Rank-66763 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 0, 1, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is 1091047493

General information

Number of lines	5
Number of points	4225
Number of singular points	3
Number of Eckardt points	2
Number of double points	2
Number of single points	315
Number of points off lines	3906
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^5
Type of lines on points	3^2, 2^2, 1^{315}, 0^{3906}

Singular Points

The surface has 3 singular points:

$0 : P_{3651} = \mathbf{P}(0, \epsilon^{42}, 1, 0) = \mathbf{P}(0, 56, 1, 0)$ $2 : P_{4163} = \mathbf{P}(1, 0, 0, 1) = \mathbf{P}(1, 0, 0, 1)$
$1 : P_{3715} = \mathbf{P}(0, \epsilon^{21}, 1, 0) = \mathbf{P}(0, 57, 1, 0)$

The 5 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & \epsilon^{42} & 0 \end{bmatrix}_{56} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 56 & 0 \end{bmatrix}_{56} = \mathbf{Pl}(57, 0, 1, 0, 0, 0)_{59}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & \epsilon^{21} & 0 \end{bmatrix}_{57} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 57 & 0 \end{bmatrix}_{57} = \mathbf{Pl}(56,0,1,0,0,0)_{58}$$

$$\ell_2 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{17043456} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{17043456} = \mathbf{Pl}(0,0,0,0,0,1)_{270401}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{21} & 0 \end{bmatrix}_{266361} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 57 & 0 \end{bmatrix}_{266361} = \mathbf{Pl}(56,57,57,1,0,0)_{3839}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{42} & 0 \end{bmatrix}_{266360} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 56 & 0 \end{bmatrix}_{266360} = \mathbf{Pl}(57,56,56,1,0,0)_{3777}$$

Rank of lines: (56, 57, 17043456, 266361, 266360)
Rank of points on Klein quadric: (59, 58, 270401, 3839, 3777)

Eckardt Points

The surface has 2 Eckardt points:
$0 : P_{3651} = \mathbf{P}(0, \epsilon^{42}, 1, 0) = \mathbf{P}(0, 56, 1, 0)$,
$1 : P_{3715} = \mathbf{P}(0, \epsilon^{21}, 1, 0) = \mathbf{P}(0, 57, 1, 0)$.

Double Points

The surface has 2 Double points:
The double points on the surface are:

$P_0 = (1, 0, 0, 0) = \ell_0 \cap \ell_1$
$P_{4163} = (1, 0, 0, 1) = \ell_3 \cap \ell_4$

Single Points

The surface has 315 single points:
The single points on the surface are:

$0 : P_1 = (0, 1, 0, 0)$ lies on line ℓ_2
$1 : P_2 = (0, 0, 1, 0)$ lies on line ℓ_2
$2 : P_{131} = (0, 1, 1, 0)$ lies on line ℓ_2
$3 : P_{195} = (0, 2, 1, 0)$ lies on line ℓ_2
$4 : P_{259} = (0, 3, 1, 0)$ lies on line ℓ_2
$5 : P_{323} = (0, 4, 1, 0)$ lies on line ℓ_2
$6 : P_{387} = (0, 5, 1, 0)$ lies on line ℓ_2
$7 : P_{451} = (0, 6, 1, 0)$ lies on line ℓ_2
$8 : P_{515} = (0, 7, 1, 0)$ lies on line ℓ_2
$9 : P_{579} = (0, 8, 1, 0)$ lies on line ℓ_2
$10 : P_{643} = (0, 9, 1, 0)$ lies on line ℓ_2
$11 : P_{707} = (0, 10, 1, 0)$ lies on line ℓ_2
$12 : P_{771} = (0, 11, 1, 0)$ lies on line ℓ_2
$13 : P_{835} = (0, 12, 1, 0)$ lies on line ℓ_2
$14 : P_{899} = (0, 13, 1, 0)$ lies on line ℓ_2
$15 : P_{963} = (0, 14, 1, 0)$ lies on line ℓ_2
$16 : P_{1027} = (0, 15, 1, 0)$ lies on line ℓ_2
$17 : P_{1091} = (0, 16, 1, 0)$ lies on line ℓ_2

