1)$ lies on line ℓ_0
 44 : $P_{10337} = (32, 32, 1, 1)$ lies on line ℓ_0
 45 : $P_{10402} = (33, 33, 1, 1)$ lies on line ℓ_0
 46 : $P_{10467} = (34, 34, 1, 1)$ lies on line ℓ_0
 47 : $P_{10532} = (35, 35, 1, 1)$ lies on line ℓ_0
 48 : $P_{10597} = (36, 36, 1, 1)$ lies on line ℓ_0
 49 : $P_{10727} = (38, 38, 1, 1)$ lies on line ℓ_0
 50 : $P_{10792} = (39, 39, 1, 1)$ lies on line ℓ_0
 51 : $P_{10857} = (40, 40, 1, 1)$ lies on line ℓ_0
 52 : $P_{10922} = (41, 41, 1, 1)$ lies on line ℓ_0
 53 : $P_{10987} = (42, 42, 1, 1)$ lies on line ℓ_0
 54 : $P_{11052} = (43, 43, 1, 1)$ lies on line ℓ_0
 55 : $P_{11117} = (44, 44, 1, 1)$ lies on line ℓ_0
 56 : $P_{11182} = (45, 45, 1, 1)$ lies on line ℓ_0
 57 : $P_{11312} = (47, 47, 1, 1)$ lies on line ℓ_0
 58 : $P_{11377} = (48, 48, 1, 1)$ lies on line ℓ_0
 59 : $P_{11442} = (49, 49, 1, 1)$ lies on line ℓ_0
 60 : $P_{11507} = (50, 50, 1, 1)$ lies on line ℓ_0
 61 : $P_{11572} = (51, 51, 1, 1)$ lies on line ℓ_0
 62 : $P_{11637} = (52, 52, 1, 1)$ lies on line ℓ_0
 63 : $P_{11702} = (53, 53, 1, 1)$ lies on line ℓ_0
 64 : $P_{11767} = (54, 54, 1, 1)$ lies on line ℓ_0
 65 : $P_{11832} = (55, 55, 1, 1)$ lies on line ℓ_0
 66 : $P_{11897} = (56, 56, 1, 1)$ lies on line ℓ_0
 67 : $P_{11962} = (57, 57, 1, 1)$ lies on line ℓ_0
 68 : $P_{12027} = (58, 58, 1, 1)$ lies on line ℓ_0
 69 : $P_{12092} = (59, 59, 1, 1)$ lies on line ℓ_0
 70 : $P_{12157} = (60, 60, 1, 1)$ lies on line ℓ_0
 71 : $P_{12222} = (61, 61, 1, 1)$ lies on line ℓ_0
 72 : $P_{12287} = (62, 62, 1, 1)$ lies on line ℓ_0
 73 : $P_{12352} = (63, 63, 1, 1)$ lies on line ℓ_0
 74 : $P_{12684} = (11, 5, 2, 1)$ lies on line ℓ_6
 75 : $P_{13078} = (21, 11, 2, 1)$ lies on line ℓ_3
 76 : $P_{13895} = (6, 24, 2, 1)$ lies on line ℓ_2
 77 : $P_{14102} = (21, 27, 2, 1)$ lies on line ℓ_5
 78 : $P_{15783} = (38, 53, 2, 1)$ lies on line ℓ_1
 79 : $P_{16169} = (40, 59, 2, 1)$ lies on line ℓ_4
 80 : $P_{17859} = (2, 22, 3, 1)$ lies on line ℓ_2
 81 : $P_{17963} = (42, 23, 3, 1)$ lies on line ℓ_4
 82 : $P_{19264} = (63, 43, 3, 1)$ lies on line ℓ_3
 83 : $P_{19398} = (5, 46, 3, 1)$ lies on line ℓ_5
 84 : $P_{20178} = (17, 58, 3, 1)$ lies on line ℓ_6
 85 : $P_{20290} = (1, 60, 3, 1)$ lies on line ℓ_1
 86 : $P_{20791} = (54, 3, 4, 1)$ lies on line ℓ_1
 87 : $P_{20949} = (20, 6, 4, 1)$ lies on line ℓ_5
 88 : $P_{21164} = (43, 9, 4, 1)$ lies on line ℓ_3
 89 : $P_{21669} = (36, 17, 4, 1)$ lies on line ℓ_4
 90 : $P_{22903} = (54, 36, 4, 1)$ lies on line ℓ_6
 91 : $P_{24415} = (30, 60, 4, 1)$ lies on line ℓ_2
 92 : $P_{25298} = (17, 10, 5, 1)$ lies on line ℓ_1
