Rank-65743 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is 1091051589

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:

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

The 5 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{17043457} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{17043457} = \mathbf{Pl}(0,0,0,1,0,1)_{278529}$$

$$\ell_1 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{21} \end{bmatrix}_{17043513} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 57 \end{bmatrix}_{17043513} = \mathbf{Pl}(0,0,0,57,0,1)_{285641}$$

$$\ell_2 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{42} \end{bmatrix}_{17043512} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 56 \end{bmatrix}_{17043512} = \mathbf{Pl}(0,0,0,56,0,1)_{285514}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{21} & \epsilon^{21} \end{bmatrix}_{270009} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 57 & 57 \end{bmatrix}_{270009} = \mathbf{Pl}(1,1,1,56,1,0)_{238649}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{42} & \epsilon^{42} \end{bmatrix}_{269944} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 56 & 56 \end{bmatrix}_{269944} = \mathbf{Pl}(1,1,1,57,1,0)_{242618}$$

Rank of lines: (17043457, 17043513, 17043512, 270009, 269944)
Rank of points on Klein quadric: (278529, 285641, 285514, 238649, 242618)

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:

$P_{11841} = (0,56,1,1) = \ell_0 \cap \ell_3$ $\qquad\qquad P_{4163} = (1,0,0,1) = \ell_3 \cap \ell_4$
$P_{11905} = (0,57,1,1) = \ell_0 \cap \ell_4$

Single Points

The surface has 316 single points:
The single points on the surface are:

$0 : P_{3652} = (1,56,1,0)$ lies on line ℓ_3 $\qquad$ $19 : P_{9345} = (0,17,1,1)$ lies on line ℓ_0
$1 : P_{3716} = (1,57,1,0)$ lies on line ℓ_4 $\qquad$ $20 : P_{9409} = (0,18,1,1)$ lies on line ℓ_0
$2 : P_{8258} = (0,0,1,1)$ lies on line ℓ_0 $\qquad$ $21 : P_{9473} = (0,19,1,1)$ lies on line ℓ_0
$3 : P_{8322} = (0,1,1,1)$ lies on line ℓ_0 $\qquad$ $22 : P_{9537} = (0,20,1,1)$ lies on line ℓ_0
$4 : P_{8385} = (0,2,1,1)$ lies on line ℓ_0 $\qquad$ $23 : P_{9601} = (0,21,1,1)$ lies on line ℓ_0
$5 : P_{8449} = (0,3,1,1)$ lies on line ℓ_0 $\qquad$ $24 : P_{9665} = (0,22,1,1)$ lies on line ℓ_0
$6 : P_{8513} = (0,4,1,1)$ lies on line ℓ_0 $\qquad$ $25 : P_{9729} = (0,23,1,1)$ lies on line ℓ_0
$7 : P_{8577} = (0,5,1,1)$ lies on line ℓ_0 $\qquad$ $26 : P_{9793} = (0,24,1,1)$ lies on line ℓ_0
$8 : P_{8641} = (0,6,1,1)$ lies on line ℓ_0 $\qquad$ $27 : P_{9857} = (0,25,1,1)$ lies on line ℓ_0
$9 : P_{8705} = (0,7,1,1)$ lies on line ℓ_0 $\qquad$ $28 : P_{9921} = (0,26,1,1)$ lies on line ℓ_0
$10 : P_{8769} = (0,8,1,1)$ lies on line ℓ_0 $\qquad$ $29 : P_{9985} = (0,27,1,1)$ lies on line ℓ_0
$11 : P_{8833} = (0,9,1,1)$ lies on line ℓ_0 $\qquad$ $30 : P_{10049} = (0,28,1,1)$ lies on line ℓ_0
$12 : P_{8897} = (0,10,1,1)$ lies on line ℓ_0 $\qquad$ $31 : P_{10113} = (0,29,1,1)$ lies on line ℓ_0
$13 : P_{8961} = (0,11,1,1)$ lies on line ℓ_0 $\qquad$ $32 : P_{10177} = (0,30,1,1)$ lies on line ℓ_0
$14 : P_{9025} = (0,12,1,1)$ lies on line ℓ_0 $\qquad$ $33 : P_{10241} = (0,31,1,1)$ lies on line ℓ_0
$15 : P_{9089} = (0,13,1,1)$ lies on line ℓ_0 $\qquad$ $34 : P_{10305} = (0,32,1,1)$ lies on line ℓ_0
$16 : P_{9153} = (0,14,1,1)$ lies on line ℓ_0 $\qquad$ $35 : P_{10369} = (0,33,1,1)$ lies on line ℓ_0
$17 : P_{9217} = (0,15,1,1)$ lies on line ℓ_0 $\qquad$ $36 : P_{10433} = (0,34,1,1)$ lies on line ℓ_0
$18 : P_{9281} = (0,16,1,1)$ lies on line ℓ_0 $\qquad$ $37 : P_{10497} = (0,35,1,1)$ lies on line ℓ_0

