

Rank-65759 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(64) is 1107828805

General information

Number of lines	5
Number of points	4225
Number of singular points	1
Number of Eckardt points	1
Number of double points	3
Number of single points	316
Number of points off lines	3905
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^5
Type of lines on points	$3, 2^3, 1^{316}, 0^{3905}$

Singular Points

The surface has 1 singular points:

$$0 : P_4 = \mathbf{P}(1, 1, 1, 1) = \mathbf{P}(1, 1, 1, 1)$$

The 5 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{65} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{65} = \mathbf{Pl}(1, 0, 1, 0, 1, 0)_{4353}$$

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{17043457} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{17043457} = \mathbf{PI}(0, 0, 0, 1, 0, 1)_{278529} \\
\ell_2 &= \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{21} \end{bmatrix}_{17043513} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 57 \end{bmatrix}_{17043513} = \mathbf{PI}(0, 0, 0, 57, 0, 1)_{285641} \\
\ell_3 &= \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{42} \end{bmatrix}_{17043512} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 56 \end{bmatrix}_{17043512} = \mathbf{PI}(0, 0, 0, 56, 0, 1)_{285514} \\
\ell_4 &= \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{8258} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{8258} = \mathbf{PI}(0, 0, 1, 1, 1, 1)_{544578}
\end{aligned}$$

Rank of lines: (65, 17043457, 17043513, 17043512, 8258)

Rank of points on Klein quadric: (4353, 278529, 285641, 285514, 544578)

Eckardt Points

The surface has 1 Eckardt points:

$$0 : P_1 = \mathbf{P}(0, 1, 0, 0) = \mathbf{P}(0, 1, 0, 0).$$

Double Points

The surface has 3 Double points:

The double points on the surface are:

$$\begin{aligned}
P_{8322} &= (0, 1, 1, 1) = \ell_0 \cap \ell_1 \\
P_4 &= (1, 1, 1, 1) = \ell_0 \cap \ell_4
\end{aligned}$$

$$P_{8258} = (0, 0, 1, 1) = \ell_1 \cap \ell_4$$

Single Points

The surface has 316 single points:

The single points on the surface are:

- 0 : $P_0 = (1, 0, 0, 0)$ lies on line ℓ_0
- 1 : $P_5 = (1, 1, 0, 0)$ lies on line ℓ_4
- 2 : $P_{8323} = (2, 1, 1, 1)$ lies on line ℓ_0
- 3 : $P_{8324} = (3, 1, 1, 1)$ lies on line ℓ_0
- 4 : $P_{8325} = (4, 1, 1, 1)$ lies on line ℓ_0
- 5 : $P_{8326} = (5, 1, 1, 1)$ lies on line ℓ_0
- 6 : $P_{8327} = (6, 1, 1, 1)$ lies on line ℓ_0
- 7 : $P_{8328} = (7, 1, 1, 1)$ lies on line ℓ_0
- 8 : $P_{8329} = (8, 1, 1, 1)$ lies on line ℓ_0
- 9 : $P_{8330} = (9, 1, 1, 1)$ lies on line ℓ_0
- 10 : $P_{8331} = (10, 1, 1, 1)$ lies on line ℓ_0
- 11 : $P_{8332} = (11, 1, 1, 1)$ lies on line ℓ_0
- 12 : $P_{8333} = (12, 1, 1, 1)$ lies on line ℓ_0
- 13 : $P_{8334} = (13, 1, 1, 1)$ lies on line ℓ_0
- 14 : $P_{8335} = (14, 1, 1, 1)$ lies on line ℓ_0
- 15 : $P_{8336} = (15, 1, 1, 1)$ lies on line ℓ_0
- 16 : $P_{8337} = (16, 1, 1, 1)$ lies on line ℓ_0
- 17 : $P_{8338} = (17, 1, 1, 1)$ lies on line ℓ_0
- 18 : $P_{8339} = (18, 1, 1, 1)$ lies on line ℓ_0