 93 : $P_{26413} = (44, 27, 5, 1)$ lies on line ℓ_6
 94 : $P_{27266} = (1, 41, 5, 1)$ lies on line ℓ_3
 95 : $P_{27867} = (26, 50, 5, 1)$ lies on line ℓ_2
 96 : $P_{27909} = (4, 51, 5, 1)$ lies on line ℓ_5
 97 : $P_{28583} = (38, 61, 5, 1)$ lies on line ℓ_4
 98 : $P_{29621} = (52, 13, 6, 1)$ lies on line ℓ_5
 99 : $P_{29850} = (25, 17, 6, 1)$ lies on line ℓ_1
 100 : $P_{30807} = (22, 32, 6, 1)$ lies on line ℓ_2
 101 : $P_{31327} = (30, 40, 6, 1)$ lies on line ℓ_3
 102 : $P_{31329} = (32, 40, 6, 1)$ lies on line ℓ_4
 103 : $P_{32515} = (2, 59, 6, 1)$ lies on line ℓ_6
 104 : $P_{33113} = (24, 4, 7, 1)$ lies on line ℓ_6
 105 : $P_{33123} = (34, 4, 7, 1)$ lies on line ℓ_4
 106 : $P_{33397} = (52, 8, 7, 1)$ lies on line ℓ_3
 107 : $P_{34431} = (62, 24, 7, 1)$ lies on line ℓ_1
 108 : $P_{35795} = (18, 46, 7, 1)$ lies on line ℓ_2
 109 : $P_{36453} = (36, 56, 7, 1)$ lies on line ℓ_5
 110 : $P_{37422} = (45, 7, 8, 1)$ lies on line ℓ_6
 111 : $P_{37815} = (54, 13, 8, 1)$ lies on line ℓ_3
 112 : $P_{37847} = (22, 14, 8, 1)$ lies on line ℓ_1
 113 : $P_{38319} = (46, 21, 8, 1)$ lies on line ℓ_2
 114 : $P_{39293} = (60, 36, 8, 1)$ lies on line ℓ_4
 115 : $P_{40791} = (22, 60, 8, 1)$ lies on line ℓ_5
 116 : $P_{41522} = (49, 7, 9, 1)$ lies on line ℓ_1
 117 : $P_{41599} = (62, 8, 9, 1)$ lies on line ℓ_4
 118 : $P_{41607} = (6, 9, 9, 1)$ lies on line ℓ_5
 119 : $P_{42795} = (42, 27, 9, 1)$ lies on line ℓ_2
 120 : $P_{43933} = (28, 45, 9, 1)$ lies on line ℓ_3
 121 : $P_{44664} = (55, 56, 9, 1)$ lies on line ℓ_6
 122 : $P_{45735} = (38, 9, 10, 1)$ lies on line ℓ_2
 123 : $P_{46682} = (25, 24, 10, 1)$ lies on line ℓ_6
 124 : $P_{46970} = (57, 28, 10, 1)$ lies on line ℓ_1
 125 : $P_{47033} = (56, 29, 10, 1)$ lies on line ℓ_4
 126 : $P_{47940} = (3, 44, 10, 1)$ lies on line ℓ_3
 127 : $P_{48695} = (54, 55, 10, 1)$ lies on line ℓ_5
 128 : $P_{49383} = (38, 2, 11, 1)$ lies on line ℓ_5
 129 : $P_{49699} = (34, 7, 11, 1)$ lies on line ℓ_2
 130 : $P_{50026} = (41, 12, 11, 1)$ lies on line ℓ_3
 131 : $P_{50591} = (30, 21, 11, 1)$ lies on line ℓ_1
 132 : $P_{51716} = (3, 39, 11, 1)$ lies on line ℓ_6
 133 : $P_{52411} = (58, 49, 11, 1)$ lies on line ℓ_4
 134 : $P_{56042} = (41, 42, 12, 1)$ lies on line ℓ_1
 135 : $P_{56056} = (55, 42, 12, 1)$ lies on line ℓ_5
 136 : $P_{56255} = (62, 45, 12, 1)$ lies on line ℓ_2
 137 : $P_{56318} = (61, 46, 12, 1)$ lies on line ℓ_3
 138 : $P_{56885} = (52, 55, 12, 1)$ lies on line ℓ_4
 139 : $P_{56997} = (36, 57, 12, 1)$ lies on line ℓ_6
 140 : $P_{57855} = (62, 6, 13, 1)$ lies on line ℓ_6
 141 : $P_{58328} = (23, 14, 13, 1)$ lies on line ℓ_3

