

Rank-74264 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(64) is 1107566662

General information

Number of lines	7
Number of points	4289
Number of singular points	0
Number of Eckardt points	0
Number of double points	9
Number of single points	437
Number of points off lines	3843
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^7
Type of lines on points	$2^9, 1^{437}, 0^{3843}$

Singular Points

The surface has 0 singular points:

The 7 Lines

The lines and their Pluecker coordinates are:

$$\begin{aligned}\ell_0 &= \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{array} \right]_{4161} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{array} \right]_{4161} = \mathbf{Pl}(1, 0, 0, 0, 0, 1)_{270402} \\ \ell_1 &= \left[\begin{array}{cccc} 1 & 0 & \epsilon^{11} & \epsilon^{40} \\ 0 & 1 & \epsilon^{27} & \epsilon^{18} \end{array} \right]_{3857997} = \left[\begin{array}{cccc} 1 & 0 & 31 & 14 \\ 0 & 1 & 46 & 11 \end{array} \right]_{3857997} = \mathbf{Pl}(40, 35, 9, 27, 35, 1)_{9497673}\end{aligned}$$

$$\begin{aligned}
\ell_2 &= \begin{bmatrix} 1 & 0 & \epsilon^{37} & \epsilon^{20} \\ 0 & 1 & \epsilon^{45} & \epsilon^9 \end{bmatrix}_{11891022} = \begin{bmatrix} 1 & 0 & 41 & 44 \\ 0 & 1 & 37 & 47 \end{bmatrix}_{11891022} = \mathbf{PI}(61, 18, 53, 43, 18, 1)_{5212371} \\
\ell_3 &= \begin{bmatrix} 1 & 0 & \epsilon^{22} & \epsilon^{17} \\ 0 & 1 & \epsilon^{54} & \epsilon^{36} \end{bmatrix}_{14195485} = \begin{bmatrix} 1 & 0 & 19 & 53 \\ 0 & 1 & 10 & 36 \end{bmatrix}_{14195485} = \mathbf{PI}(30, 58, 32, 3, 58, 1)_{15613955} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & \epsilon^{50} & \epsilon^{10} \\ 0 & 1 & \epsilon^{54} & \epsilon^{36} \end{bmatrix}_{17029126} = \begin{bmatrix} 1 & 0 & 60 & 63 \\ 0 & 1 & 10 & 36 \end{bmatrix}_{17029126} = \mathbf{PI}(58, 30, 14, 38, 30, 1)_{8205372} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & \epsilon^{44} & \epsilon^{34} \\ 0 & 1 & \epsilon^{45} & \epsilon^9 \end{bmatrix}_{2541255} = \begin{bmatrix} 1 & 0 & 34 & 9 \\ 0 & 1 & 37 & 47 \end{bmatrix}_{2541255} = \mathbf{PI}(18, 61, 63, 5, 61, 1)_{16520891} \\
\ell_6 &= \begin{bmatrix} 1 & 0 & \epsilon^{25} & \epsilon^5 \\ 0 & 1 & \epsilon^{27} & \epsilon^{18} \end{bmatrix}_{8767977} = \begin{bmatrix} 1 & 0 & 59 & 32 \\ 0 & 1 & 46 & 11 \end{bmatrix}_{8767977} = \mathbf{PI}(35, 40, 44, 17, 40, 1)_{10944715}
\end{aligned}$$

Rank of lines: (4161, 3857997, 11891022, 14195485, 17029126, 2541255, 8767977)

Rank of points on Klein quadric: (270402, 9497673, 5212371, 15613955, 8205372, 16520891, 10944715)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 9 Double points:

The double points on the surface are:

$$\begin{aligned}
P_{1284} &= (1, 19, 1, 0) = \ell_0 \cap \ell_1 & P_{3908} &= (1, 60, 1, 0) = \ell_0 \cap \ell_6 \\
P_{2052} &= (1, 31, 1, 0) = \ell_0 \cap \ell_2 & P_{199041} &= (0, 37, 47, 1) = \ell_1 \cap \ell_6 \\
P_{2244} &= (1, 34, 1, 0) = \ell_0 \cap \ell_3 & P_{152257} &= (0, 10, 36, 1) = \ell_2 \cap \ell_5 \\
P_{2692} &= (1, 41, 1, 0) = \ell_0 \cap \ell_4 & P_{52161} &= (0, 46, 11, 1) = \ell_3 \cap \ell_4 \\
P_{3844} &= (1, 59, 1, 0) = \ell_0 \cap \ell_5
\end{aligned}$$

Single Points

The surface has 437 single points:

The single points on the surface are:

- | | |
|--|---|
| 0 : $P_1 = (0, 1, 0, 0)$ lies on line ℓ_0 | 15 : $P_{964} = (1, 14, 1, 0)$ lies on line ℓ_0 |
| 1 : $P_{68} = (1, 0, 1, 0)$ lies on line ℓ_0 | 16 : $P_{1028} = (1, 15, 1, 0)$ lies on line ℓ_0 |
| 2 : $P_{132} = (1, 1, 1, 0)$ lies on line ℓ_0 | 17 : $P_{1092} = (1, 16, 1, 0)$ lies on line ℓ_0 |
| 3 : $P_{196} = (1, 2, 1, 0)$ lies on line ℓ_0 | 18 : $P_{1156} = (1, 17, 1, 0)$ lies on line ℓ_0 |
| 4 : $P_{260} = (1, 3, 1, 0)$ lies on line ℓ_0 | 19 : $P_{1220} = (1, 18, 1, 0)$ lies on line ℓ_0 |
| 5 : $P_{324} = (1, 4, 1, 0)$ lies on line ℓ_0 | 20 : $P_{1348} = (1, 20, 1, 0)$ lies on line ℓ_0 |
| 6 : $P_{388} = (1, 5, 1, 0)$ lies on line ℓ_0 | 21 : $P_{1412} = (1, 21, 1, 0)$ lies on line ℓ_0 |
| 7 : $P_{452} = (1, 6, 1, 0)$ lies on line ℓ_0 | 22 : $P_{1476} = (1, 22, 1, 0)$ lies on line ℓ_0 |
| 8 : $P_{516} = (1, 7, 1, 0)$ lies on line ℓ_0 | 23 : $P_{1540} = (1, 23, 1, 0)$ lies on line ℓ_0 |
| 9 : $P_{580} = (1, 8, 1, 0)$ lies on line ℓ_0 | 24 : $P_{1604} = (1, 24, 1, 0)$ lies on line ℓ_0 |
| 10 : $P_{644} = (1, 9, 1, 0)$ lies on line ℓ_0 | 25 : $P_{1668} = (1, 25, 1, 0)$ lies on line ℓ_0 |
| 11 : $P_{708} = (1, 10, 1, 0)$ lies on line ℓ_0 | 26 : $P_{1732} = (1, 26, 1, 0)$ lies on line ℓ_0 |
| 12 : $P_{772} = (1, 11, 1, 0)$ lies on line ℓ_0 | 27 : $P_{1796} = (1, 27, 1, 0)$ lies on line ℓ_0 |
| 13 : $P_{836} = (1, 12, 1, 0)$ lies on line ℓ_0 | 28 : $P_{1860} = (1, 28, 1, 0)$ lies on line ℓ_0 |
| 14 : $P_{900} = (1, 13, 1, 0)$ lies on line ℓ_0 | 29 : $P_{1924} = (1, 29, 1, 0)$ lies on line ℓ_0 |