$18 : P_{1155} = (0, 17, 1, 0)$ lies on line ℓ_2
$19 : P_{1219} = (0, 18, 1, 0)$ lies on line ℓ_2
$20 : P_{1283} = (0, 19, 1, 0)$ lies on line ℓ_2
$21 : P_{1347} = (0, 20, 1, 0)$ lies on line ℓ_2
$22 : P_{1411} = (0, 21, 1, 0)$ lies on line ℓ_2
$23 : P_{1475} = (0, 22, 1, 0)$ lies on line ℓ_2
$24 : P_{1539} = (0, 23, 1, 0)$ lies on line ℓ_2
$25 : P_{1603} = (0, 24, 1, 0)$ lies on line ℓ_2
$26 : P_{1667} = (0, 25, 1, 0)$ lies on line ℓ_2
$27 : P_{1731} = (0, 26, 1, 0)$ lies on line ℓ_2
$28 : P_{1795} = (0, 27, 1, 0)$ lies on line ℓ_2
$29 : P_{1859} = (0, 28, 1, 0)$ lies on line ℓ_2
$30 : P_{1923} = (0, 29, 1, 0)$ lies on line ℓ_2
$31 : P_{1987} = (0, 30, 1, 0)$ lies on line ℓ_2
$32 : P_{2051} = (0, 31, 1, 0)$ lies on line ℓ_2
$33 : P_{2115} = (0, 32, 1, 0)$ lies on line ℓ_2
$34 : P_{2179} = (0, 33, 1, 0)$ lies on line ℓ_2
$35 : P_{2243} = (0, 34, 1, 0)$ lies on line ℓ_2

$36: P_{2307} = (0, 35, 1, 0)$ lies on line ℓ_2
$37: P_{2371} = (0, 36, 1, 0)$ lies on line ℓ_2
$38: P_{2435} = (0, 37, 1, 0)$ lies on line ℓ_2
$39: P_{2499} = (0, 38, 1, 0)$ lies on line ℓ_2
$40: P_{2563} = (0, 39, 1, 0)$ lies on line ℓ_2
$41: P_{2627} = (0, 40, 1, 0)$ lies on line ℓ_2
$42: P_{2691} = (0, 41, 1, 0)$ lies on line ℓ_2
$43: P_{2755} = (0, 42, 1, 0)$ lies on line ℓ_2
$44: P_{2819} = (0, 43, 1, 0)$ lies on line ℓ_2
$45: P_{2883} = (0, 44, 1, 0)$ lies on line ℓ_2
$46: P_{2947} = (0, 45, 1, 0)$ lies on line ℓ_2
$47: P_{3011} = (0, 46, 1, 0)$ lies on line ℓ_2
$48: P_{3075} = (0, 47, 1, 0)$ lies on line ℓ_2
$49: P_{3139} = (0, 48, 1, 0)$ lies on line ℓ_2
$50: P_{3203} = (0, 49, 1, 0)$ lies on line ℓ_2
$51: P_{3267} = (0, 50, 1, 0)$ lies on line ℓ_2
$52: P_{3331} = (0, 51, 1, 0)$ lies on line ℓ_2
$53: P_{3395} = (0, 52, 1, 0)$ lies on line ℓ_2
$54: P_{3459} = (0, 53, 1, 0)$ lies on line ℓ_2
$55: P_{3523} = (0, 54, 1, 0)$ lies on line ℓ_2
$56: P_{3587} = (0, 55, 1, 0)$ lies on line ℓ_2
$57: P_{3652} = (1, 56, 1, 0)$ lies on line ℓ_1
$58: P_{3653} = (2, 56, 1, 0)$ lies on line ℓ_1
$59: P_{3654} = (3, 56, 1, 0)$ lies on line ℓ_1
$60: P_{3655} = (4, 56, 1, 0)$ lies on line ℓ_1
$61: P_{3656} = (5, 56, 1, 0)$ lies on line ℓ_1
$62: P_{3657} = (6, 56, 1, 0)$ lies on line ℓ_1
$63: P_{3658} = (7, 56, 1, 0)$ lies on line ℓ_1
$64: P_{3659} = (8, 56, 1, 0)$ lies on line ℓ_1
$65: P_{3660} = (9, 56, 1, 0)$ lies on line ℓ_1
$66: P_{3661} = (10, 56, 1, 0)$ lies on line ℓ_1
$67: P_{3662} = (11, 56, 1, 0)$ lies on line ℓ_1
$68: P_{3663} = (12, 56, 1, 0)$ lies on line ℓ_1
$69: P_{3664} = (13, 56, 1, 0)$ lies on line ℓ_1
$70: P_{3665} = (14, 56, 1, 0)$ lies on line ℓ_1
$71: P_{3666} = (15, 56, 1, 0)$ lies on line ℓ_1
$72: P_{3667} = (16, 56, 1, 0)$ lies on line ℓ_1
$73: P_{3668} = (17, 56, 1, 0)$ lies on line ℓ_1
$74: P_{3669} = (18, 56, 1, 0)$ lies on line ℓ_1
$75: P_{3670} = (19, 56, 1, 0)$ lies on line ℓ_1
$76: P_{3671} = (20, 56, 1, 0)$ lies on line ℓ_1
$77: P_{3672} = (21, 56, 1, 0)$ lies on line ℓ_1
$78: P_{3673} = (22, 56, 1, 0)$ lies on line ℓ_1
$79: P_{3674} = (23, 56, 1, 0)$ lies on line ℓ_1
$80: P_{3675} = (24, 56, 1, 0)$ lies on line ℓ_1
$81: P_{3676} = (25, 56, 1, 0)$ lies on line ℓ_1
$82: P_{3677} = (26, 56, 1, 0)$ lies on line ℓ_1
$83: P_{3678} = (27, 56, 1, 0)$ lies on line ℓ_1
$84: P_{3679} = (28, 56, 1, 0)$ lies on line ℓ_1
$85: P_{3680} = (29, 56, 1, 0)$ lies on line ℓ_1
$86: P_{3681} = (30, 56, 1, 0)$ lies on line ℓ_1
$87: P_{3682} = (31, 56, 1, 0)$ lies on line ℓ_1
$88: P_{3683} = (32, 56, 1, 0)$ lies on line ℓ_1
$89: P_{3684} = (33, 56, 1, 0)$ lies on line ℓ_1