142 : $P_{59191} = (54, 27, 13, 1)$ lies on line ℓ_4
 143 : $P_{59432} = (39, 31, 13, 1)$ lies on line ℓ_5
 144 : $P_{59663} = (14, 35, 13, 1)$ lies on line ℓ_1
 145 : $P_{59707} = (58, 35, 13, 1)$ lies on line ℓ_2
 146 : $P_{62449} = (48, 14, 14, 1)$ lies on line ℓ_4
 147 : $P_{62473} = (8, 15, 14, 1)$ lies on line ℓ_3
 148 : $P_{63640} = (23, 33, 14, 1)$ lies on line ℓ_5
 149 : $P_{63953} = (16, 38, 14, 1)$ lies on line ℓ_6
 150 : $P_{64695} = (54, 49, 14, 1)$ lies on line ℓ_2
 151 : $P_{65095} = (6, 56, 14, 1)$ lies on line ℓ_1
 152 : $P_{66888} = (7, 20, 15, 1)$ lies on line ℓ_5
 153 : $P_{67211} = (10, 25, 15, 1)$ lies on line ℓ_6
 154 : $P_{67827} = (50, 34, 15, 1)$ lies on line ℓ_4
 155 : $P_{68643} = (34, 47, 15, 1)$ lies on line ℓ_3
 156 : $P_{68770} = (33, 49, 15, 1)$ lies on line ℓ_1
 157 : $P_{69683} = (50, 63, 15, 1)$ lies on line ℓ_2
 158 : $P_{70029} = (12, 5, 16, 1)$ lies on line ℓ_3
 159 : $P_{71032} = (55, 20, 16, 1)$ lies on line ℓ_1
 160 : $P_{71772} = (27, 32, 16, 1)$ lies on line ℓ_6
 161 : $P_{72176} = (47, 38, 16, 1)$ lies on line ℓ_2
 162 : $P_{72339} = (18, 41, 16, 1)$ lies on line ℓ_5
 163 : $P_{72717} = (12, 47, 16, 1)$ lies on line ℓ_4
 164 : $P_{73999} = (14, 3, 17, 1)$ lies on line ℓ_4
 165 : $P_{75587} = (2, 28, 17, 1)$ lies on line ℓ_5
 166 : $P_{75665} = (16, 29, 17, 1)$ lies on line ℓ_1
 167 : $P_{75778} = (1, 31, 17, 1)$ lies on line ℓ_6
 168 : $P_{76199} = (38, 37, 17, 1)$ lies on line ℓ_3
 169 : $P_{76396} = (43, 40, 17, 1)$ lies on line ℓ_2
 170 : $P_{78297} = (24, 6, 18, 1)$ lies on line ℓ_1
 171 : $P_{79305} = (8, 22, 18, 1)$ lies on line ℓ_4
 172 : $P_{80115} = (50, 34, 18, 1)$ lies on line ℓ_5
 173 : $P_{80250} = (57, 36, 18, 1)$ lies on line ℓ_3
 174 : $P_{81640} = (39, 58, 18, 1)$ lies on line ℓ_2
 175 : $P_{81968} = (47, 63, 18, 1)$ lies on line ℓ_6
 176 : $P_{82038} = (53, 0, 19, 1)$ lies on line ℓ_6
 177 : $P_{82260} = (19, 4, 19, 1)$ lies on line ℓ_3
 178 : $P_{83008} = (63, 15, 19, 1)$ lies on line ℓ_1
 179 : $P_{83491} = (34, 23, 19, 1)$ lies on line ℓ_5
 180 : $P_{85348} = (35, 52, 19, 1)$ lies on line ℓ_2
 181 : $P_{85707} = (10, 58, 19, 1)$ lies on line ℓ_4
 182 : $P_{88019} = (18, 30, 20, 1)$ lies on line ℓ_6
 183 : $P_{88064} = (63, 30, 20, 1)$ lies on line ℓ_2
 184 : $P_{88520} = (7, 38, 20, 1)$ lies on line ℓ_3
 185 : $P_{89161} = (8, 48, 20, 1)$ lies on line ℓ_1
 186 : $P_{89925} = (4, 60, 20, 1)$ lies on line ℓ_4
 187 : $P_{90164} = (51, 63, 20, 1)$ lies on line ℓ_5
 188 : $P_{90606} = (45, 6, 21, 1)$ lies on line ℓ_3
 189 : $P_{90852} = (35, 10, 21, 1)$ lies on line ℓ_5
 190 : $P_{91207} = (6, 16, 21, 1)$ lies on line ℓ_4
 191 : $P_{91260} = (59, 16, 21, 1)$ lies on line ℓ_2
 192 : $P_{92297} = (8, 33, 21, 1)$ lies on line ℓ_6
 193 : $P_{93872} = (47, 57, 21, 1)$ lies on line ℓ_1
 194 : $P_{94375} = (38, 1, 22, 1)$ lies on line ℓ_6
 195 : $P_{94456} = (55, 2, 22, 1)$ lies on line ℓ_2
