

Rank-66764 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(64) is 1091047494

General information

Number of lines	7
Number of points	4289
Number of singular points	2
Number of Eckardt points	0
Number of double points	3
Number of single points	441
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	$4^2, 2^3, 1^{441}, 0^{3843}$

Singular Points

The surface has 2 singular points:

$$0 : P_{3651} = \mathbf{P}(0, \epsilon^{42}, 1, 0) = \mathbf{P}(0, 56, 1, 0)$$

$$1 : P_{3715} = \mathbf{P}(0, \epsilon^{21}, 1, 0) = \mathbf{P}(0, 57, 1, 0)$$

The 7 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{17043456} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{17043456} = \mathbf{Pl}(0, 0, 0, 0, 0, 1)_{270401}$$

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 1 & 0 & 0 & \epsilon^9 \\ 0 & 1 & \epsilon^{21} & 0 \end{bmatrix}_{12516345} = \begin{bmatrix} 1 & 0 & 0 & 47 \\ 0 & 1 & 57 & 0 \end{bmatrix}_{12516345} = \mathbf{Pl}(56, 57, 62, 1, 0, 0)_{4154} \\
\ell_2 &= \begin{bmatrix} 1 & 0 & 0 & \epsilon^{18} \\ 0 & 1 & \epsilon^{21} & 0 \end{bmatrix}_{2929401} = \begin{bmatrix} 1 & 0 & 0 & 11 \\ 0 & 1 & 57 & 0 \end{bmatrix}_{2929401} = \mathbf{Pl}(56, 57, 8, 1, 0, 0)_{752} \\
\ell_3 &= \begin{bmatrix} 1 & 0 & 0 & \epsilon^{36} \\ 0 & 1 & \epsilon^{21} & 0 \end{bmatrix}_{9587001} = \begin{bmatrix} 1 & 0 & 0 & 36 \\ 0 & 1 & 57 & 0 \end{bmatrix}_{9587001} = \mathbf{Pl}(56, 57, 15, 1, 0, 0)_{1193} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & 0 & \epsilon^9 \\ 0 & 1 & \epsilon^{42} & 0 \end{bmatrix}_{12516344} = \begin{bmatrix} 1 & 0 & 0 & 47 \\ 0 & 1 & 56 & 0 \end{bmatrix}_{12516344} = \mathbf{Pl}(57, 56, 52, 1, 0, 0)_{3525} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & 0 & \epsilon^{18} \\ 0 & 1 & \epsilon^{42} & 0 \end{bmatrix}_{2929400} = \begin{bmatrix} 1 & 0 & 0 & 11 \\ 0 & 1 & 56 & 0 \end{bmatrix}_{2929400} = \mathbf{Pl}(57, 56, 45, 1, 0, 0)_{3084} \\
\ell_6 &= \begin{bmatrix} 1 & 0 & 0 & \epsilon^{36} \\ 0 & 1 & \epsilon^{42} & 0 \end{bmatrix}_{9587000} = \begin{bmatrix} 1 & 0 & 0 & 36 \\ 0 & 1 & 56 & 0 \end{bmatrix}_{9587000} = \mathbf{Pl}(57, 56, 33, 1, 0, 0)_{2328}
\end{aligned}$$

Rank of lines: (17043456, 12516345, 2929401, 9587001, 12516344, 2929400, 9587000)

Rank of points on Klein quadric: (270401, 4154, 752, 1193, 3525, 3084, 2328)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 3 Double points:

The double points on the surface are:

$$P_{4172} = (10, 0, 0, 1) = \ell_1 \cap \ell_4$$

$$P_{4199} = (37, 0, 0, 1) = \ell_2 \cap \ell_5$$

$$P_{4208} = (46, 0, 0, 1) = \ell_3 \cap \ell_6$$

Single Points

The surface has 441 single points:

The single points on the surface are:

0 : $P_1 = (0, 1, 0, 0)$ lies on line ℓ_0

1 : $P_2 = (0, 0, 1, 0)$ lies on line ℓ_0

2 : $P_{131} = (0, 1, 1, 0)$ lies on line ℓ_0

3 : $P_{195} = (0, 2, 1, 0)$ lies on line ℓ_0

4 : $P_{259} = (0, 3, 1, 0)$ lies on line ℓ_0

5 : $P_{323} = (0, 4, 1, 0)$ lies on line ℓ_0

6 : $P_{387} = (0, 5, 1, 0)$ lies on line ℓ_0

7 : $P_{451} = (0, 6, 1, 0)$ lies on line ℓ_0

8 : $P_{515} = (0, 7, 1, 0)$ lies on line ℓ_0

9 : $P_{579} = (0, 8, 1, 0)$ lies on line ℓ_0

10 : $P_{643} = (0, 9, 1, 0)$ lies on line ℓ_0

11 : $P_{707} = (0, 10, 1, 0)$ lies on line ℓ_0

12 : $P_{771} = (0, 11, 1, 0)$ lies on line ℓ_0

13 : $P_{835} = (0, 12, 1, 0)$ lies on line ℓ_0

14 : $P_{899} = (0, 13, 1, 0)$ lies on line ℓ_0

15 : $P_{963} = (0, 14, 1, 0)$ lies on line ℓ_0

16 : $P_{1027} = (0, 15, 1, 0)$ lies on line ℓ_0

17 : $P_{1091} = (0, 16, 1, 0)$ lies on line ℓ_0

18 : $P_{1155} = (0, 17, 1, 0)$ lies on line ℓ_0

19 : $P_{1219} = (0, 18, 1, 0)$ lies on line ℓ_0

20 : $P_{1283} = (0, 19, 1, 0)$ lies on line ℓ_0

21 : $P_{1347} = (0, 20, 1, 0)$ lies on line ℓ_0

22 : $P_{1411} = (0, 21, 1, 0)$ lies on line ℓ_0

23 : $P_{1475} = (0, 22, 1, 0)$ lies on line ℓ_0

24 : $P_{1539} = (0, 23, 1, 0)$ lies on line ℓ_0

25 : $P_{1603} = (0, 24, 1, 0)$ lies on line ℓ_0

26 : $P_{1667} = (0, 25, 1, 0)$ lies on line ℓ_0

27 : $P_{1731} = (0, 26, 1, 0)$ lies on line ℓ_0

28 : $P_{1795} = (0, 27, 1, 0)$ lies on line ℓ_0

29 : $P_{1859} = (0, 28, 1, 0)$ lies on line ℓ_0

- 30 : $P_{1923} = (0, 29, 1, 0)$ lies on line ℓ_0
 31 : $P_{1987} = (0, 30, 1, 0)$ lies on line ℓ_0
 32 : $P_{2051} = (0, 31, 1, 0)$ lies on line ℓ_0
 33 : $P_{2115} = (0, 32, 1, 0)$ lies on line ℓ_0
 34 : $P_{2179} = (0, 33, 1, 0)$ lies on line ℓ_0
 35 : $P_{2243} = (0, 34, 1, 0)$ lies on line ℓ_0
 36 : $P_{2307} = (0, 35, 1, 0)$ lies on line ℓ_0
 37 : $P_{2371} = (0, 36, 1, 0)$ lies on line ℓ_0
 38 : $P_{2435} = (0, 37, 1, 0)$ lies on line ℓ_0
 39 : $P_{2499} = (0, 38, 1, 0)$ lies on line ℓ_0
 40 : $P_{2563} = (0, 39, 1, 0)$ lies on line ℓ_0
 41 : $P_{2627} = (0, 40, 1, 0)$ lies on line ℓ_0
 42 : $P_{2691} = (0, 41, 1, 0)$ lies on line ℓ_0
 43 : $P_{2755} = (0, 42, 1, 0)$ lies on line ℓ_0
 44 : $P_{2819} = (0, 43, 1, 0)$ lies on line ℓ_0
 45 : $P_{2883} = (0, 44, 1, 0)$ lies on line ℓ_0
 46 : $P_{2947} = (0, 45, 1, 0)$ lies on line ℓ_0
 47 : $P_{3011} = (0, 46, 1, 0)$ lies on line ℓ_0
 48 : $P_{3075} = (0, 47, 1, 0)$ lies on line ℓ_0
 49 : $P_{3139} = (0, 48, 1, 0)$ lies on line ℓ_0
 50 : $P_{3203} = (0, 49, 1, 0)$ lies on line ℓ_0
 51 : $P_{3267} = (0, 50, 1, 0)$ lies on line ℓ_0
 52 : $P_{3331} = (0, 51, 1, 0)$ lies on line ℓ_0
 53 : $P_{3395} = (0, 52, 1, 0)$ lies on line ℓ_0
 54 : $P_{3459} = (0, 53, 1, 0)$ lies on line ℓ_0
 55 : $P_{3523} = (0, 54, 1, 0)$ lies on line ℓ_0
 56 : $P_{3587} = (0, 55, 1, 0)$ lies on line ℓ_0
 57 : $P_{3779} = (0, 58, 1, 0)$ lies on line ℓ_0
 58 : $P_{3843} = (0, 59, 1, 0)$ lies on line ℓ_0
 59 : $P_{3907} = (0, 60, 1, 0)$ lies on line ℓ_0
 60 : $P_{3971} = (0, 61, 1, 0)$ lies on line ℓ_0
 61 : $P_{4035} = (0, 62, 1, 0)$ lies on line ℓ_0
 62 : $P_{4099} = (0, 63, 1, 0)$ lies on line ℓ_0
 63 : $P_{11851} = (10, 56, 1, 1)$ lies on line ℓ_1
 64 : $P_{11878} = (37, 56, 1, 1)$ lies on line ℓ_2
 65 : $P_{11887} = (46, 56, 1, 1)$ lies on line ℓ_3
 66 : $P_{11915} = (10, 57, 1, 1)$ lies on line ℓ_4
 67 : $P_{11942} = (37, 57, 1, 1)$ lies on line ℓ_5
 68 : $P_{11951} = (46, 57, 1, 1)$ lies on line ℓ_6
 69 : $P_{13451} = (10, 17, 2, 1)$ lies on line ℓ_1
 70 : $P_{13478} = (37, 17, 2, 1)$ lies on line ℓ_2