$90: P_{3685} = (34, 56, 1, 0)$ lies on line ℓ_1
$91: P_{3686} = (35, 56, 1, 0)$ lies on line ℓ_1
$92: P_{3687} = (36, 56, 1, 0)$ lies on line ℓ_1
$93: P_{3688} = (37, 56, 1, 0)$ lies on line ℓ_1
$94: P_{3689} = (38, 56, 1, 0)$ lies on line ℓ_1
$95: P_{3690} = (39, 56, 1, 0)$ lies on line ℓ_1
$96: P_{3691} = (40, 56, 1, 0)$ lies on line ℓ_1
$97: P_{3692} = (41, 56, 1, 0)$ lies on line ℓ_1
$98: P_{3693} = (42, 56, 1, 0)$ lies on line ℓ_1
$99: P_{3694} = (43, 56, 1, 0)$ lies on line ℓ_1
$100: P_{3695} = (44, 56, 1, 0)$ lies on line ℓ_1
$101: P_{3696} = (45, 56, 1, 0)$ lies on line ℓ_1
$102: P_{3697} = (46, 56, 1, 0)$ lies on line ℓ_1
$103: P_{3698} = (47, 56, 1, 0)$ lies on line ℓ_1
$104: P_{3699} = (48, 56, 1, 0)$ lies on line ℓ_1
$105: P_{3700} = (49, 56, 1, 0)$ lies on line ℓ_1
$106: P_{3701} = (50, 56, 1, 0)$ lies on line ℓ_1
$107: P_{3702} = (51, 56, 1, 0)$ lies on line ℓ_1
$108: P_{3703} = (52, 56, 1, 0)$ lies on line ℓ_1
$109: P_{3704} = (53, 56, 1, 0)$ lies on line ℓ_1
$110: P_{3705} = (54, 56, 1, 0)$ lies on line ℓ_1
$111: P_{3706} = (55, 56, 1, 0)$ lies on line ℓ_1
$112: P_{3707} = (56, 56, 1, 0)$ lies on line ℓ_1
$113: P_{3708} = (57, 56, 1, 0)$ lies on line ℓ_1
$114: P_{3709} = (58, 56, 1, 0)$ lies on line ℓ_1
$115: P_{3710} = (59, 56, 1, 0)$ lies on line ℓ_1
$116: P_{3711} = (60, 56, 1, 0)$ lies on line ℓ_1
$117: P_{3712} = (61, 56, 1, 0)$ lies on line ℓ_1
$118: P_{3713} = (62, 56, 1, 0)$ lies on line ℓ_1
$119: P_{3714} = (63, 56, 1, 0)$ lies on line ℓ_1
$120: P_{3716} = (1, 57, 1, 0)$ lies on line ℓ_0
$121: P_{3717} = (2, 57, 1, 0)$ lies on line ℓ_0
$122: P_{3718} = (3, 57, 1, 0)$ lies on line ℓ_0
$123: P_{3719} = (4, 57, 1, 0)$ lies on line ℓ_0
$124: P_{3720} = (5, 57, 1, 0)$ lies on line ℓ_0
$125: P_{3721} = (6, 57, 1, 0)$ lies on line ℓ_0
$126: P_{3722} = (7, 57, 1, 0)$ lies on line ℓ_0
$127: P_{3723} = (8, 57, 1, 0)$ lies on line ℓ_0
$128: P_{3724} = (9, 57, 1, 0)$ lies on line ℓ_0
$129: P_{3725} = (10, 57, 1, 0)$ lies on line ℓ_0
$130: P_{3726} = (11, 57, 1, 0)$ lies on line ℓ_0
$131: P_{3727} = (12, 57, 1, 0)$ lies on line ℓ_0
$132: P_{3728} = (13, 57, 1, 0)$ lies on line ℓ_0
$133: P_{3729} = (14, 57, 1, 0)$ lies on line ℓ_0
$134: P_{3730} = (15, 57, 1, 0)$ lies on line ℓ_0
$135: P_{3731} = (16, 57, 1, 0)$ lies on line ℓ_0
$136: P_{3732} = (17, 57, 1, 0)$ lies on line ℓ_0
$137: P_{3733} = (18, 57, 1, 0)$ lies on line ℓ_0
$138: P_{3734} = (19, 57, 1, 0)$ lies on line ℓ_0
$139: P_{3735} = (20, 57, 1, 0)$ lies on line ℓ_0
$140: P_{3736} = (21, 57, 1, 0)$ lies on line ℓ_0
$141: P_{3737} = (22, 57, 1, 0)$ lies on line ℓ_0
$142: P_{3738} = (23, 57, 1, 0)$ lies on line ℓ_0
$143: P_{3739} = (24, 57, 1, 0)$ lies on line ℓ_0