 196 : $P_{94593} = (0, 5, 22, 1)$ lies on line ℓ_4
 197 : $P_{94771} = (50, 7, 22, 1)$ lies on line ℓ_3
 198 : $P_{96488} = (39, 34, 22, 1)$ lies on line ℓ_1
 199 : $P_{97620} = (19, 52, 22, 1)$ lies on line ℓ_5
 200 : $P_{98436} = (3, 1, 23, 1)$ lies on line ℓ_5
 201 : $P_{99188} = (51, 12, 23, 1)$ lies on line ℓ_2
 202 : $P_{100889} = (24, 39, 23, 1)$ lies on line ℓ_3
 203 : $P_{100995} = (2, 41, 23, 1)$ lies on line ℓ_4
 204 : $P_{101121} = (0, 43, 23, 1)$ lies on line ℓ_1
 205 : $P_{102397} = (60, 62, 23, 1)$ lies on line ℓ_6
 206 : $P_{102834} = (49, 5, 24, 1)$ lies on line ℓ_5
 207 : $P_{103069} = (28, 9, 24, 1)$ lies on line ℓ_4
 208 : $P_{104667} = (26, 34, 24, 1)$ lies on line ℓ_3
 209 : $P_{106000} = (15, 55, 24, 1)$ lies on line ℓ_2
 210 : $P_{106378} = (9, 61, 24, 1)$ lies on line ℓ_6
 211 : $P_{106409} = (40, 61, 24, 1)$ lies on line ℓ_1
 212 : $P_{106708} = (19, 2, 25, 1)$ lies on line ℓ_6
 213 : $P_{106737} = (48, 2, 25, 1)$ lies on line ℓ_3
 214 : $P_{108959} = (30, 37, 25, 1)$ lies on line ℓ_4
 215 : $P_{109666} = (33, 48, 25, 1)$ lies on line ℓ_5
 216 : $P_{109904} = (15, 52, 25, 1)$ lies on line ℓ_1
 217 : $P_{110220} = (11, 57, 25, 1)$ lies on line ℓ_2
 218 : $P_{110896} = (47, 3, 26, 1)$ lies on line ℓ_3
 219 : $P_{111570} = (17, 14, 26, 1)$ lies on line ℓ_5
 220 : $P_{112894} = (61, 34, 26, 1)$ lies on line ℓ_6
 221 : $P_{113416} = (7, 43, 26, 1)$ lies on line ℓ_2
 222 : $P_{113672} = (7, 47, 26, 1)$ lies on line ℓ_1
 223 : $P_{113753} = (24, 48, 26, 1)$ lies on line ℓ_4
 224 : $P_{116571} = (26, 28, 27, 1)$ lies on line ℓ_4
 225 : $P_{116648} = (39, 29, 27, 1)$ lies on line ℓ_6
 226 : $P_{116998} = (5, 35, 27, 1)$ lies on line ℓ_3
 227 : $P_{117124} = (3, 37, 27, 1)$ lies on line ℓ_2
 228 : $P_{117217} = (32, 38, 27, 1)$ lies on line ℓ_1
 229 : $P_{118530} = (1, 59, 27, 1)$ lies on line ℓ_5
 230 : $P_{118930} = (17, 1, 28, 1)$ lies on line ℓ_3
 231 : $P_{119041} = (0, 3, 28, 1)$ lies on line ℓ_6
 232 : $P_{119840} = (31, 15, 28, 1)$ lies on line ℓ_2
 233 : $P_{120081} = (16, 19, 28, 1)$ lies on line ℓ_5
 234 : $P_{120472} = (23, 25, 28, 1)$ lies on line ℓ_1
 235 : $P_{120533} = (20, 26, 28, 1)$ lies on line ℓ_4
 236 : $P_{123036} = (27, 1, 29, 1)$ lies on line ℓ_2
 237 : $P_{124017} = (48, 16, 29, 1)$ lies on line ℓ_1
 238 : $P_{125116} = (59, 33, 29, 1)$ lies on line ℓ_3
 239 : $P_{125377} = (0, 38, 29, 1)$ lies on line ℓ_5
 240 : $P_{126423} = (22, 54, 29, 1)$ lies on line ℓ_4
 241 : $P_{126811} = (26, 60, 29, 1)$ lies on line ℓ_6
 242 : $P_{127801} = (56, 11, 30, 1)$ lies on line ℓ_1
 243 : $P_{128280} = (23, 19, 30, 1)$ lies on line ℓ_2
 244 : $P_{128625} = (48, 24, 30, 1)$ lies on line ℓ_5
 245 : $P_{128885} = (52, 28, 30, 1)$ lies on line ℓ_6
 246 : $P_{129125} = (36, 32, 30, 1)$ lies on line ℓ_3
 247 : $P_{129297} = (16, 35, 30, 1)$ lies on line ℓ_4
 248 : $P_{131151} = (14, 0, 31, 1)$ lies on line ℓ_3
 249 : $P_{131296} = (31, 2, 31, 1)$ lies on line ℓ_1