- 30 : $P_{1988} = (1, 30, 1, 0)$ lies on line ℓ_0
 31 : $P_{2116} = (1, 32, 1, 0)$ lies on line ℓ_0
 32 : $P_{2180} = (1, 33, 1, 0)$ lies on line ℓ_0
 33 : $P_{2308} = (1, 35, 1, 0)$ lies on line ℓ_0
 34 : $P_{2372} = (1, 36, 1, 0)$ lies on line ℓ_0
 35 : $P_{2436} = (1, 37, 1, 0)$ lies on line ℓ_0
 36 : $P_{2500} = (1, 38, 1, 0)$ lies on line ℓ_0
 37 : $P_{2564} = (1, 39, 1, 0)$ lies on line ℓ_0
 38 : $P_{2628} = (1, 40, 1, 0)$ lies on line ℓ_0
 39 : $P_{2756} = (1, 42, 1, 0)$ lies on line ℓ_0
 40 : $P_{2820} = (1, 43, 1, 0)$ lies on line ℓ_0
 41 : $P_{2884} = (1, 44, 1, 0)$ lies on line ℓ_0
 42 : $P_{2948} = (1, 45, 1, 0)$ lies on line ℓ_0
 43 : $P_{3012} = (1, 46, 1, 0)$ lies on line ℓ_0
 44 : $P_{3076} = (1, 47, 1, 0)$ lies on line ℓ_0
 45 : $P_{3140} = (1, 48, 1, 0)$ lies on line ℓ_0
 46 : $P_{3204} = (1, 49, 1, 0)$ lies on line ℓ_0
 47 : $P_{3268} = (1, 50, 1, 0)$ lies on line ℓ_0
 48 : $P_{3332} = (1, 51, 1, 0)$ lies on line ℓ_0
 49 : $P_{3396} = (1, 52, 1, 0)$ lies on line ℓ_0
 50 : $P_{3460} = (1, 53, 1, 0)$ lies on line ℓ_0
 51 : $P_{3524} = (1, 54, 1, 0)$ lies on line ℓ_0
 52 : $P_{3588} = (1, 55, 1, 0)$ lies on line ℓ_0
 53 : $P_{3652} = (1, 56, 1, 0)$ lies on line ℓ_0
 54 : $P_{3716} = (1, 57, 1, 0)$ lies on line ℓ_0
 55 : $P_{3780} = (1, 58, 1, 0)$ lies on line ℓ_0
 56 : $P_{3972} = (1, 61, 1, 0)$ lies on line ℓ_0
 57 : $P_{4036} = (1, 62, 1, 0)$ lies on line ℓ_0
 58 : $P_{4100} = (1, 63, 1, 0)$ lies on line ℓ_0
 59 : $P_{5350} = (36, 18, 0, 1)$ lies on line ℓ_5
 60 : $P_{6093} = (11, 30, 0, 1)$ lies on line ℓ_3
 61 : $P_{6449} = (47, 35, 0, 1)$ lies on line ℓ_6
 62 : $P_{6769} = (47, 40, 0, 1)$ lies on line ℓ_1
 63 : $P_{7885} = (11, 58, 0, 1)$ lies on line ℓ_4
 64 : $P_{8102} = (36, 61, 0, 1)$ lies on line ℓ_2
 65 : $P_{9483} = (10, 19, 1, 1)$ lies on line ℓ_4
 66 : $P_{10287} = (46, 31, 1, 1)$ lies on line ℓ_6
 67 : $P_{10470} = (37, 34, 1, 1)$ lies on line ℓ_2
 68 : $P_{10918} = (37, 41, 1, 1)$ lies on line ℓ_5
 69 : $P_{12079} = (46, 59, 1, 1)$ lies on line ℓ_1
 70 : $P_{12107} = (10, 60, 1, 1)$ lies on line ℓ_3
 71 : $P_{12583} = (38, 3, 2, 1)$ lies on line ℓ_2
 72 : $P_{12711} = (38, 5, 2, 1)$ lies on line ℓ_5
 73 : $P_{12938} = (9, 9, 2, 1)$ lies on line ℓ_4
 74 : $P_{13294} = (45, 14, 2, 1)$ lies on line ℓ_1
 75 : $P_{16110} = (45, 58, 2, 1)$ lies on line ℓ_6
 76 : $P_{16138} = (9, 59, 2, 1)$ lies on line ℓ_3
 77 : $P_{16877} = (44, 6, 3, 1)$ lies on line ℓ_6
 78 : $P_{18057} = (8, 25, 3, 1)$ lies on line ℓ_3
 79 : $P_{18280} = (39, 28, 3, 1)$ lies on line ℓ_2
 80 : $P_{18349} = (44, 29, 3, 1)$ lies on line ℓ_1
 81 : $P_{18505} = (8, 32, 3, 1)$ lies on line ℓ_4
 82 : $P_{20456} = (39, 62, 3, 1)$ lies on line ℓ_5
 83 : $P_{20908} = (43, 5, 4, 1)$ lies on line ℓ_1
 84 : $P_{21676} = (43, 17, 4, 1)$ lies on line ℓ_6