$38: P_{10561} = (0, 36, 1, 1)$ lies on line ℓ_0
$39: P_{10625} = (0, 37, 1, 1)$ lies on line ℓ_0
$40: P_{10689} = (0, 38, 1, 1)$ lies on line ℓ_0
$41: P_{10753} = (0, 39, 1, 1)$ lies on line ℓ_0
$42: P_{10817} = (0, 40, 1, 1)$ lies on line ℓ_0
$43: P_{10881} = (0, 41, 1, 1)$ lies on line ℓ_0
$44: P_{10945} = (0, 42, 1, 1)$ lies on line ℓ_0
$45: P_{11009} = (0, 43, 1, 1)$ lies on line ℓ_0
$46: P_{11073} = (0, 44, 1, 1)$ lies on line ℓ_0
$47: P_{11137} = (0, 45, 1, 1)$ lies on line ℓ_0
$48: P_{11201} = (0, 46, 1, 1)$ lies on line ℓ_0
$49: P_{11265} = (0, 47, 1, 1)$ lies on line ℓ_0
$50: P_{11329} = (0, 48, 1, 1)$ lies on line ℓ_0
$51: P_{11393} = (0, 49, 1, 1)$ lies on line ℓ_0
$52: P_{11457} = (0, 50, 1, 1)$ lies on line ℓ_0
$53: P_{11521} = (0, 51, 1, 1)$ lies on line ℓ_0
$54: P_{11585} = (0, 52, 1, 1)$ lies on line ℓ_0
$55: P_{11649} = (0, 53, 1, 1)$ lies on line ℓ_0
$56: P_{11713} = (0, 54, 1, 1)$ lies on line ℓ_0
$57: P_{11777} = (0, 55, 1, 1)$ lies on line ℓ_0
$58: P_{11969} = (0, 58, 1, 1)$ lies on line ℓ_0
$59: P_{12033} = (0, 59, 1, 1)$ lies on line ℓ_0
$60: P_{12097} = (0, 60, 1, 1)$ lies on line ℓ_0
$61: P_{12161} = (0, 61, 1, 1)$ lies on line ℓ_0
$62: P_{12225} = (0, 62, 1, 1)$ lies on line ℓ_0
$63: P_{12289} = (0, 63, 1, 1)$ lies on line ℓ_0
$64: P_{13444} = (3, 17, 2, 1)$ lies on line ℓ_3
$65: P_{13572} = (3, 19, 2, 1)$ lies on line ℓ_4
$66: P_{19075} = (2, 41, 3, 1)$ lies on line ℓ_3
$67: P_{19139} = (2, 42, 3, 1)$ lies on line ℓ_4
$68: P_{22726} = (5, 34, 4, 1)$ lies on line ℓ_3
$69: P_{22982} = (5, 38, 4, 1)$ lies on line ℓ_4
$70: P_{26309} = (4, 26, 5, 1)$ lies on line ℓ_3
$71: P_{26629} = (4, 31, 5, 1)$ lies on line ℓ_4
$72: P_{32008} = (7, 51, 6, 1)$ lies on line ℓ_3
$73: P_{32136} = (7, 53, 6, 1)$ lies on line ℓ_4
$74: P_{33543} = (6, 11, 7, 1)$ lies on line ℓ_3
$75: P_{33607} = (6, 12, 7, 1)$ lies on line ℓ_4
$76: P_{39306} = (9, 37, 8, 1)$ lies on line ℓ_3
$77: P_{39818} = (9, 45, 8, 1)$ lies on line ℓ_4
$78: P_{42313} = (8, 20, 9, 1)$ lies on line ℓ_4
$79: P_{42889} = (8, 29, 9, 1)$ lies on line ℓ_3
$80: P_{48460} = (11, 52, 10, 1)$ lies on line ℓ_3
$81: P_{49100} = (11, 62, 10, 1)$ lies on line ℓ_4
$82: P_{49675} = (10, 7, 11, 1)$ lies on line ℓ_4
$83: P_{49995} = (10, 12, 11, 1)$ lies on line ℓ_3
$84: P_{53774} = (13, 7, 12, 1)$ lies on line ℓ_3
$85: P_{54030} = (13, 11, 12, 1)$ lies on line ℓ_4
$86: P_{60621} = (12, 50, 13, 1)$ lies on line ℓ_4
$87: P_{61453} = (12, 63, 13, 1)$ lies on line ℓ_3
$88: P_{62928} = (15, 22, 14, 1)$ lies on line ℓ_3
$89: P_{63056} = (15, 24, 14, 1)$ lies on line ℓ_4
$90: P_{67727} = (14, 33, 15, 1)$ lies on line ℓ_4
$91: P_{68559} = (14, 46, 15, 1)$ lies on line ℓ_3
$92: P_{72466} = (17, 43, 16, 1)$ lies on line ℓ_3
$93: P_{73490} = (17, 59, 16, 1)$ lies on line ℓ_4