250 : $P_{132115} = (18, 15, 31, 1)$ lies on line ℓ_4
 251 : $P_{133012} = (19, 29, 31, 1)$ lies on line ℓ_2
 252 : $P_{133423} = (46, 35, 31, 1)$ lies on line ℓ_6
 253 : $P_{134049} = (32, 45, 31, 1)$ lies on line ℓ_5
 254 : $P_{135451} = (26, 3, 32, 1)$ lies on line ℓ_5
 255 : $P_{136215} = (22, 15, 32, 1)$ lies on line ℓ_6
 256 : $P_{136602} = (25, 21, 32, 1)$ lies on line ℓ_3
 257 : $P_{137301} = (20, 32, 32, 1)$ lies on line ℓ_1
 258 : $P_{137390} = (45, 33, 32, 1)$ lies on line ℓ_2
 259 : $P_{138894} = (13, 57, 32, 1)$ lies on line ℓ_4
 260 : $P_{140688} = (15, 21, 33, 1)$ lies on line ℓ_4
 261 : $P_{142004} = (51, 41, 33, 1)$ lies on line ℓ_1
 262 : $P_{142378} = (41, 47, 33, 1)$ lies on line ℓ_2
 263 : $P_{142413} = (12, 48, 33, 1)$ lies on line ℓ_6
 264 : $P_{142772} = (51, 53, 33, 1)$ lies on line ℓ_3
 265 : $P_{142795} = (10, 54, 33, 1)$ lies on line ℓ_5
 266 : $P_{143434} = (9, 0, 34, 1)$ lies on line ℓ_4
 267 : $P_{143995} = (58, 8, 34, 1)$ lies on line ℓ_5
 268 : $P_{144483} = (34, 16, 34, 1)$ lies on line ℓ_6
 269 : $P_{146684} = (59, 50, 34, 1)$ lies on line ℓ_1
 270 : $P_{146797} = (44, 52, 34, 1)$ lies on line ℓ_3
 271 : $P_{147366} = (37, 61, 34, 1)$ lies on line ℓ_2
 272 : $P_{148807} = (6, 20, 35, 1)$ lies on line ℓ_3
 273 : $P_{150348} = (11, 44, 35, 1)$ lies on line ℓ_4
 274 : $P_{150585} = (56, 47, 35, 1)$ lies on line ℓ_6
 275 : $P_{150818} = (33, 51, 35, 1)$ lies on line ℓ_2
 276 : $P_{151325} = (28, 59, 35, 1)$ lies on line ℓ_1
 277 : $P_{151467} = (42, 61, 35, 1)$ lies on line ℓ_5
 278 : $P_{151916} = (43, 4, 36, 1)$ lies on line ℓ_1
 279 : $P_{153020} = (59, 21, 36, 1)$ lies on line ℓ_5
 280 : $P_{153278} = (61, 25, 36, 1)$ lies on line ℓ_2
 281 : $P_{154310} = (5, 42, 36, 1)$ lies on line ℓ_4
 282 : $P_{154784} = (31, 49, 36, 1)$ lies on line ℓ_6
 283 : $P_{155091} = (18, 54, 36, 1)$ lies on line ℓ_3
 284 : $P_{156104} = (7, 6, 37, 1)$ lies on line ℓ_4
 285 : $P_{156557} = (12, 13, 37, 1)$ lies on line ℓ_1
 286 : $P_{156614} = (5, 14, 37, 1)$ lies on line ℓ_6
 287 : $P_{157177} = (56, 22, 37, 1)$ lies on line ℓ_3
 288 : $P_{157242} = (57, 23, 37, 1)$ lies on line ℓ_2
 289 : $P_{157804} = (43, 32, 37, 1)$ lies on line ℓ_5
 290 : $P_{160182} = (53, 5, 38, 1)$ lies on line ℓ_2
 291 : $P_{161026} = (1, 19, 38, 1)$ lies on line ℓ_4
 292 : $P_{161221} = (4, 22, 38, 1)$ lies on line ℓ_1
 293 : $P_{161320} = (39, 23, 38, 1)$ lies on line ℓ_3
 294 : $P_{161756} = (27, 30, 38, 1)$ lies on line ℓ_5
 295 : $P_{162796} = (43, 46, 38, 1)$ lies on line ℓ_6
 296 : $P_{164658} = (49, 11, 39, 1)$ lies on line ℓ_2
 297 : $P_{165042} = (49, 17, 39, 1)$ lies on line ℓ_6
 298 : $P_{165924} = (35, 31, 39, 1)$ lies on line ℓ_1
 299 : $P_{166668} = (11, 43, 39, 1)$ lies on line ℓ_5
 300 : $P_{167438} = (13, 55, 39, 1)$ lies on line ℓ_3
 301 : $P_{167940} = (3, 63, 39, 1)$ lies on line ℓ_4
 302 : $P_{168588} = (11, 9, 40, 1)$ lies on line ℓ_1
 303 : $P_{169157} = (4, 18, 40, 1)$ lies on line ℓ_6