 85 : $P_{22625} = (32, 32, 4, 1)$ lies on line ℓ_2
 86 : $P_{23952} = (15, 53, 4, 1)$ lies on line ℓ_3
 87 : $P_{24417} = (32, 60, 4, 1)$ lies on line ℓ_5
 88 : $P_{24464} = (15, 61, 4, 1)$ lies on line ℓ_4
 89 : $P_{25122} = (33, 7, 5, 1)$ lies on line ℓ_5
 90 : $P_{25935} = (14, 20, 5, 1)$ lies on line ℓ_4
 91 : $P_{26091} = (42, 22, 5, 1)$ lies on line ℓ_1
 92 : $P_{26127} = (14, 23, 5, 1)$ lies on line ℓ_3
 93 : $P_{27563} = (42, 45, 5, 1)$ lies on line ℓ_6
 94 : $P_{28706} = (33, 63, 5, 1)$ lies on line ℓ_2
 95 : $P_{29290} = (41, 8, 6, 1)$ lies on line ℓ_6
 96 : $P_{29646} = (13, 14, 6, 1)$ lies on line ℓ_4
 97 : $P_{29774} = (13, 16, 6, 1)$ lies on line ℓ_3
 98 : $P_{30691} = (34, 30, 6, 1)$ lies on line ℓ_2
 99 : $P_{31018} = (41, 35, 6, 1)$ lies on line ℓ_1
 100 : $P_{31523} = (34, 43, 6, 1)$ lies on line ℓ_5
 101 : $P_{32932} = (35, 1, 7, 1)$ lies on line ℓ_2
 102 : $P_{33892} = (35, 16, 7, 1)$ lies on line ℓ_5
 103 : $P_{35341} = (12, 39, 7, 1)$ lies on line ℓ_4
 104 : $P_{35945} = (40, 48, 7, 1)$ lies on line ℓ_1
 105 : $P_{36045} = (12, 50, 7, 1)$ lies on line ℓ_3
 106 : $P_{36201} = (40, 52, 7, 1)$ lies on line ℓ_6
 107 : $P_{37421} = (44, 7, 8, 1)$ lies on line ℓ_2
 108 : $P_{38184} = (39, 19, 8, 1)$ lies on line ℓ_1
 109 : $P_{39400} = (39, 38, 8, 1)$ lies on line ℓ_6
 110 : $P_{39556} = (3, 41, 8, 1)$ lies on line ℓ_3
 111 : $P_{39981} = (44, 47, 8, 1)$ lies on line ℓ_5
 112 : $P_{40260} = (3, 52, 8, 1)$ lies on line ℓ_4
 113 : $P_{41063} = (38, 0, 9, 1)$ lies on line ℓ_1
 114 : $P_{41731} = (2, 11, 9, 1)$ lies on line ℓ_3
 115 : $P_{42350} = (45, 20, 9, 1)$ lies on line ℓ_5
 116 : $P_{42606} = (45, 24, 9, 1)$ lies on line ℓ_2
 117 : $P_{42727} = (38, 26, 9, 1)$ lies on line ℓ_6
 118 : $P_{42883} = (2, 29, 9, 1)$ lies on line ℓ_4
 119 : $P_{45570} = (1, 7, 10, 1)$ lies on line ℓ_4
 120 : $P_{45890} = (1, 12, 10, 1)$ lies on line ℓ_3
 121 : $P_{48550} = (37, 53, 10, 1)$ lies on line ℓ_1
 122 : $P_{48751} = (46, 56, 10, 1)$ lies on line ℓ_5
 123 : $P_{48815} = (46, 57, 10, 1)$ lies on line ℓ_2
 124 : $P_{49190} = (37, 63, 10, 1)$ lies on line ℓ_6
 125 : $P_{49445} = (36, 3, 11, 1)$ lies on line ℓ_6
 126 : $P_{49456} = (47, 3, 11, 1)$ lies on line ℓ_5
 127 : $P_{51685} = (36, 38, 11, 1)$ lies on line ℓ_1
 128 : $P_{51696} = (47, 38, 11, 1)$ lies on line ℓ_2
 129 : $P_{53417} = (40, 1, 12, 1)$ lies on line ℓ_5
 130 : $P_{53448} = (7, 2, 12, 1)$ lies on line ℓ_3
 131 : $P_{54628} = (35, 20, 12, 1)$ lies on line ℓ_6
 132 : $P_{55017} = (40, 26, 12, 1)$ lies on line ℓ_2
 133 : $P_{56584} = (7, 51, 12, 1)$ lies on line ℓ_4
 134 : $P_{57316} = (35, 62, 12, 1)$ lies on line ℓ_1
 135 : $P_{57770} = (41, 5, 13, 1)$ lies on line ℓ_2
 136 : $P_{59079} = (6, 26, 13, 1)$ lies on line ℓ_4
 137 : $P_{59463} = (6, 32, 13, 1)$ lies on line ℓ_3