$94: P_{73937} = (16, 2, 17, 1)$ lies on line ℓ_4
$95: P_{75025} = (16, 19, 17, 1)$ lies on line ℓ_3
$96: P_{80468} = (19, 40, 18, 1)$ lies on line ℓ_4
$97: P_{81620} = (19, 58, 18, 1)$ lies on line ℓ_3
$98: P_{82131} = (18, 2, 19, 1)$ lies on line ℓ_3
$99: P_{83091} = (18, 17, 19, 1)$ lies on line ℓ_4
$100: P_{86678} = (21, 9, 20, 1)$ lies on line ℓ_3
$101: P_{87958} = (21, 29, 20, 1)$ lies on line ℓ_4
$102: P_{92501} = (20, 36, 21, 1)$ lies on line ℓ_4
$103: P_{93333} = (20, 49, 21, 1)$ lies on line ℓ_3
$104: P_{95192} = (23, 14, 22, 1)$ lies on line ℓ_4
$105: P_{95832} = (23, 24, 22, 1)$ lies on line ℓ_3
$106: P_{100439} = (22, 32, 23, 1)$ lies on line ℓ_3
$107: P_{101911} = (22, 55, 23, 1)$ lies on line ℓ_4
$108: P_{103386} = (25, 14, 24, 1)$ lies on line ℓ_3
$109: P_{103898} = (25, 22, 24, 1)$ lies on line ℓ_4
$110: P_{109593} = (24, 47, 25, 1)$ lies on line ℓ_4
$111: P_{110041} = (24, 54, 25, 1)$ lies on line ℓ_3
$112: P_{111004} = (27, 5, 26, 1)$ lies on line ℓ_4
$113: P_{112668} = (27, 31, 26, 1)$ lies on line ℓ_3
$114: P_{117275} = (26, 39, 27, 1)$ lies on line ℓ_3
$115: P_{118619} = (26, 60, 27, 1)$ lies on line ℓ_4
$116: P_{121694} = (29, 44, 28, 1)$ lies on line ℓ_3
$117: P_{121950} = (29, 48, 28, 1)$ lies on line ℓ_4
$118: P_{123549} = (28, 9, 29, 1)$ lies on line ℓ_4
$119: P_{124253} = (28, 20, 29, 1)$ lies on line ℓ_3
$120: P_{129312} = (31, 35, 30, 1)$ lies on line ℓ_4
$121: P_{130976} = (31, 61, 30, 1)$ lies on line ℓ_3
$122: P_{131487} = (30, 5, 31, 1)$ lies on line ℓ_3
$123: P_{132831} = (30, 26, 31, 1)$ lies on line ℓ_4
$124: P_{136738} = (33, 23, 32, 1)$ lies on line ℓ_4
$125: P_{138786} = (33, 55, 32, 1)$ lies on line ℓ_3
$126: P_{140321} = (32, 15, 33, 1)$ lies on line ℓ_3
$127: P_{142305} = (32, 46, 33, 1)$ lies on line ℓ_4
$128: P_{143716} = (35, 4, 34, 1)$ lies on line ℓ_4
$129: P_{145892} = (35, 38, 34, 1)$ lies on line ℓ_3
$130: P_{149475} = (34, 30, 35, 1)$ lies on line ℓ_3
$131: P_{151459} = (34, 61, 35, 1)$ lies on line ℓ_4
$132: P_{152998} = (37, 21, 36, 1)$ lies on line ℓ_3
$133: P_{154790} = (37, 49, 36, 1)$ lies on line ℓ_4
$134: P_{156261} = (36, 8, 37, 1)$ lies on line ℓ_4
$135: P_{158629} = (36, 45, 37, 1)$ lies on line ℓ_3
$136: P_{160104} = (39, 4, 38, 1)$ lies on line ℓ_3
$137: P_{162024} = (39, 34, 38, 1)$ lies on line ℓ_4
$138: P_{165671} = (38, 27, 39, 1)$ lies on line ℓ_4
$139: P_{167783} = (38, 60, 39, 1)$ lies on line ℓ_3
$140: P_{169194} = (41, 18, 40, 1)$ lies on line ℓ_3
$141: P_{171754} = (41, 58, 40, 1)$ lies on line ℓ_4
$142: P_{172329} = (40, 3, 41, 1)$ lies on line ℓ_4
$143: P_{174825} = (40, 42, 41, 1)$ lies on line ℓ_3
$144: P_{176428} = (43, 3, 42, 1)$ lies on line ℓ_3
$145: P_{178860} = (43, 41, 42, 1)$ lies on line ℓ_4