$144: P_{3740} = (25, 57, 1, 0)$ lies on line ℓ_0

$145: P_{3741} = (26, 57, 1, 0)$ lies on line ℓ_0

$146: P_{3742} = (27, 57, 1, 0)$ lies on line ℓ_0

$147: P_{3743} = (28, 57, 1, 0)$ lies on line ℓ_0

$148: P_{3744} = (29, 57, 1, 0)$ lies on line ℓ_0

$149: P_{3745} = (30, 57, 1, 0)$ lies on line ℓ_0

$150: P_{3746} = (31, 57, 1, 0)$ lies on line ℓ_0

$151: P_{3747} = (32, 57, 1, 0)$ lies on line ℓ_0

$152: P_{3748} = (33, 57, 1, 0)$ lies on line ℓ_0

$153: P_{3749} = (34, 57, 1, 0)$ lies on line ℓ_0

$154: P_{3750} = (35, 57, 1, 0)$ lies on line ℓ_0

$155: P_{3751} = (36, 57, 1, 0)$ lies on line ℓ_0

$156: P_{3752} = (37, 57, 1, 0)$ lies on line ℓ_0

$157: P_{3753} = (38, 57, 1, 0)$ lies on line ℓ_0

$158: P_{3754} = (39, 57, 1, 0)$ lies on line ℓ_0

$159: P_{3755} = (40, 57, 1, 0)$ lies on line ℓ_0

$160: P_{3756} = (41, 57, 1, 0)$ lies on line ℓ_0

$161: P_{3757} = (42, 57, 1, 0)$ lies on line ℓ_0

$162: P_{3758} = (43, 57, 1, 0)$ lies on line ℓ_0

$163: P_{3759} = (44, 57, 1, 0)$ lies on line ℓ_0

$164: P_{3760} = (45, 57, 1, 0)$ lies on line ℓ_0

$165: P_{3761} = (46, 57, 1, 0)$ lies on line ℓ_0

$166: P_{3762} = (47, 57, 1, 0)$ lies on line ℓ_0

$167: P_{3763} = (48, 57, 1, 0)$ lies on line ℓ_0

$168: P_{3764} = (49, 57, 1, 0)$ lies on line ℓ_0

$169: P_{3765} = (50, 57, 1, 0)$ lies on line ℓ_0

$170: P_{3766} = (51, 57, 1, 0)$ lies on line ℓ_0

$171: P_{3767} = (52, 57, 1, 0)$ lies on line ℓ_0

$172: P_{3768} = (53, 57, 1, 0)$ lies on line ℓ_0

$173: P_{3769} = (54, 57, 1, 0)$ lies on line ℓ_0

$174: P_{3770} = (55, 57, 1, 0)$ lies on line ℓ_0

$175: P_{3771} = (56, 57, 1, 0)$ lies on line ℓ_0

$176: P_{3772} = (57, 57, 1, 0)$ lies on line ℓ_0

$177: P_{3773} = (58, 57, 1, 0)$ lies on line ℓ_0

$178: P_{3774} = (59, 57, 1, 0)$ lies on line ℓ_0

$179: P_{3775} = (60, 57, 1, 0)$ lies on line ℓ_0

$180: P_{3776} = (61, 57, 1, 0)$ lies on line ℓ_0

$181: P_{3777} = (62, 57, 1, 0)$ lies on line ℓ_0

$182: P_{3778} = (63, 57, 1, 0)$ lies on line ℓ_0

$183: P_{3779} = (0, 58, 1, 0)$ lies on line ℓ_2

$184: P_{3843} = (0, 59, 1, 0)$ lies on line ℓ_2