138 : $P_{60003} = (34, 40, 13, 1)$ lies on line ℓ_6
 139 : $P_{60323} = (34, 45, 13, 1)$ lies on line ℓ_1
 140 : $P_{61162} = (41, 58, 13, 1)$ lies on line ℓ_5
 141 : $P_{61510} = (5, 0, 14, 1)$ lies on line ℓ_4
 142 : $P_{62370} = (33, 13, 14, 1)$ lies on line ℓ_6
 143 : $P_{62955} = (42, 22, 14, 1)$ lies on line ℓ_5
 144 : $P_{63074} = (33, 24, 14, 1)$ lies on line ℓ_1
 145 : $P_{63851} = (42, 36, 14, 1)$ lies on line ℓ_2
 146 : $P_{64006} = (5, 39, 14, 1)$ lies on line ℓ_3
 147 : $P_{65925} = (4, 5, 15, 1)$ lies on line ℓ_3
 148 : $P_{66337} = (32, 11, 15, 1)$ lies on line ℓ_1
 149 : $P_{68229} = (4, 41, 15, 1)$ lies on line ℓ_4
 150 : $P_{68524} = (43, 45, 15, 1)$ lies on line ℓ_5
 151 : $P_{68769} = (32, 49, 15, 1)$ lies on line ℓ_6
 152 : $P_{69420} = (43, 59, 15, 1)$ lies on line ℓ_2
 153 : $P_{70325} = (52, 9, 16, 1)$ lies on line ℓ_5
 154 : $P_{70812} = (27, 17, 16, 1)$ lies on line ℓ_3
 155 : $P_{72156} = (27, 38, 16, 1)$ lies on line ℓ_4
 156 : $P_{72309} = (52, 40, 16, 1)$ lies on line ℓ_2
 157 : $P_{72384} = (63, 41, 16, 1)$ lies on line ℓ_6
 158 : $P_{73792} = (63, 63, 16, 1)$ lies on line ℓ_1
 159 : $P_{74779} = (26, 15, 17, 1)$ lies on line ℓ_4
 160 : $P_{75199} = (62, 21, 17, 1)$ lies on line ℓ_6
 161 : $P_{76671} = (62, 44, 17, 1)$ lies on line ℓ_1
 162 : $P_{77046} = (53, 50, 17, 1)$ lies on line ℓ_5
 163 : $P_{77083} = (26, 51, 17, 1)$ lies on line ℓ_3
 164 : $P_{77366} = (53, 55, 17, 1)$ lies on line ℓ_2
 165 : $P_{79258} = (25, 21, 18, 1)$ lies on line ℓ_4
 166 : $P_{79351} = (54, 22, 18, 1)$ lies on line ℓ_2
 167 : $P_{79550} = (61, 25, 18, 1)$ lies on line ℓ_1
 168 : $P_{79863} = (54, 30, 18, 1)$ lies on line ℓ_5
 169 : $P_{81022} = (61, 48, 18, 1)$ lies on line ℓ_6
 170 : $P_{81242} = (25, 52, 18, 1)$ lies on line ℓ_3
 171 : $P_{82616} = (55, 9, 19, 1)$ lies on line ℓ_2
 172 : $P_{82685} = (60, 10, 19, 1)$ lies on line ℓ_1
 173 : $P_{82813} = (60, 12, 19, 1)$ lies on line ℓ_6
 174 : $P_{83417} = (24, 22, 19, 1)$ lies on line ℓ_3
 175 : $P_{84408} = (55, 37, 19, 1)$ lies on line ℓ_5
 176 : $P_{85849} = (24, 60, 19, 1)$ lies on line ℓ_4
 177 : $P_{87292} = (59, 18, 20, 1)$ lies on line ℓ_1
 178 : $P_{87868} = (59, 27, 20, 1)$ lies on line ℓ_6
 179 : $P_{88224} = (31, 33, 20, 1)$ lies on line ℓ_4
 180 : $P_{88625} = (48, 39, 20, 1)$ lies on line ℓ_5
 181 : $P_{89521} = (48, 53, 20, 1)$ lies on line ℓ_2
 182 : $P_{89824} = (31, 58, 20, 1)$ lies on line ℓ_3
 183 : $P_{90299} = (58, 1, 21, 1)$ lies on line ℓ_1
 184 : $P_{90719} = (30, 8, 21, 1)$ lies on line ℓ_4
 185 : $P_{91743} = (30, 24, 21, 1)$ lies on line ℓ_3
 186 : $P_{92018} = (49, 28, 21, 1)$ lies on line ℓ_5
 187 : $P_{92731} = (58, 39, 21, 1)$ lies on line ℓ_6
 188 : $P_{92914} = (49, 42, 21, 1)$ lies on line ℓ_2
 189 : $P_{94458} = (57, 2, 22, 1)$ lies on line ℓ_6
 190 : $P_{95027} = (50, 11, 22, 1)$ lies on line ℓ_2
 191 : $P_{95454} = (29, 18, 22, 1)$ lies on line ℓ_4