 71 : $P_{13487} = (46, 17, 2, 1)$ lies on line ℓ_3
 72 : $P_{13579} = (10, 19, 2, 1)$ lies on line ℓ_4
 73 : $P_{13606} = (37, 19, 2, 1)$ lies on line ℓ_5
 74 : $P_{13615} = (46, 19, 2, 1)$ lies on line ℓ_6
 75 : $P_{19083} = (10, 41, 3, 1)$ lies on line ℓ_1
 76 : $P_{19110} = (37, 41, 3, 1)$ lies on line ℓ_2
 77 : $P_{19119} = (46, 41, 3, 1)$ lies on line ℓ_3
 78 : $P_{19147} = (10, 42, 3, 1)$ lies on line ℓ_4
 79 : $P_{19174} = (37, 42, 3, 1)$ lies on line ℓ_5
 80 : $P_{19183} = (46, 42, 3, 1)$ lies on line ℓ_6
 81 : $P_{22731} = (10, 34, 4, 1)$ lies on line ℓ_1
 82 : $P_{22758} = (37, 34, 4, 1)$ lies on line ℓ_2
 83 : $P_{22767} = (46, 34, 4, 1)$ lies on line ℓ_3
 84 : $P_{22987} = (10, 38, 4, 1)$ lies on line ℓ_4
 85 : $P_{23014} = (37, 38, 4, 1)$ lies on line ℓ_5
 86 : $P_{23023} = (46, 38, 4, 1)$ lies on line ℓ_6
 87 : $P_{26315} = (10, 26, 5, 1)$ lies on line ℓ_1
 88 : $P_{26342} = (37, 26, 5, 1)$ lies on line ℓ_2
 89 : $P_{26351} = (46, 26, 5, 1)$ lies on line ℓ_3
 90 : $P_{26635} = (10, 31, 5, 1)$ lies on line ℓ_4
 91 : $P_{26662} = (37, 31, 5, 1)$ lies on line ℓ_5
 92 : $P_{26671} = (46, 31, 5, 1)$ lies on line ℓ_6
 93 : $P_{32011} = (10, 51, 6, 1)$ lies on line ℓ_1
 94 : $P_{32038} = (37, 51, 6, 1)$ lies on line ℓ_2
 95 : $P_{32047} = (46, 51, 6, 1)$ lies on line ℓ_3
 96 : $P_{32139} = (10, 53, 6, 1)$ lies on line ℓ_4
 97 : $P_{32166} = (37, 53, 6, 1)$ lies on line ℓ_5
 98 : $P_{32175} = (46, 53, 6, 1)$ lies on line ℓ_6
 99 : $P_{33547} = (10, 11, 7, 1)$ lies on line ℓ_1
 100 : $P_{33574} = (37, 11, 7, 1)$ lies on line ℓ_2
 101 : $P_{33583} = (46, 11, 7, 1)$ lies on line ℓ_3
 102 : $P_{33611} = (10, 12, 7, 1)$ lies on line ℓ_4
 103 : $P_{33638} = (37, 12, 7, 1)$ lies on line ℓ_5
 104 : $P_{33647} = (46, 12, 7, 1)$ lies on line ℓ_6
 105 : $P_{39307} = (10, 37, 8, 1)$ lies on line ℓ_1
 106 : $P_{39334} = (37, 37, 8, 1)$ lies on line ℓ_2
 107 : $P_{39343} = (46, 37, 8, 1)$ lies on line ℓ_3
 108 : $P_{39819} = (10, 45, 8, 1)$ lies on line ℓ_4
 109 : $P_{39846} = (37, 45, 8, 1)$ lies on line ℓ_5
 110 : $P_{39855} = (46, 45, 8, 1)$ lies on line ℓ_6
 111 : $P_{42315} = (10, 20, 9, 1)$ lies on line ℓ_4
 112 : $P_{42342} = (37, 20, 9, 1)$ lies on line ℓ_5
 113 : $P_{42351} = (46, 20, 9, 1)$ lies on line ℓ_6
 114 : $P_{42891} = (10, 29, 9, 1)$ lies on line ℓ_1
 115 : $P_{42918} = (37, 29, 9, 1)$ lies on line ℓ_2
 116 : $P_{42927} = (46, 29, 9, 1)$ lies on line ℓ_3
 117 : $P_{48459} = (10, 52, 10, 1)$ lies on line ℓ_1
 118 : $P_{48486} = (37, 52, 10, 1)$ lies on line ℓ_2
 119 : $P_{48495} = (46, 52, 10, 1)$ lies on line ℓ_3
 120 : $P_{49099} = (10, 62, 10, 1)$ lies on line ℓ_4
 121 : $P_{49126} = (37, 62, 10, 1)$ lies on line ℓ_5
 122 : $P_{49135} = (46, 62, 10, 1)$ lies on line ℓ_6
 123 : $P_{49675} = (10, 7, 11, 1)$ lies on line ℓ_4
 124 : $P_{49702} = (37, 7, 11, 1)$ lies on line ℓ_5
 125 : $P_{49711} = (46, 7, 11, 1)$ lies on line ℓ_6
 126 : $P_{49995} = (10, 12, 11, 1)$ lies on line ℓ_1
 127 : $P_{50022} = (37, 12, 11, 1)$ lies on line ℓ_2
 128 : $P_{50031} = (46, 12, 11, 1)$ lies on line ℓ_3
 129 : $P_{53771} = (10, 7, 12, 1)$ lies on line ℓ_1
 130 : $P_{53798} = (37, 7, 12, 1)$ lies on line ℓ_2
 131 : $P_{53807} = (46, 7, 12, 1)$ lies on line ℓ_3
 132 : $P_{54027} = (10, 11, 12, 1)$ lies on line ℓ_4
 133 : $P_{54054} = (37, 11, 12, 1)$ lies on line ℓ_5
 134 : $P_{54063} = (46, 11, 12, 1)$ lies on line ℓ_6
 135 : $P_{60619} = (10, 50, 13, 1)$ lies on line ℓ_4
 136 : $P_{60646} = (37, 50, 13, 1)$ lies on line ℓ_5
 137 : $P_{60655} = (46, 50, 13, 1)$ lies on line ℓ_6