$185: P_{3907} = (0, 60, 1, 0)$ lies on line ℓ_2

$186: P_{3971} = (0, 61, 1, 0)$ lies on line ℓ_2

$187: P_{4035} = (0, 62, 1, 0)$ lies on line ℓ_2

$188: P_{4099} = (0, 63, 1, 0)$ lies on line ℓ_2

$189: P_{11842} = (1, 56, 1, 1)$ lies on line ℓ_3

$190: P_{11906} = (1, 57, 1, 1)$ lies on line ℓ_4

$191: P_{13442} = (1, 17, 2, 1)$ lies on line ℓ_3

$192: P_{13570} = (1, 19, 2, 1)$ lies on line ℓ_4

$193: P_{19074} = (1, 41, 3, 1)$ lies on line ℓ_3

$194: P_{19138} = (1, 42, 3, 1)$ lies on line ℓ_4

$195: P_{22722} = (1, 34, 4, 1)$ lies on line ℓ_3

$196: P_{22978} = (1, 38, 4, 1)$ lies on line ℓ_4

$197: P_{26306} = (1, 26, 5, 1)$ lies on line ℓ_3

$198: P_{26626} = (1, 31, 5, 1)$ lies on line ℓ_4

$199: P_{32002} = (1, 51, 6, 1)$ lies on line ℓ_3

$200: P_{32130} = (1, 53, 6, 1)$ lies on line ℓ_4

$201: P_{33538} = (1, 11, 7, 1)$ lies on line ℓ_3

$202: P_{33602} = (1, 12, 7, 1)$ lies on line ℓ_4

$203: P_{39298} = (1, 37, 8, 1)$ lies on line ℓ_3

$204: P_{39810} = (1, 45, 8, 1)$ lies on line ℓ_4

$205: P_{42306} = (1, 20, 9, 1)$ lies on line ℓ_4

$206: P_{42882} = (1, 29, 9, 1)$ lies on line ℓ_3

$207: P_{48450} = (1, 52, 10, 1)$ lies on line ℓ_3

$208: P_{49090} = (1, 62, 10, 1)$ lies on line ℓ_4

$209: P_{49666} = (1, 7, 11, 1)$ lies on line ℓ_4

$210: P_{49986} = (1, 12, 11, 1)$ lies on line ℓ_3

$211: P_{53762} = (1, 7, 12, 1)$ lies on line ℓ_3

$212: P_{54018} = (1, 11, 12, 1)$ lies on line ℓ_4

$213: P_{60610} = (1, 50, 13, 1)$ lies on line ℓ_4

$214: P_{61442} = (1, 63, 13, 1)$ lies on line ℓ_3

$215: P_{62914} = (1, 22, 14, 1)$ lies on line ℓ_3

$216: P_{63042} = (1, 24, 14, 1)$ lies on line ℓ_4

$217: P_{67714} = (1, 33, 15, 1)$ lies on line ℓ_4

$218: P_{68546} = (1, 46, 15, 1)$ lies on line ℓ_3

$219: P_{72450} = (1, 43, 16, 1)$ lies on line ℓ_3

$220: P_{73474} = (1, 59, 16, 1)$ lies on line ℓ_4

$221: P_{73922} = (1, 2, 17, 1)$ lies on line ℓ_4

$222: P_{75010} = (1, 19, 17, 1)$ lies on line ℓ_3

$223: P_{80450} = (1, 40, 18, 1)$ lies on line ℓ_4

$224: P_{81602} = (1, 58, 18, 1)$ lies on line ℓ_3

$225: P_{82114} = (1, 2, 19, 1)$ lies on line ℓ_3