 304 : $P_{170014} = (29, 31, 40, 1)$ lies on line ℓ_4
 305 : $P_{171066} = (57, 47, 40, 1)$ lies on line ℓ_5
 306 : $P_{171086} = (13, 48, 40, 1)$ lies on line ℓ_2
 307 : $P_{171216} = (15, 50, 40, 1)$ lies on line ℓ_3
 308 : $P_{172141} = (44, 0, 41, 1)$ lies on line ℓ_1
 309 : $P_{173286} = (37, 18, 41, 1)$ lies on line ℓ_3
 310 : $P_{173802} = (41, 26, 41, 1)$ lies on line ℓ_5
 311 : $P_{175007} = (30, 45, 41, 1)$ lies on line ℓ_6
 312 : $P_{175392} = (31, 51, 41, 1)$ lies on line ℓ_4
 313 : $P_{176074} = (9, 62, 41, 1)$ lies on line ℓ_2
 314 : $P_{177073} = (48, 13, 42, 1)$ lies on line ℓ_6
 315 : $P_{177467} = (58, 19, 42, 1)$ lies on line ℓ_3
 316 : $P_{177957} = (36, 27, 42, 1)$ lies on line ℓ_1
 317 : $P_{178522} = (25, 36, 42, 1)$ lies on line ℓ_5
 318 : $P_{178650} = (25, 38, 42, 1)$ lies on line ℓ_4
 319 : $P_{179014} = (5, 44, 42, 1)$ lies on line ℓ_2
 320 : $P_{180956} = (27, 10, 43, 1)$ lies on line ℓ_4
 321 : $P_{181386} = (9, 17, 43, 1)$ lies on line ℓ_5
 322 : $P_{181444} = (3, 18, 43, 1)$ lies on line ℓ_1
 323 : $P_{182466} = (1, 34, 43, 1)$ lies on line ℓ_2
 324 : $P_{183531} = (42, 50, 43, 1)$ lies on line ℓ_6
 325 : $P_{183569} = (16, 51, 43, 1)$ lies on line ℓ_3
 326 : $P_{184926} = (29, 8, 44, 1)$ lies on line ℓ_2
 327 : $P_{185174} = (21, 12, 44, 1)$ lies on line ℓ_4
 328 : $P_{185477} = (4, 17, 44, 1)$ lies on line ℓ_3
 329 : $P_{187214} = (13, 44, 44, 1)$ lies on line ℓ_6
 330 : $P_{187317} = (52, 45, 44, 1)$ lies on line ℓ_1
 331 : $P_{188057} = (24, 57, 44, 1)$ lies on line ℓ_5
 332 : $P_{188890} = (25, 6, 45, 1)$ lies on line ℓ_2
 333 : $P_{189257} = (8, 12, 45, 1)$ lies on line ℓ_5
 334 : $P_{189720} = (23, 19, 45, 1)$ lies on line ℓ_6
 335 : $P_{190552} = (23, 32, 45, 1)$ lies on line ℓ_4
 336 : $P_{190804} = (19, 36, 45, 1)$ lies on line ℓ_1
 337 : $P_{191663} = (46, 49, 45, 1)$ lies on line ℓ_3
 338 : $P_{193878} = (21, 20, 46, 1)$ lies on line ℓ_2
 339 : $P_{195698} = (49, 48, 46, 1)$ lies on line ℓ_3
 340 : $P_{195833} = (56, 50, 46, 1)$ lies on line ℓ_5
 341 : $P_{195898} = (57, 51, 46, 1)$ lies on line ℓ_6
 342 : $P_{195986} = (17, 53, 46, 1)$ lies on line ℓ_4
 343 : $P_{196636} = (27, 63, 46, 1)$ lies on line ℓ_1
 344 : $P_{197161} = (40, 7, 47, 1)$ lies on line ℓ_5
 345 : $P_{197476} = (35, 12, 47, 1)$ lies on line ℓ_6
 346 : $P_{197724} = (27, 16, 47, 1)$ lies on line ℓ_3
 347 : $P_{198292} = (19, 25, 47, 1)$ lies on line ℓ_4
 348 : $P_{198354} = (17, 26, 47, 1)$ lies on line ℓ_2
 349 : $P_{200189} = (60, 54, 47, 1)$ lies on line ℓ_1
 350 : $P_{200973} = (12, 3, 48, 1)$ lies on line ℓ_2
 351 : $P_{202027} = (42, 19, 48, 1)$ lies on line ℓ_1
 352 : $P_{202094} = (45, 20, 48, 1)$ lies on line ℓ_4
 353 : $P_{204211} = (50, 53, 48, 1)$ lies on line ℓ_6
 354 : $P_{204534} = (53, 58, 48, 1)$ lies on line ℓ_3
 355 : $P_{204542} = (61, 58, 48, 1)$ lies on line ℓ_5
 356 : $P_{205545} = (40, 10, 49, 1)$ lies on line ℓ_6
 357 : $P_{205705} = (8, 13, 49, 1)$ lies on line ℓ_2