$146 : P_{181355} = (42, 16, 43, 1)$ lies on line ℓ_4
$147 : P_{184107} = (42, 59, 43, 1)$ lies on line ℓ_3
$148 : P_{186222} = (45, 28, 44, 1)$ lies on line ℓ_4
$149 : P_{187502} = (45, 48, 44, 1)$ lies on line ℓ_3
$150 : P_{189037} = (44, 8, 45, 1)$ lies on line ℓ_3
$151 : P_{190893} = (44, 37, 45, 1)$ lies on line ℓ_4
$152 : P_{193584} = (47, 15, 46, 1)$ lies on line ℓ_4
$153 : P_{194736} = (47, 33, 46, 1)$ lies on line ℓ_3
$154 : P_{198319} = (46, 25, 47, 1)$ lies on line ℓ_3
$155 : P_{200175} = (46, 54, 47, 1)$ lies on line ℓ_4
$156 : P_{202610} = (49, 28, 48, 1)$ lies on line ℓ_3
$157 : P_{203634} = (49, 44, 48, 1)$ lies on line ℓ_4
$158 : P_{206257} = (48, 21, 49, 1)$ lies on line ℓ_4
$159 : P_{207217} = (48, 36, 49, 1)$ lies on line ℓ_3
$160 : P_{209844} = (51, 13, 50, 1)$ lies on line ℓ_3
$161 : P_{213044} = (51, 63, 50, 1)$ lies on line ℓ_4
$162 : P_{213491} = (50, 6, 51, 1)$ lies on line ℓ_4
$163 : P_{216499} = (50, 53, 51, 1)$ lies on line ℓ_3
$164 : P_{217846} = (53, 10, 52, 1)$ lies on line ℓ_4
$165 : P_{221174} = (53, 62, 52, 1)$ lies on line ℓ_3
$166 : P_{221685} = (52, 6, 53, 1)$ lies on line ℓ_3
$167 : P_{224565} = (52, 51, 53, 1)$ lies on line ℓ_4
$168 : P_{227000} = (55, 25, 54, 1)$ lies on line ℓ_4
$169 : P_{228408} = (55, 47, 54, 1)$ lies on line ℓ_3
$170 : P_{230967} = (54, 23, 55, 1)$ lies on line ℓ_3
$171 : P_{231543} = (54, 32, 55, 1)$ lies on line ℓ_4
$172 : P_{233537} = (0, 0, 56, 1)$ lies on line ℓ_1
$173 : P_{233601} = (0, 1, 56, 1)$ lies on line ℓ_1
$174 : P_{233658} = (57, 1, 56, 1)$ lies on line ℓ_4
$175 : P_{233665} = (0, 2, 56, 1)$ lies on line ℓ_1
$176 : P_{233729} = (0, 3, 56, 1)$ lies on line ℓ_1
$177 : P_{233793} = (0, 4, 56, 1)$ lies on line ℓ_1
$178 : P_{233857} = (0, 5, 56, 1)$ lies on line ℓ_1
$179 : P_{233921} = (0, 6, 56, 1)$ lies on line ℓ_1
$180 : P_{233985} = (0, 7, 56, 1)$ lies on line ℓ_1
$181 : P_{234049} = (0, 8, 56, 1)$ lies on line ℓ_1
$182 : P_{234113} = (0, 9, 56, 1)$ lies on line ℓ_1
$183 : P_{234177} = (0, 10, 56, 1)$ lies on line ℓ_1
$184 : P_{234241} = (0, 11, 56, 1)$ lies on line ℓ_1
$185 : P_{234305} = (0, 12, 56, 1)$ lies on line ℓ_1
$186 : P_{234369} = (0, 13, 56, 1)$ lies on line ℓ_1
$187 : P_{234433} = (0, 14, 56, 1)$ lies on line ℓ_1
$188 : P_{234497} = (0, 15, 56, 1)$ lies on line ℓ_1
$189 : P_{234561} = (0, 16, 56, 1)$ lies on line ℓ_1
$190 : P_{234625} = (0, 17, 56, 1)$ lies on line ℓ_1
$191 : P_{234689} = (0, 18, 56, 1)$ lies on line ℓ_1
$192 : P_{234753} = (0, 19, 56, 1)$ lies on line ℓ_1
$193 : P_{234817} = (0, 20, 56, 1)$ lies on line ℓ_1
$194 : P_{234881} = (0, 21, 56, 1)$ lies on line ℓ_1
$195 : P_{234945} = (0, 22, 56, 1)$ lies on line ℓ_1
$196 : P_{235009} = (0, 23, 56, 1)$ lies on line ℓ_1
$197 : P_{235073} = (0, 24, 56, 1)$ lies on line ℓ_1
$198 : P_{235137} = (0, 25, 56, 1)$ lies on line ℓ_1
$199 : P_{235201} = (0, 26, 56, 1)$ lies on line ℓ_1