138 : $P_{61451} = (10, 63, 13, 1)$ lies on line ℓ_1
 139 : $P_{61478} = (37, 63, 13, 1)$ lies on line ℓ_2
 140 : $P_{61487} = (46, 63, 13, 1)$ lies on line ℓ_3
 141 : $P_{62923} = (10, 22, 14, 1)$ lies on line ℓ_1
 142 : $P_{62950} = (37, 22, 14, 1)$ lies on line ℓ_2
 143 : $P_{62959} = (46, 22, 14, 1)$ lies on line ℓ_3
 144 : $P_{63051} = (10, 24, 14, 1)$ lies on line ℓ_4
 145 : $P_{63078} = (37, 24, 14, 1)$ lies on line ℓ_5
 146 : $P_{63087} = (46, 24, 14, 1)$ lies on line ℓ_6
 147 : $P_{67723} = (10, 33, 15, 1)$ lies on line ℓ_4
 148 : $P_{67750} = (37, 33, 15, 1)$ lies on line ℓ_5
 149 : $P_{67759} = (46, 33, 15, 1)$ lies on line ℓ_6
 150 : $P_{68555} = (10, 46, 15, 1)$ lies on line ℓ_1
 151 : $P_{68582} = (37, 46, 15, 1)$ lies on line ℓ_2
 152 : $P_{68591} = (46, 46, 15, 1)$ lies on line ℓ_3
 153 : $P_{72459} = (10, 43, 16, 1)$ lies on line ℓ_1
 154 : $P_{72486} = (37, 43, 16, 1)$ lies on line ℓ_2
 155 : $P_{72495} = (46, 43, 16, 1)$ lies on line ℓ_3
 156 : $P_{73483} = (10, 59, 16, 1)$ lies on line ℓ_4
 157 : $P_{73510} = (37, 59, 16, 1)$ lies on line ℓ_5
 158 : $P_{73519} = (46, 59, 16, 1)$ lies on line ℓ_6
 159 : $P_{73931} = (10, 2, 17, 1)$ lies on line ℓ_4
 160 : $P_{73958} = (37, 2, 17, 1)$ lies on line ℓ_5
 161 : $P_{73967} = (46, 2, 17, 1)$ lies on line ℓ_6
 162 : $P_{75019} = (10, 19, 17, 1)$ lies on line ℓ_1
 163 : $P_{75046} = (37, 19, 17, 1)$ lies on line ℓ_2
 164 : $P_{75055} = (46, 19, 17, 1)$ lies on line ℓ_3
 165 : $P_{80459} = (10, 40, 18, 1)$ lies on line ℓ_4
 166 : $P_{80486} = (37, 40, 18, 1)$ lies on line ℓ_5
 167 : $P_{80495} = (46, 40, 18, 1)$ lies on line ℓ_6
 168 : $P_{81611} = (10, 58, 18, 1)$ lies on line ℓ_1
 169 : $P_{81638} = (37, 58, 18, 1)$ lies on line ℓ_2
 170 : $P_{81647} = (46, 58, 18, 1)$ lies on line ℓ_3
 171 : $P_{82123} = (10, 2, 19, 1)$ lies on line ℓ_1
 172 : $P_{82150} = (37, 2, 19, 1)$ lies on line ℓ_2
 173 : $P_{82159} = (46, 2, 19, 1)$ lies on line ℓ_3
 174 : $P_{83083} = (10, 17, 19, 1)$ lies on line ℓ_4
 175 : $P_{83110} = (37, 17, 19, 1)$ lies on line ℓ_5
 176 : $P_{83119} = (46, 17, 19, 1)$ lies on line ℓ_6
 177 : $P_{86667} = (10, 9, 20, 1)$ lies on line ℓ_1
 178 : $P_{86694} = (37, 9, 20, 1)$ lies on line ℓ_2
 179 : $P_{86703} = (46, 9, 20, 1)$ lies on line ℓ_3
 180 : $P_{87947} = (10, 29, 20, 1)$ lies on line ℓ_4
 181 : $P_{87974} = (37, 29, 20, 1)$ lies on line ℓ_5
 182 : $P_{87983} = (46, 29, 20, 1)$ lies on line ℓ_6
 183 : $P_{92491} = (10, 36, 21, 1)$ lies on line ℓ_4
 184 : $P_{92518} = (37, 36, 21, 1)$ lies on line ℓ_5
 185 : $P_{92527} = (46, 36, 21, 1)$ lies on line ℓ_6
 186 : $P_{93323} = (10, 49, 21, 1)$ lies on line ℓ_1
 187 : $P_{93350} = (37, 49, 21, 1)$ lies on line ℓ_2
 188 : $P_{93359} = (46, 49, 21, 1)$ lies on line ℓ_3
 189 : $P_{95179} = (10, 14, 22, 1)$ lies on line ℓ_4
 190 : $P_{95206} = (37, 14, 22, 1)$ lies on line ℓ_5
 191 : $P_{95215} = (46, 14, 22, 1)$ lies on line ℓ_6