358 : $P_{205870} = (45, 15, 49, 1)$ lies on line ℓ_5
 359 : $P_{206542} = (13, 26, 49, 1)$ lies on line ℓ_1
 360 : $P_{206560} = (31, 26, 49, 1)$ lies on line ℓ_3
 361 : $P_{208496} = (47, 56, 49, 1)$ lies on line ℓ_4
 362 : $P_{209030} = (5, 1, 50, 1)$ lies on line ℓ_1
 363 : $P_{210689} = (0, 27, 50, 1)$ lies on line ℓ_3
 364 : $P_{210949} = (4, 31, 50, 1)$ lies on line ℓ_2
 365 : $P_{211655} = (6, 42, 50, 1)$ lies on line ℓ_6
 366 : $P_{211882} = (41, 45, 50, 1)$ lies on line ℓ_4
 367 : $P_{212126} = (29, 49, 50, 1)$ lies on line ℓ_5
 368 : $P_{213164} = (43, 1, 51, 1)$ lies on line ℓ_4
 369 : $P_{213326} = (13, 4, 51, 1)$ lies on line ℓ_5
 370 : $P_{213603} = (34, 8, 51, 1)$ lies on line ℓ_1
 371 : $P_{214145} = (0, 17, 51, 1)$ lies on line ℓ_2
 372 : $P_{214429} = (28, 21, 51, 1)$ lies on line ℓ_6
 373 : $P_{216875} = (42, 59, 51, 1)$ lies on line ℓ_3
 374 : $P_{217638} = (37, 7, 52, 1)$ lies on line ℓ_4
 375 : $P_{217916} = (59, 11, 52, 1)$ lies on line ℓ_6
 376 : $P_{218815} = (62, 25, 52, 1)$ lies on line ℓ_3
 377 : $P_{219997} = (28, 44, 52, 1)$ lies on line ℓ_5
 378 : $P_{220694} = (21, 55, 52, 1)$ lies on line ℓ_1
 379 : $P_{220957} = (28, 59, 52, 1)$ lies on line ℓ_2
 380 : $P_{222861} = (12, 25, 53, 1)$ lies on line ℓ_5
 381 : $P_{224040} = (39, 43, 53, 1)$ lies on line ℓ_4
 382 : $P_{224610} = (33, 52, 53, 1)$ lies on line ℓ_6
 383 : $P_{224665} = (24, 53, 53, 1)$ lies on line ℓ_2
 384 : $P_{224917} = (20, 57, 53, 1)$ lies on line ℓ_3
 385 : $P_{225267} = (50, 62, 53, 1)$ lies on line ℓ_1
 386 : $P_{226640} = (15, 20, 54, 1)$ lies on line ℓ_6
 387 : $P_{227771} = (58, 37, 54, 1)$ lies on line ℓ_1
 388 : $P_{227861} = (20, 39, 54, 1)$ lies on line ℓ_2
 389 : $P_{227901} = (60, 39, 54, 1)$ lies on line ℓ_5
 390 : $P_{228940} = (11, 56, 54, 1)$ lies on line ℓ_3
 391 : $P_{229346} = (33, 62, 54, 1)$ lies on line ℓ_4
 392 : $P_{230628} = (35, 18, 55, 1)$ lies on line ℓ_4
 393 : $P_{230637} = (44, 18, 55, 1)$ lies on line ℓ_5
 394 : $P_{231010} = (33, 24, 55, 1)$ lies on line ℓ_3
 395 : $P_{232081} = (16, 41, 55, 1)$ lies on line ℓ_2
 396 : $P_{232214} = (21, 43, 55, 1)$ lies on line ℓ_6
 397 : $P_{232286} = (29, 44, 55, 1)$ lies on line ℓ_1
 398 : $P_{234733} = (44, 18, 56, 1)$ lies on line ℓ_2
 399 : $P_{234975} = (30, 22, 56, 1)$ lies on line ℓ_5
 400 : $P_{235428} = (35, 29, 56, 1)$ lies on line ℓ_3
 401 : $P_{236129} = (32, 40, 56, 1)$ lies on line ℓ_6
 402 : $P_{236798} = (61, 50, 56, 1)$ lies on line ℓ_4
 403 : $P_{237302} = (53, 58, 56, 1)$ lies on line ℓ_1
 404 : $P_{239163} = (58, 23, 57, 1)$ lies on line ℓ_6
 405 : $P_{239465} = (40, 28, 57, 1)$ lies on line ℓ_2
 406 : $P_{239616} = (63, 30, 57, 1)$ lies on line ℓ_4
 407 : $P_{239887} = (14, 35, 57, 1)$ lies on line ℓ_5
 408 : $P_{240915} = (18, 51, 57, 1)$ lies on line ℓ_1
 409 : $P_{241546} = (9, 61, 57, 1)$ lies on line ℓ_3