- 19 : $P_{8340} = (19, 1, 1, 1)$ lies on line ℓ_0
- 20 : $P_{8341} = (20, 1, 1, 1)$ lies on line ℓ_0
- 21 : $P_{8342} = (21, 1, 1, 1)$ lies on line ℓ_0
- 22 : $P_{8343} = (22, 1, 1, 1)$ lies on line ℓ_0
- 23 : $P_{8344} = (23, 1, 1, 1)$ lies on line ℓ_0
- 24 : $P_{8345} = (24, 1, 1, 1)$ lies on line ℓ_0
- 25 : $P_{8346} = (25, 1, 1, 1)$ lies on line ℓ_0
- 26 : $P_{8347} = (26, 1, 1, 1)$ lies on line ℓ_0
- 27 : $P_{8348} = (27, 1, 1, 1)$ lies on line ℓ_0
- 28 : $P_{8349} = (28, 1, 1, 1)$ lies on line ℓ_0
- 29 : $P_{8350} = (29, 1, 1, 1)$ lies on line ℓ_0
- 30 : $P_{8351} = (30, 1, 1, 1)$ lies on line ℓ_0
- 31 : $P_{8352} = (31, 1, 1, 1)$ lies on line ℓ_0
- 32 : $P_{8353} = (32, 1, 1, 1)$ lies on line ℓ_0
- 33 : $P_{8354} = (33, 1, 1, 1)$ lies on line ℓ_0
- 34 : $P_{8355} = (34, 1, 1, 1)$ lies on line ℓ_0
- 35 : $P_{8356} = (35, 1, 1, 1)$ lies on line ℓ_0
- 36 : $P_{8357} = (36, 1, 1, 1)$ lies on line ℓ_0
- 37 : $P_{8358} = (37, 1, 1, 1)$ lies on line ℓ_0