192 : $P_{96286} = (29, 31, 22, 1)$ lies on line ℓ_3
 193 : $P_{97395} = (50, 48, 22, 1)$ lies on line ℓ_5
 194 : $P_{97658} = (57, 52, 22, 1)$ lies on line ℓ_1
 195 : $P_{99124} = (51, 11, 23, 1)$ lies on line ℓ_5
 196 : $P_{99700} = (51, 20, 23, 1)$ lies on line ℓ_2
 197 : $P_{100921} = (56, 39, 23, 1)$ lies on line ℓ_1
 198 : $P_{102173} = (28, 59, 23, 1)$ lies on line ℓ_4
 199 : $P_{102301} = (28, 61, 23, 1)$ lies on line ℓ_3
 200 : $P_{102393} = (56, 62, 23, 1)$ lies on line ℓ_6
 201 : $P_{102776} = (55, 4, 24, 1)$ lies on line ℓ_1
 202 : $P_{103677} = (60, 18, 24, 1)$ lies on line ℓ_2
 203 : $P_{104916} = (19, 38, 24, 1)$ lies on line ℓ_3
 204 : $P_{105044} = (19, 40, 24, 1)$ lies on line ℓ_4
 205 : $P_{105336} = (55, 44, 24, 1)$ lies on line ℓ_6
 206 : $P_{105853} = (60, 52, 24, 1)$ lies on line ℓ_5
 207 : $P_{106643} = (18, 1, 25, 1)$ lies on line ℓ_4
 208 : $P_{106835} = (18, 4, 25, 1)$ lies on line ℓ_3
 209 : $P_{107454} = (61, 13, 25, 1)$ lies on line ℓ_2
 210 : $P_{107582} = (61, 15, 25, 1)$ lies on line ℓ_5
 211 : $P_{107639} = (54, 16, 25, 1)$ lies on line ℓ_6
 212 : $P_{108087} = (54, 23, 25, 1)$ lies on line ℓ_1
 213 : $P_{110866} = (17, 3, 26, 1)$ lies on line ℓ_3
 214 : $P_{112402} = (17, 27, 26, 1)$ lies on line ℓ_4
 215 : $P_{112886} = (53, 34, 26, 1)$ lies on line ℓ_1
 216 : $P_{112959} = (62, 35, 26, 1)$ lies on line ℓ_5
 217 : $P_{113535} = (62, 44, 26, 1)$ lies on line ℓ_2
 218 : $P_{114102} = (53, 53, 26, 1)$ lies on line ℓ_6
 219 : $P_{115381} = (52, 9, 27, 1)$ lies on line ℓ_6
 220 : $P_{116352} = (63, 24, 27, 1)$ lies on line ℓ_5
 221 : $P_{116881} = (16, 33, 27, 1)$ lies on line ℓ_3
 222 : $P_{117941} = (52, 49, 27, 1)$ lies on line ℓ_1
 223 : $P_{117969} = (16, 50, 27, 1)$ lies on line ℓ_4
 224 : $P_{118080} = (63, 51, 27, 1)$ lies on line ℓ_2
 225 : $P_{119704} = (23, 13, 28, 1)$ lies on line ℓ_3
 226 : $P_{119865} = (56, 15, 28, 1)$ lies on line ℓ_2
 227 : $P_{120569} = (56, 26, 28, 1)$ lies on line ℓ_5
 228 : $P_{120820} = (51, 30, 28, 1)$ lies on line ℓ_6
 229 : $P_{121524} = (51, 41, 28, 1)$ lies on line ℓ_1
 230 : $P_{121880} = (23, 47, 28, 1)$ lies on line ℓ_4
 231 : $P_{123351} = (22, 6, 29, 1)$ lies on line ℓ_4
 232 : $P_{124026} = (57, 16, 29, 1)$ lies on line ℓ_2
 233 : $P_{125114} = (57, 33, 29, 1)$ lies on line ℓ_5
 234 : $P_{125171} = (50, 34, 29, 1)$ lies on line ℓ_6
 235 : $P_{125975} = (22, 47, 29, 1)$ lies on line ℓ_3
 236 : $P_{126707} = (50, 58, 29, 1)$ lies on line ℓ_1
 237 : $P_{127538} = (49, 7, 30, 1)$ lies on line ℓ_6
 238 : $P_{127931} = (58, 13, 30, 1)$ lies on line ℓ_5
 239 : $P_{128050} = (49, 15, 30, 1)$ lies on line ℓ_1
 240 : $P_{128854} = (21, 28, 30, 1)$ lies on line ℓ_4
 241 : $P_{129622} = (21, 40, 30, 1)$ lies on line ℓ_3
 242 : $P_{130235} = (58, 49, 30, 1)$ lies on line ℓ_2
 243 : $P_{131797} = (20, 10, 31, 1)$ lies on line ℓ_3
 244 : $P_{132977} = (48, 28, 31, 1)$ lies on line ℓ_1
 245 : $P_{134140} = (59, 46, 31, 1)$ lies on line ℓ_2