192 : $P_{95819} = (10, 24, 22, 1)$ lies on line ℓ_1
 193 : $P_{95846} = (37, 24, 22, 1)$ lies on line ℓ_2
 194 : $P_{95855} = (46, 24, 22, 1)$ lies on line ℓ_3
 195 : $P_{100427} = (10, 32, 23, 1)$ lies on line ℓ_1
 196 : $P_{100454} = (37, 32, 23, 1)$ lies on line ℓ_2
 197 : $P_{100463} = (46, 32, 23, 1)$ lies on line ℓ_3
 198 : $P_{101899} = (10, 55, 23, 1)$ lies on line ℓ_4
 199 : $P_{101926} = (37, 55, 23, 1)$ lies on line ℓ_5
 200 : $P_{101935} = (46, 55, 23, 1)$ lies on line ℓ_6
 201 : $P_{103371} = (10, 14, 24, 1)$ lies on line ℓ_1
 202 : $P_{103398} = (37, 14, 24, 1)$ lies on line ℓ_2
 203 : $P_{103407} = (46, 14, 24, 1)$ lies on line ℓ_3
 204 : $P_{103883} = (10, 22, 24, 1)$ lies on line ℓ_4
 205 : $P_{103910} = (37, 22, 24, 1)$ lies on line ℓ_5
 206 : $P_{103919} = (46, 22, 24, 1)$ lies on line ℓ_6
 207 : $P_{109579} = (10, 47, 25, 1)$ lies on line ℓ_4
 208 : $P_{109606} = (37, 47, 25, 1)$ lies on line ℓ_5
 209 : $P_{109615} = (46, 47, 25, 1)$ lies on line ℓ_6
 210 : $P_{110027} = (10, 54, 25, 1)$ lies on line ℓ_1
 211 : $P_{110054} = (37, 54, 25, 1)$ lies on line ℓ_2
 212 : $P_{110063} = (46, 54, 25, 1)$ lies on line ℓ_3
 213 : $P_{110987} = (10, 5, 26, 1)$ lies on line ℓ_4
 214 : $P_{111014} = (37, 5, 26, 1)$ lies on line ℓ_5
 215 : $P_{111023} = (46, 5, 26, 1)$ lies on line ℓ_6
 216 : $P_{112651} = (10, 31, 26, 1)$ lies on line ℓ_1
 217 : $P_{112678} = (37, 31, 26, 1)$ lies on line ℓ_2
 218 : $P_{112687} = (46, 31, 26, 1)$ lies on line ℓ_3
 219 : $P_{117259} = (10, 39, 27, 1)$ lies on line ℓ_1
 220 : $P_{117286} = (37, 39, 27, 1)$ lies on line ℓ_2
 221 : $P_{117295} = (46, 39, 27, 1)$ lies on line ℓ_3
 222 : $P_{118603} = (10, 60, 27, 1)$ lies on line ℓ_4
 223 : $P_{118630} = (37, 60, 27, 1)$ lies on line ℓ_5
 224 : $P_{118639} = (46, 60, 27, 1)$ lies on line ℓ_6
 225 : $P_{121675} = (10, 44, 28, 1)$ lies on line ℓ_1
 226 : $P_{121702} = (37, 44, 28, 1)$ lies on line ℓ_2
 227 : $P_{121711} = (46, 44, 28, 1)$ lies on line ℓ_3
 228 : $P_{121931} = (10, 48, 28, 1)$ lies on line ℓ_4
 229 : $P_{121958} = (37, 48, 28, 1)$ lies on line ℓ_5
 230 : $P_{121967} = (46, 48, 28, 1)$ lies on line ℓ_6
 231 : $P_{123531} = (10, 9, 29, 1)$ lies on line ℓ_4
 232 : $P_{123558} = (37, 9, 29, 1)$ lies on line ℓ_5
 233 : $P_{123567} = (46, 9, 29, 1)$ lies on line ℓ_6
 234 : $P_{124235} = (10, 20, 29, 1)$ lies on line ℓ_1
 235 : $P_{124262} = (37, 20, 29, 1)$ lies on line ℓ_2
 236 : $P_{124271} = (46, 20, 29, 1)$ lies on line ℓ_3
 237 : $P_{129291} = (10, 35, 30, 1)$ lies on line ℓ_4
 238 : $P_{129318} = (37, 35, 30, 1)$ lies on line ℓ_5
 239 : $P_{129327} = (46, 35, 30, 1)$ lies on line ℓ_6
 240 : $P_{130955} = (10, 61, 30, 1)$ lies on line ℓ_1
 241 : $P_{130982} = (37, 61, 30, 1)$ lies on line ℓ_2
 242 : $P_{130991} = (46, 61, 30, 1)$ lies on line ℓ_3
 243 : $P_{131467} = (10, 5, 31, 1)$ lies on line ℓ_1
 244 : $P_{131494} = (37, 5, 31, 1)$ lies on line ℓ_2
 245 : $P_{131503} = (46, 5, 31, 1)$ lies on line ℓ_3