- 38 : $P_{8359} = (38, 1, 1, 1)$ lies on line ℓ_0
 39 : $P_{8360} = (39, 1, 1, 1)$ lies on line ℓ_0
 40 : $P_{8361} = (40, 1, 1, 1)$ lies on line ℓ_0
 41 : $P_{8362} = (41, 1, 1, 1)$ lies on line ℓ_0
 42 : $P_{8363} = (42, 1, 1, 1)$ lies on line ℓ_0
 43 : $P_{8364} = (43, 1, 1, 1)$ lies on line ℓ_0
 44 : $P_{8365} = (44, 1, 1, 1)$ lies on line ℓ_0
 45 : $P_{8366} = (45, 1, 1, 1)$ lies on line ℓ_0
 46 : $P_{8367} = (46, 1, 1, 1)$ lies on line ℓ_0
 47 : $P_{8368} = (47, 1, 1, 1)$ lies on line ℓ_0
 48 : $P_{8369} = (48, 1, 1, 1)$ lies on line ℓ_0
 49 : $P_{8370} = (49, 1, 1, 1)$ lies on line ℓ_0
 50 : $P_{8371} = (50, 1, 1, 1)$ lies on line ℓ_0
 51 : $P_{8372} = (51, 1, 1, 1)$ lies on line ℓ_0
 52 : $P_{8373} = (52, 1, 1, 1)$ lies on line ℓ_0
 53 : $P_{8374} = (53, 1, 1, 1)$ lies on line ℓ_0
 54 : $P_{8375} = (54, 1, 1, 1)$ lies on line ℓ_0
 55 : $P_{8376} = (55, 1, 1, 1)$ lies on line ℓ_0
 56 : $P_{8377} = (56, 1, 1, 1)$ lies on line ℓ_0
 57 : $P_{8378} = (57, 1, 1, 1)$ lies on line ℓ_0
 58 : $P_{8379} = (58, 1, 1, 1)$ lies on line ℓ_0
 59 : $P_{8380} = (59, 1, 1, 1)$ lies on line ℓ_0
 60 : $P_{8381} = (60, 1, 1, 1)$ lies on line ℓ_0
 61 : $P_{8382} = (61, 1, 1, 1)$ lies on line ℓ_0
 62 : $P_{8383} = (62, 1, 1, 1)$ lies on line ℓ_0
 63 : $P_{8384} = (63, 1, 1, 1)$ lies on line ℓ_0
 64 : $P_{8385} = (0, 2, 1, 1)$ lies on line ℓ_1
 65 : $P_{8387} = (2, 2, 1, 1)$ lies on line ℓ_4
 66 : $P_{8449} = (0, 3, 1, 1)$ lies on line ℓ_1
 67 : $P_{8452} = (3, 3, 1, 1)$ lies on line ℓ_4
 68 : $P_{8513} = (0, 4, 1, 1)$ lies on line ℓ_1
 69 : $P_{8517} = (4, 4, 1, 1)$ lies on line ℓ_4
 70 : $P_{8577} = (0, 5, 1, 1)$ lies on line ℓ_1
 71 : $P_{8582} = (5, 5, 1, 1)$ lies on line ℓ_4
 72 : $P_{8641} = (0, 6, 1, 1)$ lies on line ℓ_1
 73 : $P_{8647} = (6, 6, 1, 1)$ lies on line ℓ_4
 74 : $P_{8705} = (0, 7, 1, 1)$ lies on line ℓ_1
 75 : $P_{8712} = (7, 7, 1, 1)$ lies on line ℓ_4
 76 : $P_{8769} = (0, 8, 1, 1)$ lies on line ℓ_1
 77 : $P_{8777} = (8, 8, 1, 1)$ lies on line ℓ_4
 78 : $P_{8833} = (0, 9, 1, 1)$ lies on line ℓ_1
 79 : $P_{8842} = (9, 9, 1, 1)$ lies on line ℓ_4
 80 : $P_{8897} = (0, 10, 1, 1)$ lies on line ℓ_1
 81 : $P_{8907} = (10, 10, 1, 1)$ lies on line ℓ_4
 82 : $P_{8961} = (0, 11, 1, 1)$ lies on line ℓ_1
 83 : $P_{8972} = (11, 11, 1, 1)$ lies on line ℓ_4
 84 : $P_{9025} = (0, 12, 1, 1)$ lies on line ℓ_1
 85 : $P_{9037} = (12, 12, 1, 1)$ lies on line ℓ_4
 86 : $P_{9089} = (0, 13, 1, 1)$ lies on line ℓ_1
 87 : $P_{9102} = (13, 13, 1, 1)$ lies on line ℓ_4
 88 : $P_{9153} = (0, 14, 1, 1)$ lies on line ℓ_1
 89 : $P_{9167} = (14, 14, 1, 1)$ lies on line ℓ_4
 90 : $P_{9217} = (0, 15, 1, 1)$ lies on line ℓ_1
 91 : $P_{9232} = (15, 15, 1, 1)$ lies on line ℓ_4
 92 : $P_{9281} = (0, 16, 1, 1)$ lies on line ℓ_1