246 : $P_{134549} = (20, 53, 31, 1)$ lies on line ℓ_4
 247 : $P_{134652} = (59, 54, 31, 1)$ lies on line ℓ_5
 248 : $P_{134961} = (48, 59, 31, 1)$ lies on line ℓ_6
 249 : $P_{135276} = (43, 0, 32, 1)$ lies on line ℓ_3
 250 : $P_{135404} = (43, 2, 32, 1)$ lies on line ℓ_4
 251 : $P_{135632} = (15, 6, 32, 1)$ lies on line ℓ_1
 252 : $P_{136709} = (4, 23, 32, 1)$ lies on line ℓ_2
 253 : $P_{137541} = (4, 36, 32, 1)$ lies on line ℓ_5
 254 : $P_{138768} = (15, 55, 32, 1)$ lies on line ℓ_6
 255 : $P_{139846} = (5, 8, 33, 1)$ lies on line ℓ_2
 256 : $P_{140047} = (14, 11, 33, 1)$ lies on line ℓ_6
 257 : $P_{140687} = (14, 21, 33, 1)$ lies on line ℓ_1
 258 : $P_{141318} = (5, 31, 33, 1)$ lies on line ℓ_5
 259 : $P_{141547} = (42, 34, 33, 1)$ lies on line ℓ_3
 260 : $P_{142123} = (42, 43, 33, 1)$ lies on line ℓ_4
 261 : $P_{145486} = (13, 32, 34, 1)$ lies on line ℓ_1
 262 : $P_{145834} = (41, 37, 34, 1)$ lies on line ℓ_3
 263 : $P_{146055} = (6, 41, 34, 1)$ lies on line ℓ_2
 264 : $P_{146382} = (13, 46, 34, 1)$ lies on line ℓ_6
 265 : $P_{146602} = (41, 49, 34, 1)$ lies on line ℓ_4
 266 : $P_{146695} = (6, 51, 34, 1)$ lies on line ℓ_5
 267 : $P_{148009} = (40, 7, 35, 1)$ lies on line ℓ_3
 268 : $P_{148040} = (7, 8, 35, 1)$ lies on line ℓ_5
 269 : $P_{148685} = (12, 18, 35, 1)$ lies on line ℓ_6
 270 : $P_{149097} = (40, 24, 35, 1)$ lies on line ℓ_4
 271 : $P_{150797} = (12, 51, 35, 1)$ lies on line ℓ_1
 272 : $P_{150984} = (7, 54, 35, 1)$ lies on line ℓ_2
 273 : $P_{151948} = (11, 5, 36, 1)$ lies on line ℓ_6
 274 : $P_{151984} = (47, 5, 36, 1)$ lies on line ℓ_4
 275 : $P_{154380} = (11, 43, 36, 1)$ lies on line ℓ_1
 276 : $P_{154416} = (47, 43, 36, 1)$ lies on line ℓ_3
 277 : $P_{156335} = (46, 9, 37, 1)$ lies on line ℓ_3
 278 : $P_{157058} = (1, 21, 37, 1)$ lies on line ℓ_2
 279 : $P_{158575} = (46, 44, 37, 1)$ lies on line ℓ_4
 280 : $P_{158850} = (1, 49, 37, 1)$ lies on line ℓ_5
 281 : $P_{159307} = (10, 56, 37, 1)$ lies on line ℓ_1
 282 : $P_{159371} = (10, 57, 37, 1)$ lies on line ℓ_6
 283 : $P_{160650} = (9, 13, 38, 1)$ lies on line ℓ_1
 284 : $P_{160750} = (45, 14, 38, 1)$ lies on line ℓ_3
 285 : $P_{161610} = (9, 28, 38, 1)$ lies on line ℓ_6
 286 : $P_{161667} = (2, 29, 38, 1)$ lies on line ℓ_5
 287 : $P_{163139} = (2, 52, 38, 1)$ lies on line ℓ_2
 288 : $P_{163310} = (45, 54, 38, 1)$ lies on line ℓ_4
 289 : $P_{165833} = (8, 30, 39, 1)$ lies on line ℓ_1
 290 : $P_{165933} = (44, 31, 39, 1)$ lies on line ℓ_4
 291 : $P_{165961} = (8, 32, 39, 1)$ lies on line ℓ_6
 292 : $P_{166340} = (3, 38, 39, 1)$ lies on line ℓ_5
 293 : $P_{166660} = (3, 43, 39, 1)$ lies on line ℓ_2
 294 : $P_{166765} = (44, 44, 39, 1)$ lies on line ℓ_3
 295 : $P_{168804} = (35, 12, 40, 1)$ lies on line ℓ_4
 296 : $P_{169613} = (12, 25, 40, 1)$ lies on line ℓ_5
 297 : $P_{170893} = (12, 45, 40, 1)$ lies on line ℓ_2
 298 : $P_{171208} = (7, 50, 40, 1)$ lies on line ℓ_6
 299 : $P_{171556} = (35, 55, 40, 1)$ lies on line ℓ_3
 300 : $P_{171912} = (7, 61, 40, 1)$ lies on line ℓ_1
 301 : $P_{172999} = (6, 14, 41, 1)$ lies on line ℓ_6
 302 : $P_{173475} = (34, 21, 41, 1)$ lies on line ℓ_3
 303 : $P_{174286} = (13, 34, 41, 1)$ lies on line ℓ_5
 304 : $P_{174499} = (34, 37, 41, 1)$ lies on line ℓ_4
 305 : $P_{175047} = (6, 46, 41, 1)$ lies on line ℓ_1
 306 : $P_{175310} = (13, 50, 41, 1)$ lies on line ℓ_2
 307 : $P_{177103} = (14, 14, 42, 1)$ lies on line ℓ_5
 308 : $P_{177378} = (33, 18, 42, 1)$ lies on line ℓ_3
 309 : $P_{177423} = (14, 19, 42, 1)$ lies on line ℓ_2
 310 : $P_{177926} = (5, 27, 42, 1)$ lies on line ℓ_1
 311 : $P_{178950} = (5, 43, 42, 1)$ lies on line ℓ_6
 312 : $P_{180258} = (33, 63, 42, 1)$ lies on line ℓ_4
 313 : $P_{180805} = (4, 8, 43, 1)$ lies on line ℓ_1
 314 : $P_{181072} = (15, 12, 43, 1)$ lies on line ℓ_2
 315 : $P_{181729} = (32, 22, 43, 1)$ lies on line ℓ_4
 316 : $P_{181765} = (4, 23, 43, 1)$ lies on line ℓ_6
 317 : $P_{183393} = (32, 48, 43, 1)$ lies on line ℓ_3
 318 : $P_{183696} = (15, 53, 43, 1)$ lies on line ℓ_5
 319 : $P_{184388} = (3, 0, 44, 1)$ lies on line ℓ_6
 320 : $P_{185128} = (39, 11, 44, 1)$ lies on line ℓ_4
 321 : $P_{185412} = (3, 16, 44, 1)$ lies on line ℓ_1
 322 : $P_{186216} = (39, 28, 44, 1)$ lies on line ℓ_3
 323 : $P_{187465} = (8, 48, 44, 1)$ lies on line ℓ_2
 324 : $P_{187913} = (8, 55, 44, 1)$ lies on line ℓ_5
 325 : $P_{188675} = (2, 3, 45, 1)$ lies on line ℓ_1
 326 : $P_{189258} = (9, 12, 45, 1)$ lies on line ℓ_5
 327 : $P_{190695} = (38, 34, 45, 1)$ lies on line ℓ_4
 328 : $P_{191498} = (9, 47, 45, 1)$ lies on line ℓ_2
 329 : $P_{192323} = (2, 60, 45, 1)$ lies on line ℓ_6
 330 : $P_{192487} = (38, 62, 45, 1)$ lies on line ℓ_3
 331 : $P_{193483} = (10, 14, 46, 1)$ lies on line ℓ_2
 332 : $P_{194178} = (1, 25, 46, 1)$ lies on line ℓ_6
 333 : $P_{194635} = (10, 32, 46, 1)$ lies on line ℓ_5
 334 : $P_{196034} = (1, 54, 46, 1)$ lies on line ℓ_1
 335 : $P_{196198} = (37, 56, 46, 1)$ lies on line ℓ_4
 336 : $P_{196262} = (37, 57, 46, 1)$ lies on line ℓ_3
 337 : $P_{197772} = (11, 17, 47, 1)$ lies on line ℓ_2
 338 : $P_{197797} = (36, 17, 47, 1)$ lies on line ℓ_4
 339 : $P_{198412} = (11, 27, 47, 1)$ lies on line ℓ_5
 340 : $P_{198437} = (36, 27, 47, 1)$ lies on line ℓ_3
 341 : $P_{200917} = (20, 2, 48, 1)$ lies on line ℓ_2
 342 : $P_{201788} = (59, 15, 48, 1)$ lies on line ℓ_3
 343 : $P_{201888} = (31, 17, 48, 1)$ lies on line ℓ_1
 344 : $P_{202748} = (59, 30, 48, 1)$ lies on line ℓ_4
 345 : $P_{204704} = (31, 61, 48, 1)$ lies on line ℓ_6
 346 : $P_{204821} = (20, 63, 48, 1)$ lies on line ℓ_5
 347 : $P_{204959} = (30, 1, 49, 1)$ lies on line ℓ_6
 348 : $P_{205023} = (30, 2, 49, 1)$ lies on line ℓ_1
 349 : $P_{205142} = (21, 4, 49, 1)$ lies on line ℓ_5
 350 : $P_{206742} = (21, 29, 49, 1)$ lies on line ℓ_2
 351 : $P_{207803} = (58, 45, 49, 1)$ lies on line ℓ_3
 352 : $P_{208443} = (58, 55, 49, 1)$ lies on line ℓ_4
 353 : $P_{211294} = (29, 36, 50, 1)$ lies on line ℓ_6