$200 : P_{235265} = (0, 27, 56, 1)$ lies on line ℓ_1
$201 : P_{235329} = (0, 28, 56, 1)$ lies on line ℓ_1
$202 : P_{235393} = (0, 29, 56, 1)$ lies on line ℓ_1
$203 : P_{235457} = (0, 30, 56, 1)$ lies on line ℓ_1
$204 : P_{235521} = (0, 31, 56, 1)$ lies on line ℓ_1
$205 : P_{235585} = (0, 32, 56, 1)$ lies on line ℓ_1
$206 : P_{235649} = (0, 33, 56, 1)$ lies on line ℓ_1
$207 : P_{235713} = (0, 34, 56, 1)$ lies on line ℓ_1
$208 : P_{235777} = (0, 35, 56, 1)$ lies on line ℓ_1
$209 : P_{235841} = (0, 36, 56, 1)$ lies on line ℓ_1
$210 : P_{235905} = (0, 37, 56, 1)$ lies on line ℓ_1
$211 : P_{235969} = (0, 38, 56, 1)$ lies on line ℓ_1
$212 : P_{236033} = (0, 39, 56, 1)$ lies on line ℓ_1
$213 : P_{236097} = (0, 40, 56, 1)$ lies on line ℓ_1
$214 : P_{236161} = (0, 41, 56, 1)$ lies on line ℓ_1
$215 : P_{236225} = (0, 42, 56, 1)$ lies on line ℓ_1
$216 : P_{236289} = (0, 43, 56, 1)$ lies on line ℓ_1
$217 : P_{236353} = (0, 44, 56, 1)$ lies on line ℓ_1
$218 : P_{236417} = (0, 45, 56, 1)$ lies on line ℓ_1
$219 : P_{236481} = (0, 46, 56, 1)$ lies on line ℓ_1
$220 : P_{236545} = (0, 47, 56, 1)$ lies on line ℓ_1
$221 : P_{236609} = (0, 48, 56, 1)$ lies on line ℓ_1
$222 : P_{236673} = (0, 49, 56, 1)$ lies on line ℓ_1
$223 : P_{236737} = (0, 50, 56, 1)$ lies on line ℓ_1
$224 : P_{236801} = (0, 51, 56, 1)$ lies on line ℓ_1
$225 : P_{236865} = (0, 52, 56, 1)$ lies on line ℓ_1
$226 : P_{236929} = (0, 53, 56, 1)$ lies on line ℓ_1
$227 : P_{236993} = (0, 54, 56, 1)$ lies on line ℓ_1
$228 : P_{237057} = (0, 55, 56, 1)$ lies on line ℓ_1
$229 : P_{237121} = (0, 56, 56, 1)$ lies on line ℓ_1
$230 : P_{237185} = (0, 57, 56, 1)$ lies on line ℓ_1
$231 : P_{237242} = (57, 57, 56, 1)$ lies on line ℓ_3
$232 : P_{237249} = (0, 58, 56, 1)$ lies on line ℓ_1
$233 : P_{237313} = (0, 59, 56, 1)$ lies on line ℓ_1
$234 : P_{237377} = (0, 60, 56, 1)$ lies on line ℓ_1
$235 : P_{237441} = (0, 61, 56, 1)$ lies on line ℓ_1
$236 : P_{237505} = (0, 62, 56, 1)$ lies on line ℓ_1
$237 : P_{237569} = (0, 63, 56, 1)$ lies on line ℓ_1
$238 : P_{237633} = (0, 0, 57, 1)$ lies on line ℓ_2
$239 : P_{237697} = (0, 1, 57, 1)$ lies on line ℓ_2
$240 : P_{237753} = (56, 1, 57, 1)$ lies on line ℓ_3
$241 : P_{237761} = (0, 2, 57, 1)$ lies on line ℓ_2
$242 : P_{237825} = (0, 3, 57, 1)$ lies on line ℓ_2
$243 : P_{237889} = (0, 4, 57, 1)$ lies on line ℓ_2
$244 : P_{237953} = (0, 5, 57, 1)$ lies on line ℓ_2
$245 : P_{238017} = (0, 6, 57, 1)$ lies on line ℓ_2
$246 : P_{238081} = (0, 7, 57, 1)$ lies on line ℓ_2
$247 : P_{238145} = (0, 8, 57, 1)$ lies on line ℓ_2
$248 : P_{238209} = (0, 9, 57, 1)$ lies on line ℓ_2
$249 : P_{238273} = (0, 10, 57, 1)$ lies on line ℓ_2
$250 : P_{238337} = (0, 11, 57, 1)$ lies on line ℓ_2
$251 : P_{238401} = (0, 12, 57, 1)$ lies on line ℓ_2
$252 : P_{238465} = (0, 13, 57, 1)$ lies on line ℓ_2
$253 : P_{238529} = (0, 14, 57, 1)$ lies on line ℓ_2