 93 : $P_{9297} = (16, 16, 1, 1)$ lies on line ℓ_4
 94 : $P_{9345} = (0, 17, 1, 1)$ lies on line ℓ_1
 95 : $P_{9362} = (17, 17, 1, 1)$ lies on line ℓ_4
 96 : $P_{9409} = (0, 18, 1, 1)$ lies on line ℓ_1
 97 : $P_{9427} = (18, 18, 1, 1)$ lies on line ℓ_4
 98 : $P_{9473} = (0, 19, 1, 1)$ lies on line ℓ_1
 99 : $P_{9492} = (19, 19, 1, 1)$ lies on line ℓ_4
 100 : $P_{9537} = (0, 20, 1, 1)$ lies on line ℓ_1
 101 : $P_{9557} = (20, 20, 1, 1)$ lies on line ℓ_4
 102 : $P_{9601} = (0, 21, 1, 1)$ lies on line ℓ_1
 103 : $P_{9622} = (21, 21, 1, 1)$ lies on line ℓ_4
 104 : $P_{9665} = (0, 22, 1, 1)$ lies on line ℓ_1
 105 : $P_{9687} = (22, 22, 1, 1)$ lies on line ℓ_4
 106 : $P_{9729} = (0, 23, 1, 1)$ lies on line ℓ_1
 107 : $P_{9752} = (23, 23, 1, 1)$ lies on line ℓ_4
 108 : $P_{9793} = (0, 24, 1, 1)$ lies on line ℓ_1
 109 : $P_{9817} = (24, 24, 1, 1)$ lies on line ℓ_4
 110 : $P_{9857} = (0, 25, 1, 1)$ lies on line ℓ_1
 111 : $P_{9882} = (25, 25, 1, 1)$ lies on line ℓ_4
 112 : $P_{9921} = (0, 26, 1, 1)$ lies on line ℓ_1
 113 : $P_{9947} = (26, 26, 1, 1)$ lies on line ℓ_4
 114 : $P_{9985} = (0, 27, 1, 1)$ lies on line ℓ_1
 115 : $P_{10012} = (27, 27, 1, 1)$ lies on line ℓ_4
 116 : $P_{10049} = (0, 28, 1, 1)$ lies on line ℓ_1
 117 : $P_{10077} = (28, 28, 1, 1)$ lies on line ℓ_4
 118 : $P_{10113} = (0, 29, 1, 1)$ lies on line ℓ_1
 119 : $P_{10142} = (29, 29, 1, 1)$ lies on line ℓ_4
 120 : $P_{10177} = (0, 30, 1, 1)$ lies on line ℓ_1
 121 : $P_{10207} = (30, 30, 1, 1)$ lies on line ℓ_4
 122 : $P_{10241} = (0, 31, 1, 1)$ lies on line ℓ_1
 123 : $P_{10272} = (31, 31, 1, 1)$ lies on line ℓ_4
 124 : $P_{10305} = (0, 32, 1, 1)$ lies on line ℓ_1
 125 : $P_{10337} = (32, 32, 1, 1)$ lies on line ℓ_4
 126 : $P_{10369} = (0, 33, 1, 1)$ lies on line ℓ_1
 127 : $P_{10402} = (33, 33, 1, 1)$ lies on line ℓ_4
 128 : $P_{10433} = (0, 34, 1, 1)$ lies on line ℓ_1
 129 : $P_{10467} = (34, 34, 1, 1)$ lies on line ℓ_4
 130 : $P_{10497} = (0, 35, 1, 1)$ lies on line ℓ_1
 131 : $P_{10532} = (35, 35, 1, 1)$ lies on line ℓ_4
 132 : $P_{10561} = (0, 36, 1, 1)$ lies on line ℓ_1
 133 : $P_{10597} = (36, 36, 1, 1)$ lies on line ℓ_4
 134 : $P_{10625} = (0, 37, 1, 1)$ lies on line ℓ_1
 135 : $P_{10662} = (37, 37, 1, 1)$ lies on line ℓ_4
 136 : $P_{10689} = (0, 38, 1, 1)$ lies on line ℓ_1
 137 : $P_{10727} = (38, 38, 1, 1)$ lies on line ℓ_4
 138 : $P_{10753} = (0, 39, 1, 1)$ lies on line ℓ_1
 139 : $P_{10792} = (39, 39, 1, 1)$ lies on line ℓ_4
 140 : $P_{10817} = (0, 40, 1, 1)$ lies on line ℓ_1
 141 : $P_{10857} = (40, 40, 1, 1)$ lies on line ℓ_4
 142 : $P_{10881} = (0, 41, 1, 1)$ lies on line ℓ_1
 143 : $P_{10922} = (41, 41, 1, 1)$ lies on line ℓ_4
 144 : $P_{10945} = (0, 42, 1, 1)$ lies on line ℓ_1
 145 : $P_{10987} = (42, 42, 1, 1)$ lies on line ℓ_4