246 : $P_{132811} = (10, 26, 31, 1)$ lies on line ℓ_4
 247 : $P_{132838} = (37, 26, 31, 1)$ lies on line ℓ_5
 248 : $P_{132847} = (46, 26, 31, 1)$ lies on line ℓ_6
 249 : $P_{136715} = (10, 23, 32, 1)$ lies on line ℓ_4
 250 : $P_{136742} = (37, 23, 32, 1)$ lies on line ℓ_5
 251 : $P_{136751} = (46, 23, 32, 1)$ lies on line ℓ_6
 252 : $P_{138763} = (10, 55, 32, 1)$ lies on line ℓ_1
 253 : $P_{138790} = (37, 55, 32, 1)$ lies on line ℓ_2
 254 : $P_{138799} = (46, 55, 32, 1)$ lies on line ℓ_3
 255 : $P_{140299} = (10, 15, 33, 1)$ lies on line ℓ_1
 256 : $P_{140326} = (37, 15, 33, 1)$ lies on line ℓ_2
 257 : $P_{140335} = (46, 15, 33, 1)$ lies on line ℓ_3
 258 : $P_{142283} = (10, 46, 33, 1)$ lies on line ℓ_4
 259 : $P_{142310} = (37, 46, 33, 1)$ lies on line ℓ_5
 260 : $P_{142319} = (46, 46, 33, 1)$ lies on line ℓ_6
 261 : $P_{143691} = (10, 4, 34, 1)$ lies on line ℓ_4
 262 : $P_{143718} = (37, 4, 34, 1)$ lies on line ℓ_5
 263 : $P_{143727} = (46, 4, 34, 1)$ lies on line ℓ_6
 264 : $P_{145867} = (10, 38, 34, 1)$ lies on line ℓ_1
 265 : $P_{145894} = (37, 38, 34, 1)$ lies on line ℓ_2
 266 : $P_{145903} = (46, 38, 34, 1)$ lies on line ℓ_3
 267 : $P_{149451} = (10, 30, 35, 1)$ lies on line ℓ_1
 268 : $P_{149478} = (37, 30, 35, 1)$ lies on line ℓ_2
 269 : $P_{149487} = (46, 30, 35, 1)$ lies on line ℓ_3
 270 : $P_{151435} = (10, 61, 35, 1)$ lies on line ℓ_4
 271 : $P_{151462} = (37, 61, 35, 1)$ lies on line ℓ_5
 272 : $P_{151471} = (46, 61, 35, 1)$ lies on line ℓ_6
 273 : $P_{152971} = (10, 21, 36, 1)$ lies on line ℓ_1
 274 : $P_{152998} = (37, 21, 36, 1)$ lies on line ℓ_2
 275 : $P_{153007} = (46, 21, 36, 1)$ lies on line ℓ_3
 276 : $P_{154763} = (10, 49, 36, 1)$ lies on line ℓ_4
 277 : $P_{154790} = (37, 49, 36, 1)$ lies on line ℓ_5
 278 : $P_{154799} = (46, 49, 36, 1)$ lies on line ℓ_6
 279 : $P_{156235} = (10, 8, 37, 1)$ lies on line ℓ_4
 280 : $P_{156262} = (37, 8, 37, 1)$ lies on line ℓ_5
 281 : $P_{156271} = (46, 8, 37, 1)$ lies on line ℓ_6
 282 : $P_{158603} = (10, 45, 37, 1)$ lies on line ℓ_1
 283 : $P_{158630} = (37, 45, 37, 1)$ lies on line ℓ_2
 284 : $P_{158639} = (46, 45, 37, 1)$ lies on line ℓ_3
 285 : $P_{160075} = (10, 4, 38, 1)$ lies on line ℓ_1
 286 : $P_{160102} = (37, 4, 38, 1)$ lies on line ℓ_2
 287 : $P_{160111} = (46, 4, 38, 1)$ lies on line ℓ_3
 288 : $P_{161995} = (10, 34, 38, 1)$ lies on line ℓ_4
 289 : $P_{162022} = (37, 34, 38, 1)$ lies on line ℓ_5
 290 : $P_{162031} = (46, 34, 38, 1)$ lies on line ℓ_6
 291 : $P_{165643} = (10, 27, 39, 1)$ lies on line ℓ_4
 292 : $P_{165670} = (37, 27, 39, 1)$ lies on line ℓ_5
 293 : $P_{165679} = (46, 27, 39, 1)$ lies on line ℓ_6
 294 : $P_{167755} = (10, 60, 39, 1)$ lies on line ℓ_1
 295 : $P_{167782} = (37, 60, 39, 1)$ lies on line ℓ_2
 296 : $P_{167791} = (46, 60, 39, 1)$ lies on line ℓ_3
 297 : $P_{169163} = (10, 18, 40, 1)$ lies on line ℓ_1
 298 : $P_{169190} = (37, 18, 40, 1)$ lies on line ℓ_2
 299 : $P_{169199} = (46, 18, 40, 1)$ lies on line ℓ_3