254 : $P_{238593} = (0, 15, 57, 1)$ lies on line ℓ_2

255 : $P_{238657} = (0, 16, 57, 1)$ lies on line ℓ_2

256 : $P_{238721} = (0, 17, 57, 1)$ lies on line ℓ_2

257 : $P_{238785} = (0, 18, 57, 1)$ lies on line ℓ_2

258 : $P_{238849} = (0, 19, 57, 1)$ lies on line ℓ_2

259 : $P_{238913} = (0, 20, 57, 1)$ lies on line ℓ_2

260 : $P_{238977} = (0, 21, 57, 1)$ lies on line ℓ_2

261 : $P_{239041} = (0, 22, 57, 1)$ lies on line ℓ_2

262 : $P_{239105} = (0, 23, 57, 1)$ lies on line ℓ_2

263 : $P_{239169} = (0, 24, 57, 1)$ lies on line ℓ_2

264 : $P_{239233} = (0, 25, 57, 1)$ lies on line ℓ_2

265 : $P_{239297} = (0, 26, 57, 1)$ lies on line ℓ_2

266 : $P_{239361} = (0, 27, 57, 1)$ lies on line ℓ_2

267 : $P_{239425} = (0, 28, 57, 1)$ lies on line ℓ_2

268 : $P_{239489} = (0, 29, 57, 1)$ lies on line ℓ_2

269 : $P_{239553} = (0, 30, 57, 1)$ lies on line ℓ_2

270 : $P_{239617} = (0, 31, 57, 1)$ lies on line ℓ_2

271 : $P_{239681} = (0, 32, 57, 1)$ lies on line ℓ_2

272 : $P_{239745} = (0, 33, 57, 1)$ lies on line ℓ_2

273 : $P_{239809} = (0, 34, 57, 1)$ lies on line ℓ_2

274 : $P_{239873} = (0, 35, 57, 1)$ lies on line ℓ_2

275 : $P_{239937} = (0, 36, 57, 1)$ lies on line ℓ_2

276 : $P_{240001} = (0, 37, 57, 1)$ lies on line ℓ_2

277 : $P_{240065} = (0, 38, 57, 1)$ lies on line ℓ_2

278 : $P_{240129} = (0, 39, 57, 1)$ lies on line ℓ_2

279 : $P_{240193} = (0, 40, 57, 1)$ lies on line ℓ_2

280 : $P_{240257} = (0, 41, 57, 1)$ lies on line ℓ_2

281 : $P_{240321} = (0, 42, 57, 1)$ lies on line ℓ_2

282 : $P_{240385} = (0, 43, 57, 1)$ lies on line ℓ_2

283 : $P_{240449} = (0, 44, 57, 1)$ lies on line ℓ_2

284 : $P_{240513} = (0, 45, 57, 1)$ lies on line ℓ_2

285 : $P_{240577} = (0, 46, 57, 1)$ lies on line ℓ_2

286 : $P_{240641} = (0, 47, 57, 1)$ lies on line ℓ_2

287 : $P_{240705} = (0, 48, 57, 1)$ lies on line ℓ_2

288 : $P_{240769} = (0, 49, 57, 1)$ lies on line ℓ_2

289 : $P_{240833} = (0, 50, 57, 1)$ lies on line ℓ_2

290 : $P_{240897} = (0, 51, 57, 1)$ lies on line ℓ_2