146 : $P_{11009} = (0, 43, 1, 1)$ lies on line ℓ_1
 147 : $P_{11052} = (43, 43, 1, 1)$ lies on line ℓ_4
 148 : $P_{11073} = (0, 44, 1, 1)$ lies on line ℓ_1
 149 : $P_{11117} = (44, 44, 1, 1)$ lies on line ℓ_4
 150 : $P_{11137} = (0, 45, 1, 1)$ lies on line ℓ_1
 151 : $P_{11182} = (45, 45, 1, 1)$ lies on line ℓ_4
 152 : $P_{11201} = (0, 46, 1, 1)$ lies on line ℓ_1
 153 : $P_{11247} = (46, 46, 1, 1)$ lies on line ℓ_4
 154 : $P_{11265} = (0, 47, 1, 1)$ lies on line ℓ_1
 155 : $P_{11312} = (47, 47, 1, 1)$ lies on line ℓ_4
 156 : $P_{11329} = (0, 48, 1, 1)$ lies on line ℓ_1
 157 : $P_{11377} = (48, 48, 1, 1)$ lies on line ℓ_4
 158 : $P_{11393} = (0, 49, 1, 1)$ lies on line ℓ_1
 159 : $P_{11442} = (49, 49, 1, 1)$ lies on line ℓ_4
 160 : $P_{11457} = (0, 50, 1, 1)$ lies on line ℓ_1
 161 : $P_{11507} = (50, 50, 1, 1)$ lies on line ℓ_4
 162 : $P_{11521} = (0, 51, 1, 1)$ lies on line ℓ_1
 163 : $P_{11572} = (51, 51, 1, 1)$ lies on line ℓ_4
 164 : $P_{11585} = (0, 52, 1, 1)$ lies on line ℓ_1
 165 : $P_{11637} = (52, 52, 1, 1)$ lies on line ℓ_4
 166 : $P_{11649} = (0, 53, 1, 1)$ lies on line ℓ_1
 167 : $P_{11702} = (53, 53, 1, 1)$ lies on line ℓ_4
 168 : $P_{11713} = (0, 54, 1, 1)$ lies on line ℓ_1
 169 : $P_{11767} = (54, 54, 1, 1)$ lies on line ℓ_4
 170 : $P_{11777} = (0, 55, 1, 1)$ lies on line ℓ_1
 171 : $P_{11832} = (55, 55, 1, 1)$ lies on line ℓ_4
 172 : $P_{11841} = (0, 56, 1, 1)$ lies on line ℓ_1
 173 : $P_{11897} = (56, 56, 1, 1)$ lies on line ℓ_4
 174 : $P_{11905} = (0, 57, 1, 1)$ lies on line ℓ_1
 175 : $P_{11962} = (57, 57, 1, 1)$ lies on line ℓ_4
 176 : $P_{11969} = (0, 58, 1, 1)$ lies on line ℓ_1
 177 : $P_{12027} = (58, 58, 1, 1)$ lies on line ℓ_4
 178 : $P_{12033} = (0, 59, 1, 1)$ lies on line ℓ_1
 179 : $P_{12092} = (59, 59, 1, 1)$ lies on line ℓ_4
 180 : $P_{12097} = (0, 60, 1, 1)$ lies on line ℓ_1
 181 : $P_{12157} = (60, 60, 1, 1)$ lies on line ℓ_4
 182 : $P_{12161} = (0, 61, 1, 1)$ lies on line ℓ_1
 183 : $P_{12222} = (61, 61, 1, 1)$ lies on line ℓ_4
 184 : $P_{12225} = (0, 62, 1, 1)$ lies on line ℓ_1
 185 : $P_{12287} = (62, 62, 1, 1)$ lies on line ℓ_4
 186 : $P_{12289} = (0, 63, 1, 1)$ lies on line ℓ_1
 187 : $P_{12352} = (63, 63, 1, 1)$ lies on line ℓ_4
 188 : $P_{233537} = (0, 0, 56, 1)$ lies on line ℓ_2
 189 : $P_{233601} = (0, 1, 56, 1)$ lies on line ℓ_2
 190 : $P_{233665} = (0, 2, 56, 1)$ lies on line ℓ_2
 191 : $P_{233729} = (0, 3, 56, 1)$ lies on line ℓ_2
 192 : $P_{233793} = (0, 4, 56, 1)$ lies on line ℓ_2
 193 : $P_{233857} = (0, 5, 56, 1)$ lies on line ℓ_2
 194 : $P_{233921} = (0, 6, 56, 1)$ lies on line ℓ_2
 195 : $P_{233985} = (0, 7, 56, 1)$ lies on line ℓ_2
 196 : $P_{234049} = (0, 8, 56, 1)$ lies on line ℓ_2
 197 : $P_{234113} = (0, 9, 56, 1)$ lies on line ℓ_2
 198 : $P_{234177} = (0, 10, 56, 1)$ lies on line ℓ_2
 199 : $P_{234241} = (0, 11, 56, 1)$ lies on line ℓ_2