300 : $P_{171723} = (10, 58, 40, 1)$ lies on line ℓ_4
 301 : $P_{171750} = (37, 58, 40, 1)$ lies on line ℓ_5
 302 : $P_{171759} = (46, 58, 40, 1)$ lies on line ℓ_6
 303 : $P_{172299} = (10, 3, 41, 1)$ lies on line ℓ_4
 304 : $P_{172326} = (37, 3, 41, 1)$ lies on line ℓ_5
 305 : $P_{172335} = (46, 3, 41, 1)$ lies on line ℓ_6
 306 : $P_{174795} = (10, 42, 41, 1)$ lies on line ℓ_1
 307 : $P_{174822} = (37, 42, 41, 1)$ lies on line ℓ_2
 308 : $P_{174831} = (46, 42, 41, 1)$ lies on line ℓ_3
 309 : $P_{176395} = (10, 3, 42, 1)$ lies on line ℓ_1
 310 : $P_{176422} = (37, 3, 42, 1)$ lies on line ℓ_2
 311 : $P_{176431} = (46, 3, 42, 1)$ lies on line ℓ_3
 312 : $P_{178827} = (10, 41, 42, 1)$ lies on line ℓ_4
 313 : $P_{178854} = (37, 41, 42, 1)$ lies on line ℓ_5
 314 : $P_{178863} = (46, 41, 42, 1)$ lies on line ℓ_6
 315 : $P_{181323} = (10, 16, 43, 1)$ lies on line ℓ_4
 316 : $P_{181350} = (37, 16, 43, 1)$ lies on line ℓ_5
 317 : $P_{181359} = (46, 16, 43, 1)$ lies on line ℓ_6
 318 : $P_{184075} = (10, 59, 43, 1)$ lies on line ℓ_1
 319 : $P_{184102} = (37, 59, 43, 1)$ lies on line ℓ_2
 320 : $P_{184111} = (46, 59, 43, 1)$ lies on line ℓ_3
 321 : $P_{186187} = (10, 28, 44, 1)$ lies on line ℓ_4
 322 : $P_{186214} = (37, 28, 44, 1)$ lies on line ℓ_5
 323 : $P_{186223} = (46, 28, 44, 1)$ lies on line ℓ_6
 324 : $P_{187467} = (10, 48, 44, 1)$ lies on line ℓ_1
 325 : $P_{187494} = (37, 48, 44, 1)$ lies on line ℓ_2
 326 : $P_{187503} = (46, 48, 44, 1)$ lies on line ℓ_3
 327 : $P_{189003} = (10, 8, 45, 1)$ lies on line ℓ_1
 328 : $P_{189030} = (37, 8, 45, 1)$ lies on line ℓ_2
 329 : $P_{189039} = (46, 8, 45, 1)$ lies on line ℓ_3
 330 : $P_{190859} = (10, 37, 45, 1)$ lies on line ℓ_4
 331 : $P_{190886} = (37, 37, 45, 1)$ lies on line ℓ_5
 332 : $P_{190895} = (46, 37, 45, 1)$ lies on line ℓ_6
 333 : $P_{193547} = (10, 15, 46, 1)$ lies on line ℓ_4
 334 : $P_{193574} = (37, 15, 46, 1)$ lies on line ℓ_5
 335 : $P_{193583} = (46, 15, 46, 1)$ lies on line ℓ_6
 336 : $P_{194699} = (10, 33, 46, 1)$ lies on line ℓ_1
 337 : $P_{194726} = (37, 33, 46, 1)$ lies on line ℓ_2
 338 : $P_{194735} = (46, 33, 46, 1)$ lies on line ℓ_3
 339 : $P_{198283} = (10, 25, 47, 1)$ lies on line ℓ_1
 340 : $P_{198310} = (37, 25, 47, 1)$ lies on line ℓ_2
 341 : $P_{198319} = (46, 25, 47, 1)$ lies on line ℓ_3
 342 : $P_{200139} = (10, 54, 47, 1)$ lies on line ℓ_4
 343 : $P_{200166} = (37, 54, 47, 1)$ lies on line ℓ_5
 344 : $P_{200175} = (46, 54, 47, 1)$ lies on line ℓ_6
 345 : $P_{202571} = (10, 28, 48, 1)$ lies on line ℓ_1
 346 : $P_{202598} = (37, 28, 48, 1)$ lies on line ℓ_2
 347 : $P_{202607} = (46, 28, 48, 1)$ lies on line ℓ_3
 348 : $P_{203595} = (10, 44, 48, 1)$ lies on line ℓ_4
 349 : $P_{203622} = (37, 44, 48, 1)$ lies on line ℓ_5
 350 : $P_{203631} = (46, 44, 48, 1)$ lies on line ℓ_6
 351 : $P_{206219} = (10, 21, 49, 1)$ lies on line ℓ_4
 352 : $P_{206246} = (37, 21, 49, 1)$ lies on line ℓ_5
 353 : $P_{206255} = (46, 21, 49, 1)$ lies on line ℓ_6