291 : $P_{240961} = (0, 52, 57, 1)$ lies on line ℓ_2

292 : $P_{241025} = (0, 53, 57, 1)$ lies on line ℓ_2

293 : $P_{241089} = (0, 54, 57, 1)$ lies on line ℓ_2

294 : $P_{241153} = (0, 55, 57, 1)$ lies on line ℓ_2

295 : $P_{241217} = (0, 56, 57, 1)$ lies on line ℓ_2

296 : $P_{241273} = (56, 56, 57, 1)$ lies on line ℓ_4

297 : $P_{241281} = (0, 57, 57, 1)$ lies on line ℓ_2

298 : $P_{241345} = (0, 58, 57, 1)$ lies on line ℓ_2

299 : $P_{241409} = (0, 59, 57, 1)$ lies on line ℓ_2

300 : $P_{241473} = (0, 60, 57, 1)$ lies on line ℓ_2

301 : $P_{241537} = (0, 61, 57, 1)$ lies on line ℓ_2

302 : $P_{241601} = (0, 62, 57, 1)$ lies on line ℓ_2

303 : $P_{241665} = (0, 63, 57, 1)$ lies on line ℓ_2

304 : $P_{242940} = (59, 18, 58, 1)$ lies on line ℓ_4

305 : $P_{244348} = (59, 40, 58, 1)$ lies on line ℓ_3

306 : $P_{246907} = (58, 16, 59, 1)$ lies on line ℓ_3

307 : $P_{248635} = (58, 43, 59, 1)$ lies on line ℓ_4

308 : $P_{251710} = (61, 27, 60, 1)$ lies on line ℓ_3

309 : $P_{252478} = (61, 39, 60, 1)$ lies on line ℓ_4

310 : $P_{255997} = (60, 30, 61, 1)$ lies on line ℓ_4

311 : $P_{256317} = (60, 35, 61, 1)$ lies on line ℓ_3

312 : $P_{258816} = (63, 10, 62, 1)$ lies on line ℓ_3

313 : $P_{261504} = (63, 52, 62, 1)$ lies on line ℓ_4

314 : $P_{263103} = (62, 13, 63, 1)$ lies on line ℓ_4

315 : $P_{265471} = (62, 50, 63, 1)$ lies on line ℓ_3

The single points on the surface are:

Points on surface but on no line

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

Line Intersection Graph

```
 |0 1 2 3 4
-+---------
0|0 1 1 1 1
1|1 0 1 0 0
2|1 1 0 0 0
3|1 0 0 0 1
4|1 0 0 1 0
```

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4
in point	P_1	P_1	P_{11841}	P_{11905}

5

Line 1 intersects

Line	ℓ_0	ℓ_2
in point	P_1	P_1

Line 2 intersects

Line	ℓ_0	ℓ_1
in point	P_1	P_1

Line 3 intersects

Line	ℓ_0	ℓ_4
in point	P_{11841}	P_{4163}

Line 4 intersects

Line	ℓ_0	ℓ_3
in point	P_{11905}	P_{4163}

The surface has 4225 points:
Too many to print.