200 : $P_{234305} = (0, 12, 56, 1)$ lies on line ℓ_2
 201 : $P_{234369} = (0, 13, 56, 1)$ lies on line ℓ_2
 202 : $P_{234433} = (0, 14, 56, 1)$ lies on line ℓ_2
 203 : $P_{234497} = (0, 15, 56, 1)$ lies on line ℓ_2
 204 : $P_{234561} = (0, 16, 56, 1)$ lies on line ℓ_2
 205 : $P_{234625} = (0, 17, 56, 1)$ lies on line ℓ_2
 206 : $P_{234689} = (0, 18, 56, 1)$ lies on line ℓ_2
 207 : $P_{234753} = (0, 19, 56, 1)$ lies on line ℓ_2
 208 : $P_{234817} = (0, 20, 56, 1)$ lies on line ℓ_2
 209 : $P_{234881} = (0, 21, 56, 1)$ lies on line ℓ_2
 210 : $P_{234945} = (0, 22, 56, 1)$ lies on line ℓ_2
 211 : $P_{235009} = (0, 23, 56, 1)$ lies on line ℓ_2
 212 : $P_{235073} = (0, 24, 56, 1)$ lies on line ℓ_2
 213 : $P_{235137} = (0, 25, 56, 1)$ lies on line ℓ_2
 214 : $P_{235201} = (0, 26, 56, 1)$ lies on line ℓ_2
 215 : $P_{235265} = (0, 27, 56, 1)$ lies on line ℓ_2
 216 : $P_{235329} = (0, 28, 56, 1)$ lies on line ℓ_2
 217 : $P_{235393} = (0, 29, 56, 1)$ lies on line ℓ_2
 218 : $P_{235457} = (0, 30, 56, 1)$ lies on line ℓ_2
 219 : $P_{235521} = (0, 31, 56, 1)$ lies on line ℓ_2
 220 : $P_{235585} = (0, 32, 56, 1)$ lies on line ℓ_2
 221 : $P_{235649} = (0, 33, 56, 1)$ lies on line ℓ_2
 222 : $P_{235713} = (0, 34, 56, 1)$ lies on line ℓ_2
 223 : $P_{235777} = (0, 35, 56, 1)$ lies on line ℓ_2
 224 : $P_{235841} = (0, 36, 56, 1)$ lies on line ℓ_2
 225 : $P_{235905} = (0, 37, 56, 1)$ lies on line ℓ_2
 226 : $P_{235969} = (0, 38, 56, 1)$ lies on line ℓ_2
 227 : $P_{236033} = (0, 39, 56, 1)$ lies on line ℓ_2
 228 : $P_{236097} = (0, 40, 56, 1)$ lies on line ℓ_2
 229 : $P_{236161} = (0, 41, 56, 1)$ lies on line ℓ_2
 230 : $P_{236225} = (0, 42, 56, 1)$ lies on line ℓ_2
 231 : $P_{236289} = (0, 43, 56, 1)$ lies on line ℓ_2
 232 : $P_{236353} = (0, 44, 56, 1)$ lies on line ℓ_2
 233 : $P_{236417} = (0, 45, 56, 1)$ lies on line ℓ_2
 234 : $P_{236481} = (0, 46, 56, 1)$ lies on line ℓ_2
 235 : $P_{236545} = (0, 47, 56, 1)$ lies on line ℓ_2
 236 : $P_{236609} = (0, 48, 56, 1)$ lies on line ℓ_2
 237 : $P_{236673} = (0, 49, 56, 1)$ lies on line ℓ_2
 238 : $P_{236737} = (0, 50, 56, 1)$ lies on line ℓ_2
 239 : $P_{236801} = (0, 51, 56, 1)$ lies on line ℓ_2
 240 : $P_{236865} = (0, 52, 56, 1)$ lies on line ℓ_2
 241 : $P_{236929} = (0, 53, 56, 1)$ lies on line ℓ_2
 242 : $P_{236993} = (0, 54, 56, 1)$ lies on line ℓ_2
 243 : $P_{237057} = (0, 55, 56, 1)$ lies on line ℓ_2
 244 : $P_{237121} = (0, 56, 56, 1)$ lies on line ℓ_2
 245 : $P_{237185} = (0, 57, 56, 1)$ lies on line ℓ_2
 246 : $P_{237249} = (0, 58, 56, 1)$ lies on line ℓ_2
 247 : $P_{237313} = (0, 59, 56, 1)$ lies on line ℓ_2
 248 : $P_{237377} = (0, 60, 56, 1)$ lies on line ℓ_2
 249 : $P_{237441} = (0, 61, 56, 1)$ lies on line ℓ_2
 250 : $P_{237505} = (0, 62, 56, 1)$ lies on line ℓ_2
 251 : $P_{237569} = (0, 63, 56, 1)$ lies on line ℓ_2
 252 : $P_{237633} = (0, 0, 57, 1)$ lies on line ℓ_3
 253 : $P_{237697} = (0, 1, 57, 1)$ lies on line ℓ_3