 410 : $P_{242490} = (57, 11, 58, 1)$ lies on line ℓ_4
 411 : $P_{242661} = (36, 14, 58, 1)$ lies on line ℓ_2
 412 : $P_{243647} = (62, 29, 58, 1)$ lies on line ℓ_5
 413 : $P_{244315} = (26, 40, 58, 1)$ lies on line ℓ_1
 414 : $P_{245269} = (20, 55, 58, 1)$ lies on line ℓ_6
 415 : $P_{245591} = (22, 60, 58, 1)$ lies on line ℓ_3
 416 : $P_{245857} = (32, 0, 59, 1)$ lies on line ℓ_2
 417 : $P_{246351} = (14, 8, 59, 1)$ lies on line ℓ_6
 418 : $P_{247677} = (60, 28, 59, 1)$ lies on line ℓ_3
 419 : $P_{247998} = (61, 33, 59, 1)$ lies on line ℓ_1
 420 : $P_{248380} = (59, 39, 59, 1)$ lies on line ℓ_4
 421 : $P_{248431} = (46, 40, 59, 1)$ lies on line ℓ_5
 422 : $P_{249984} = (63, 0, 60, 1)$ lies on line ℓ_5
 423 : $P_{251370} = (41, 22, 60, 1)$ lies on line ℓ_6
 424 : $P_{251851} = (10, 30, 60, 1)$ lies on line ℓ_1
 425 : $P_{252086} = (53, 33, 60, 1)$ lies on line ℓ_4
 426 : $P_{252669} = (60, 42, 60, 1)$ lies on line ℓ_2
 427 : $P_{253929} = (40, 62, 60, 1)$ lies on line ℓ_3
 428 : $P_{254904} = (55, 13, 61, 1)$ lies on line ℓ_4
 429 : $P_{255534} = (45, 23, 61, 1)$ lies on line ℓ_1
 430 : $P_{255939} = (2, 30, 61, 1)$ lies on line ℓ_3
 431 : $P_{256377} = (56, 36, 61, 1)$ lies on line ℓ_2
 432 : $P_{256692} = (51, 41, 61, 1)$ lies on line ℓ_6
 433 : $P_{257456} = (47, 53, 61, 1)$ lies on line ℓ_5
 434 : $P_{258718} = (29, 9, 62, 1)$ lies on line ℓ_6
 435 : $P_{258848} = (31, 11, 62, 1)$ lies on line ℓ_5
 436 : $P_{258918} = (37, 12, 62, 1)$ lies on line ℓ_1
 437 : $P_{259698} = (49, 24, 62, 1)$ lies on line ℓ_4
 438 : $P_{260126} = (29, 31, 62, 1)$ lies on line ℓ_3
 439 : $P_{261621} = (52, 54, 62, 1)$ lies on line ℓ_2
 440 : $P_{262531} = (2, 5, 63, 1)$ lies on line ℓ_1
 441 : $P_{265588} = (51, 52, 63, 1)$ lies on line ℓ_4
 442 : $P_{265672} = (7, 54, 63, 1)$ lies on line ℓ_6
 443 : $P_{265841} = (48, 56, 63, 1)$ lies on line ℓ_2
 444 : $P_{266192} = (15, 62, 63, 1)$ lies on line ℓ_5
 445 : $P_{266296} = (55, 63, 63, 1)$ lies on line ℓ_3

The single points on the surface are:

Points on surface but on no line

The surface has 3840 points not on any line:
Too many to print.

Line Intersection Graph

	0	1	2	3	4	5	6
0	0	1	1	1	1	1	1
1	1	0	0	0	1	0	0
2	1	0	0	1	0	0	0
3	1	0	1	0	0	0	0
4	1	1	0	0	0	0	0
5	1	0	0	0	0	0	1
6	1	0	0	0	0	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
in point	P_{11247}	P_{8907}	P_{8907}	P_{11247}	P_{10662}	P_{10662}

Line 1 intersects

Line	ℓ_0	ℓ_4
in point	P_{11247}	P_{11247}

Line 2 intersects

Line	ℓ_0	ℓ_3
in point	P_{8907}	P_{8907}

Line 3 intersects

Line	ℓ_0	ℓ_2
in point	P_{8907}	P_{8907}

Line 4 intersects

Line	ℓ_0	ℓ_1
in point	P_{11247}	P_{11247}

Line 5 intersects

Line	ℓ_0	ℓ_6
in point	P_{10662}	P_{10662}

Line 6 intersects

Line	ℓ_0	ℓ_5
in point	P_{10662}	P_{10662}

The surface has 4289 points:

Too many to print.