354 : $P_{207179} = (10, 36, 49, 1)$ lies on line ℓ_1
 355 : $P_{207206} = (37, 36, 49, 1)$ lies on line ℓ_2
 356 : $P_{207215} = (46, 36, 49, 1)$ lies on line ℓ_3
 357 : $P_{209803} = (10, 13, 50, 1)$ lies on line ℓ_1
 358 : $P_{209830} = (37, 13, 50, 1)$ lies on line ℓ_2
 359 : $P_{209839} = (46, 13, 50, 1)$ lies on line ℓ_3
 360 : $P_{213003} = (10, 63, 50, 1)$ lies on line ℓ_4
 361 : $P_{213030} = (37, 63, 50, 1)$ lies on line ℓ_5
 362 : $P_{213039} = (46, 63, 50, 1)$ lies on line ℓ_6
 363 : $P_{213451} = (10, 6, 51, 1)$ lies on line ℓ_4
 364 : $P_{213478} = (37, 6, 51, 1)$ lies on line ℓ_5
 365 : $P_{213487} = (46, 6, 51, 1)$ lies on line ℓ_6
 366 : $P_{216459} = (10, 53, 51, 1)$ lies on line ℓ_1
 367 : $P_{216486} = (37, 53, 51, 1)$ lies on line ℓ_2
 368 : $P_{216495} = (46, 53, 51, 1)$ lies on line ℓ_3
 369 : $P_{217803} = (10, 10, 52, 1)$ lies on line ℓ_4
 370 : $P_{217830} = (37, 10, 52, 1)$ lies on line ℓ_5
 371 : $P_{217839} = (46, 10, 52, 1)$ lies on line ℓ_6
 372 : $P_{221131} = (10, 62, 52, 1)$ lies on line ℓ_1
 373 : $P_{221158} = (37, 62, 52, 1)$ lies on line ℓ_2
 374 : $P_{221167} = (46, 62, 52, 1)$ lies on line ℓ_3
 375 : $P_{221643} = (10, 6, 53, 1)$ lies on line ℓ_1
 376 : $P_{221670} = (37, 6, 53, 1)$ lies on line ℓ_2
 377 : $P_{221679} = (46, 6, 53, 1)$ lies on line ℓ_3
 378 : $P_{224523} = (10, 51, 53, 1)$ lies on line ℓ_4
 379 : $P_{224550} = (37, 51, 53, 1)$ lies on line ℓ_5
 380 : $P_{224559} = (46, 51, 53, 1)$ lies on line ℓ_6
 381 : $P_{226955} = (10, 25, 54, 1)$ lies on line ℓ_4
 382 : $P_{226982} = (37, 25, 54, 1)$ lies on line ℓ_5
 383 : $P_{226991} = (46, 25, 54, 1)$ lies on line ℓ_6
 384 : $P_{228363} = (10, 47, 54, 1)$ lies on line ℓ_1
 385 : $P_{228390} = (37, 47, 54, 1)$ lies on line ℓ_2
 386 : $P_{228399} = (46, 47, 54, 1)$ lies on line ℓ_3
 387 : $P_{230923} = (10, 23, 55, 1)$ lies on line ℓ_1
 388 : $P_{230950} = (37, 23, 55, 1)$ lies on line ℓ_2
 389 : $P_{230959} = (46, 23, 55, 1)$ lies on line ℓ_3
 390 : $P_{231499} = (10, 32, 55, 1)$ lies on line ℓ_4
 391 : $P_{231526} = (37, 32, 55, 1)$ lies on line ℓ_5
 392 : $P_{231535} = (46, 32, 55, 1)$ lies on line ℓ_6
 393 : $P_{233611} = (10, 1, 56, 1)$ lies on line ℓ_4
 394 : $P_{233638} = (37, 1, 56, 1)$ lies on line ℓ_5
 395 : $P_{233647} = (46, 1, 56, 1)$ lies on line ℓ_6
 396 : $P_{237195} = (10, 57, 56, 1)$ lies on line ℓ_1
 397 : $P_{237222} = (37, 57, 56, 1)$ lies on line ℓ_2
 398 : $P_{237231} = (46, 57, 56, 1)$ lies on line ℓ_3
 399 : $P_{237707} = (10, 1, 57, 1)$ lies on line ℓ_1
 400 : $P_{237734} = (37, 1, 57, 1)$ lies on line ℓ_2
 401 : $P_{237743} = (46, 1, 57, 1)$ lies on line ℓ_3
 402 : $P_{241227} = (10, 56, 57, 1)$ lies on line ℓ_4
 403 : $P_{241254} = (37, 56, 57, 1)$ lies on line ℓ_5
 404 : $P_{241263} = (46, 56, 57, 1)$ lies on line ℓ_6
 405 : $P_{242891} = (10, 18, 58, 1)$ lies on line ℓ_4
 406 : $P_{242918} = (37, 18, 58, 1)$ lies on line ℓ_5
 407 : $P_{242927} = (46, 18, 58, 1)$ lies on line ℓ_6
 408 : $P_{244299} = (10, 40, 58, 1)$ lies on line ℓ_1
 409 : $P_{244326} = (37, 40, 58, 1)$ lies on line ℓ_2
 410 : $P_{244335} = (46, 40, 58, 1)$ lies on line ℓ_3
 411 : $P_{246859} = (10, 16, 59, 1)$ lies on line ℓ_1
 412 : $P_{246886} = (37, 16, 59, 1)$ lies on line ℓ_2
 413 : $P_{246895} = (46, 16, 59, 1)$ lies on line ℓ_3
 414 : $P_{248587} = (10, 43, 59, 1)$ lies on line ℓ_4
 415 : $P_{248614} = (37, 43, 59, 1)$ lies on line ℓ_5
 416 : $P_{248623} = (46, 43, 59, 1)$ lies on line ℓ_6
 417 : $P_{251659} = (10, 27, 60, 1)$ lies on line ℓ_1
 418 : $P_{251686} = (37, 27, 60, 1)$ lies on line ℓ_2
 419 : $P_{251695} = (46, 27, 60, 1)$ lies on line ℓ_3
 420 : $P_{252427} = (10, 39, 60, 1)$ lies on line ℓ_4
 421 : $P_{252454} = (37, 39, 60, 1)$ lies on line ℓ_5
 422 : $P_{252463} = (46, 39, 60, 1)$ lies on line ℓ_6
 423 : $P_{255947} = (10, 30, 61, 1)$ lies on line ℓ_4
 424 : $P_{255974} = (37, 30, 61, 1)$ lies on line ℓ_5
 425 : $P_{255983} = (46, 30, 61, 1)$ lies on line ℓ_6
 426 : $P_{256267} = (10, 35, 61, 1)$ lies on line ℓ_1
 427 : $P_{256294} = (37, 35, 61, 1)$ lies on line ℓ_2
 428 : $P_{256303} = (46, 35, 61, 1)$ lies on line ℓ_3
 429 : $P_{258763} = (10, 10, 62, 1)$ lies on line ℓ_1
 430 : $P_{258790} = (37, 10, 62, 1)$ lies on line ℓ_2
 431 : $P_{258799} = (46, 10, 62, 1)$ lies on line ℓ_3
 432 : $P_{261451} = (10, 52, 62, 1)$ lies on line ℓ_4
 433 : $P_{261478} = (37, 52, 62, 1)$ lies on line ℓ_5
 434 : $P_{261487} = (46, 52, 62, 1)$ lies on line ℓ_6
 435 : $P_{263051} = (10, 13, 63, 1)$ lies on line ℓ_4
 436 : $P_{263078} = (37, 13, 63, 1)$ lies on line ℓ_5
 437 : $P_{263087} = (46, 13, 63, 1)$ lies on line ℓ_6
 438 : $P_{265419} = (10, 50, 63, 1)$ lies on line ℓ_1
 439 : $P_{265446} = (37, 50, 63, 1)$ lies on line ℓ_2
 440 : $P_{265455} = (46, 50, 63, 1)$ lies on line ℓ_3

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	1	1	1	0	0
2	1	1	0	1	0	1	0
3	1	1	1	0	0	0	1
4	1	1	0	0	0	1	1
5	1	0	1	0	1	0	1
6	1	0	0	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
in point	P_{3651}	P_{3651}	P_{3651}	P_{3715}	P_{3715}	P_{3715}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4
in point	P_{3651}	P_{3651}	P_{3651}	P_{4172}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_5
in point	P_{3651}	P_{3651}	P_{3651}	P_{4199}

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_6
in point	P_{3651}	P_{3651}	P_{3651}	P_{4208}

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_5	ℓ_6
in point	P_{3715}	P_{4172}	P_{3715}	P_{3715}

Line 5 intersects

Line	ℓ_0	ℓ_2	ℓ_4	ℓ_6
in point	P_{3715}	P_{4199}	P_{3715}	P_{3715}

Line 6 intersects

Line	ℓ_0	ℓ_3	ℓ_4	ℓ_5
in point	P_{3715}	P_{4208}	P_{3715}	P_{3715}

The surface has 4289 points:

Too many to print.