254 : $P_{237761} = (0, 2, 57, 1)$ lies on line ℓ_3
 255 : $P_{237825} = (0, 3, 57, 1)$ lies on line ℓ_3
 256 : $P_{237889} = (0, 4, 57, 1)$ lies on line ℓ_3
 257 : $P_{237953} = (0, 5, 57, 1)$ lies on line ℓ_3
 258 : $P_{238017} = (0, 6, 57, 1)$ lies on line ℓ_3
 259 : $P_{238081} = (0, 7, 57, 1)$ lies on line ℓ_3
 260 : $P_{238145} = (0, 8, 57, 1)$ lies on line ℓ_3
 261 : $P_{238209} = (0, 9, 57, 1)$ lies on line ℓ_3
 262 : $P_{238273} = (0, 10, 57, 1)$ lies on line ℓ_3
 263 : $P_{238337} = (0, 11, 57, 1)$ lies on line ℓ_3
 264 : $P_{238401} = (0, 12, 57, 1)$ lies on line ℓ_3
 265 : $P_{238465} = (0, 13, 57, 1)$ lies on line ℓ_3
 266 : $P_{238529} = (0, 14, 57, 1)$ lies on line ℓ_3
 267 : $P_{238593} = (0, 15, 57, 1)$ lies on line ℓ_3
 268 : $P_{238657} = (0, 16, 57, 1)$ lies on line ℓ_3
 269 : $P_{238721} = (0, 17, 57, 1)$ lies on line ℓ_3
 270 : $P_{238785} = (0, 18, 57, 1)$ lies on line ℓ_3
 271 : $P_{238849} = (0, 19, 57, 1)$ lies on line ℓ_3
 272 : $P_{238913} = (0, 20, 57, 1)$ lies on line ℓ_3
 273 : $P_{238977} = (0, 21, 57, 1)$ lies on line ℓ_3
 274 : $P_{239041} = (0, 22, 57, 1)$ lies on line ℓ_3
 275 : $P_{239105} = (0, 23, 57, 1)$ lies on line ℓ_3
 276 : $P_{239169} = (0, 24, 57, 1)$ lies on line ℓ_3
 277 : $P_{239233} = (0, 25, 57, 1)$ lies on line ℓ_3
 278 : $P_{239297} = (0, 26, 57, 1)$ lies on line ℓ_3
 279 : $P_{239361} = (0, 27, 57, 1)$ lies on line ℓ_3
 280 : $P_{239425} = (0, 28, 57, 1)$ lies on line ℓ_3
 281 : $P_{239489} = (0, 29, 57, 1)$ lies on line ℓ_3
 282 : $P_{239553} = (0, 30, 57, 1)$ lies on line ℓ_3
 283 : $P_{239617} = (0, 31, 57, 1)$ lies on line ℓ_3
 284 : $P_{239681} = (0, 32, 57, 1)$ lies on line ℓ_3
 285 : $P_{239745} = (0, 33, 57, 1)$ lies on line ℓ_3