354 : $P_{211543} = (22, 40, 50, 1)$ lies on line ℓ_5
 355 : $P_{211706} = (57, 42, 50, 1)$ lies on line ℓ_3
 356 : $P_{211898} = (57, 45, 50, 1)$ lies on line ℓ_4
 357 : $P_{212510} = (29, 55, 50, 1)$ lies on line ℓ_1
 358 : $P_{212823} = (22, 60, 50, 1)$ lies on line ℓ_2
 359 : $P_{213369} = (56, 4, 51, 1)$ lies on line ℓ_4
 360 : $P_{213625} = (56, 8, 51, 1)$ lies on line ℓ_3
 361 : $P_{214296} = (23, 19, 51, 1)$ lies on line ℓ_5
 362 : $P_{214621} = (28, 24, 51, 1)$ lies on line ℓ_6
 363 : $P_{215320} = (23, 35, 51, 1)$ lies on line ℓ_2
 364 : $P_{215389} = (28, 36, 51, 1)$ lies on line ℓ_1
 365 : $P_{218140} = (27, 15, 52, 1)$ lies on line ℓ_6
 366 : $P_{218257} = (16, 17, 52, 1)$ lies on line ℓ_5
 367 : $P_{218816} = (63, 25, 52, 1)$ lies on line ℓ_4
 368 : $P_{219153} = (16, 31, 52, 1)$ lies on line ℓ_2
 369 : $P_{219520} = (63, 36, 52, 1)$ lies on line ℓ_3
 370 : $P_{221020} = (27, 60, 52, 1)$ lies on line ℓ_1
 371 : $P_{221266} = (17, 0, 53, 1)$ lies on line ℓ_2
 372 : $P_{221695} = (62, 6, 53, 1)$ lies on line ℓ_3
 373 : $P_{223954} = (17, 42, 53, 1)$ lies on line ℓ_5
 374 : $P_{224283} = (26, 47, 53, 1)$ lies on line ℓ_1
 375 : $P_{224383} = (62, 48, 53, 1)$ lies on line ℓ_4
 376 : $P_{224539} = (26, 51, 53, 1)$ lies on line ℓ_6
 377 : $P_{225470} = (61, 1, 54, 1)$ lies on line ℓ_3
 378 : $P_{225747} = (18, 6, 54, 1)$ lies on line ℓ_5
 379 : $P_{226778} = (25, 22, 54, 1)$ lies on line ℓ_6
 380 : $P_{227034} = (25, 26, 54, 1)$ lies on line ℓ_1
 381 : $P_{227475} = (18, 33, 54, 1)$ lies on line ℓ_2
 382 : $P_{228094} = (61, 42, 54, 1)$ lies on line ℓ_4
 383 : $P_{229693} = (60, 3, 55, 1)$ lies on line ℓ_4
 384 : $P_{230041} = (24, 9, 55, 1)$ lies on line ℓ_1
 385 : $P_{231741} = (60, 35, 55, 1)$ lies on line ℓ_3
 386 : $P_{232153} = (24, 42, 55, 1)$ lies on line ℓ_6
 387 : $P_{233364} = (19, 61, 55, 1)$ lies on line ℓ_5
 388 : $P_{233428} = (19, 62, 55, 1)$ lies on line ℓ_2
 389 : $P_{233693} = (28, 2, 56, 1)$ lies on line ℓ_5
 390 : $P_{234612} = (51, 16, 56, 1)$ lies on line ℓ_4
 391 : $P_{236248} = (23, 42, 56, 1)$ lies on line ℓ_1
 392 : $P_{237144} = (23, 56, 56, 1)$ lies on line ℓ_6
 393 : $P_{237149} = (28, 56, 56, 1)$ lies on line ℓ_2
 394 : $P_{237172} = (51, 56, 56, 1)$ lies on line ℓ_3
 395 : $P_{237911} = (22, 4, 57, 1)$ lies on line ℓ_6
 396 : $P_{239347} = (50, 26, 57, 1)$ lies on line ℓ_3
 397 : $P_{240158} = (29, 39, 57, 1)$ lies on line ℓ_2
 398 : $P_{241303} = (22, 57, 57, 1)$ lies on line ℓ_1
 399 : $P_{241310} = (29, 57, 57, 1)$ lies on line ℓ_5
 400 : $P_{241331} = (50, 57, 57, 1)$ lies on line ℓ_4
 401 : $P_{242143} = (30, 6, 58, 1)$ lies on line ℓ_2
 402 : $P_{242518} = (21, 12, 58, 1)$ lies on line ℓ_1
 403 : $P_{243103} = (30, 21, 58, 1)$ lies on line ℓ_5
 404 : $P_{243634} = (49, 29, 58, 1)$ lies on line ℓ_3
 405 : $P_{243862} = (21, 33, 58, 1)$ lies on line ℓ_6
 406 : $P_{244018} = (49, 35, 58, 1)$ lies on line ℓ_4
 407 : $P_{246513} = (48, 10, 59, 1)$ lies on line ℓ_4
 408 : $P_{247456} = (31, 25, 59, 1)$ lies on line ℓ_2
 409 : $P_{247701} = (20, 29, 59, 1)$ lies on line ℓ_6
 410 : $P_{247829} = (20, 31, 59, 1)$ lies on line ℓ_1
 411 : $P_{248800} = (31, 46, 59, 1)$ lies on line ℓ_5
 412 : $P_{249905} = (48, 63, 59, 1)$ lies on line ℓ_3
 413 : $P_{250388} = (19, 7, 60, 1)$ lies on line ℓ_1
 414 : $P_{250580} = (19, 10, 60, 1)$ lies on line ℓ_6
 415 : $P_{251192} = (55, 19, 60, 1)$ lies on line ℓ_3
 416 : $P_{251448} = (55, 23, 60, 1)$ lies on line ℓ_4
 417 : $P_{252313} = (24, 37, 60, 1)$ lies on line ℓ_2
 418 : $P_{252761} = (24, 44, 60, 1)$ lies on line ℓ_5
 419 : $P_{255315} = (18, 20, 61, 1)$ lies on line ℓ_1
 420 : $P_{255514} = (25, 23, 61, 1)$ lies on line ℓ_5
 421 : $P_{257207} = (54, 49, 61, 1)$ lies on line ℓ_3
 422 : $P_{257491} = (18, 54, 61, 1)$ lies on line ℓ_6
 423 : $P_{257754} = (25, 58, 61, 1)$ lies on line ℓ_2
 424 : $P_{258039} = (54, 62, 61, 1)$ lies on line ℓ_4
 425 : $P_{259346} = (17, 19, 62, 1)$ lies on line ℓ_6
 426 : $P_{259867} = (26, 27, 62, 1)$ lies on line ℓ_2
 427 : $P_{260242} = (17, 33, 62, 1)$ lies on line ℓ_1
 428 : $P_{260470} = (53, 36, 62, 1)$ lies on line ℓ_4
 429 : $P_{261622} = (53, 54, 62, 1)$ lies on line ℓ_3
 430 : $P_{261915} = (26, 59, 62, 1)$ lies on line ℓ_5
 431 : $P_{262236} = (27, 0, 63, 1)$ lies on line ℓ_5
 432 : $P_{262492} = (27, 4, 63, 1)$ lies on line ℓ_2
 433 : $P_{263093} = (52, 13, 63, 1)$ lies on line ℓ_4
 434 : $P_{263541} = (52, 20, 63, 1)$ lies on line ℓ_3
 435 : $P_{265233} = (16, 47, 63, 1)$ lies on line ℓ_6
 436 : $P_{265425} = (16, 50, 63, 1)$ lies on line ℓ_1

The single points on the surface are:

Points on surface but on no line

The surface has 3843 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	0	0	1
2	1	0	0	0	0	1	0
3	1	0	0	0	1	0	0
4	1	0	0	1	0	0	0
5	1	0	1	0	0	0	0
6	1	1	0	0	0	0	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_{1284}	P_{2052}	P_{2244}	P_{2692}	P_{3844}	P_{3908}

Line 1 intersects

Line	ℓ_0	ℓ_6
in point	P_{1284}	P_{199041}

Line 2 intersects

Line	ℓ_0	ℓ_5
in point	P_{2052}	P_{152257}

Line 3 intersects

Line	ℓ_0	ℓ_4
in point	P_{2244}	P_{52161}

Line 4 intersects

Line	ℓ_0	ℓ_3
in point	P_{2692}	P_{52161}

Line 5 intersects

Line	ℓ_0	ℓ_2
in point	P_{3844}	P_{152257}

Line 6 intersects

Line	ℓ_0	ℓ_1
in point	P_{3908}	P_{199041}

The surface has 4289 points:

Too many to print.