286 : $P_{239809} = (0, 34, 57, 1)$ lies on line ℓ_3
 287 : $P_{239873} = (0, 35, 57, 1)$ lies on line ℓ_3
 288 : $P_{239937} = (0, 36, 57, 1)$ lies on line ℓ_3
 289 : $P_{240001} = (0, 37, 57, 1)$ lies on line ℓ_3
 290 : $P_{240065} = (0, 38, 57, 1)$ lies on line ℓ_3
 291 : $P_{240129} = (0, 39, 57, 1)$ lies on line ℓ_3
 292 : $P_{240193} = (0, 40, 57, 1)$ lies on line ℓ_3
 293 : $P_{240257} = (0, 41, 57, 1)$ lies on line ℓ_3
 294 : $P_{240321} = (0, 42, 57, 1)$ lies on line ℓ_3
 295 : $P_{240385} = (0, 43, 57, 1)$ lies on line ℓ_3
 296 : $P_{240449} = (0, 44, 57, 1)$ lies on line ℓ_3
 297 : $P_{240513} = (0, 45, 57, 1)$ lies on line ℓ_3
 298 : $P_{240577} = (0, 46, 57, 1)$ lies on line ℓ_3
 299 : $P_{240641} = (0, 47, 57, 1)$ lies on line ℓ_3
 300 : $P_{240705} = (0, 48, 57, 1)$ lies on line ℓ_3
 301 : $P_{240769} = (0, 49, 57, 1)$ lies on line ℓ_3
 302 : $P_{240833} = (0, 50, 57, 1)$ lies on line ℓ_3
 303 : $P_{240897} = (0, 51, 57, 1)$ lies on line ℓ_3
 304 : $P_{240961} = (0, 52, 57, 1)$ lies on line ℓ_3
 305 : $P_{241025} = (0, 53, 57, 1)$ lies on line ℓ_3
 306 : $P_{241089} = (0, 54, 57, 1)$ lies on line ℓ_3
 307 : $P_{241153} = (0, 55, 57, 1)$ lies on line ℓ_3
 308 : $P_{241217} = (0, 56, 57, 1)$ lies on line ℓ_3
 309 : $P_{241281} = (0, 57, 57, 1)$ lies on line ℓ_3
 310 : $P_{241345} = (0, 58, 57, 1)$ lies on line ℓ_3
 311 : $P_{241409} = (0, 59, 57, 1)$ lies on line ℓ_3
 312 : $P_{241473} = (0, 60, 57, 1)$ lies on line ℓ_3
 313 : $P_{241537} = (0, 61, 57, 1)$ lies on line ℓ_3
 314 : $P_{241601} = (0, 62, 57, 1)$ lies on line ℓ_3
 315 : $P_{241665} = (0, 63, 57, 1)$ lies on line ℓ_3

The single points on the surface are:

Points on surface but on no line

The surface has 3905 points not on any line:
Too many to print.

Line Intersection Graph

	0	1	2	3	4
0	0	1	0	0	1
1	1	0	1	1	1
2	0	1	0	1	0
3	0	1	1	0	0
4	1	1	0	0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_4
in point	P_{8322}	P_4

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4
in point	P_{8322}	P_1	P_1	P_{8258}

Line 2 intersects

Line	ℓ_1	ℓ_3
in point	P_1	P_1

Line 3 intersects

Line	ℓ_1	ℓ_2
in point	P_1	P_1

Line 4 intersects

Line	ℓ_0	ℓ_1
in point	P_4	P_{8258}

The surface has 4225 points:
Too many to print.