$226: P_{83074} = (1, 17, 19, 1)$ lies on line ℓ_4

$227: P_{86658} = (1, 9, 20, 1)$ lies on line ℓ_3

$228: P_{87938} = (1, 29, 20, 1)$ lies on line ℓ_4

$229: P_{92482} = (1, 36, 21, 1)$ lies on line ℓ_4

$230: P_{93314} = (1, 49, 21, 1)$ lies on line ℓ_3

$231: P_{95170} = (1, 14, 22, 1)$ lies on line ℓ_4

$232: P_{95810} = (1, 24, 22, 1)$ lies on line ℓ_3

$233: P_{100418} = (1, 32, 23, 1)$ lies on line ℓ_3

$234: P_{101890} = (1, 55, 23, 1)$ lies on line ℓ_4

$235: P_{103362} = (1, 14, 24, 1)$ lies on line ℓ_3

$236: P_{103874} = (1, 22, 24, 1)$ lies on line ℓ_4

$237: P_{109570} = (1, 47, 25, 1)$ lies on line ℓ_4

$238: P_{110018} = (1, 54, 25, 1)$ lies on line ℓ_3

$239: P_{110978} = (1, 5, 26, 1)$ lies on line ℓ_4

$240: P_{112642} = (1, 31, 26, 1)$ lies on line ℓ_3

$241: P_{117250} = (1, 39, 27, 1)$ lies on line ℓ_3

$242: P_{118594} = (1, 60, 27, 1)$ lies on line ℓ_4

$243: P_{121666} = (1, 44, 28, 1)$ lies on line ℓ_3

$244: P_{121922} = (1, 48, 28, 1)$ lies on line ℓ_4

$245: P_{123522} = (1, 9, 29, 1)$ lies on line ℓ_4

$246: P_{124226} = (1, 20, 29, 1)$ lies on line ℓ_3

$247: P_{129282} = (1, 35, 30, 1)$ lies on line ℓ_4

$248: P_{130946} = (1, 61, 30, 1)$ lies on line ℓ_3

$249: P_{131458} = (1, 5, 31, 1)$ lies on line ℓ_3

$250: P_{132802} = (1, 26, 31, 1)$ lies on line ℓ_4

$251: P_{136706} = (1, 23, 32, 1)$ lies on line ℓ_4

252 : $P_{138754} = (1, 55, 32, 1)$ lies on line ℓ_3

253 : $P_{140290} = (1, 15, 33, 1)$ lies on line ℓ_3

254 : $P_{142274} = (1, 46, 33, 1)$ lies on line ℓ_4

255 : $P_{143682} = (1, 4, 34, 1)$ lies on line ℓ_4

256 : $P_{145858} = (1, 38, 34, 1)$ lies on line ℓ_3

257 : $P_{149442} = (1, 30, 35, 1)$ lies on line ℓ_3

258 : $P_{151426} = (1, 61, 35, 1)$ lies on line ℓ_4

259 : $P_{152962} = (1, 21, 36, 1)$ lies on line ℓ_3

260 : $P_{154754} = (1, 49, 36, 1)$ lies on line ℓ_4

261 : $P_{156226} = (1, 8, 37, 1)$ lies on line ℓ_4

262 : $P_{158594} = (1, 45, 37, 1)$ lies on line ℓ_3

263 : $P_{160066} = (1, 4, 38, 1)$ lies on line ℓ_3

264 : $P_{161986} = (1, 34, 38, 1)$ lies on line ℓ_4

265 : $P_{165634} = (1, 27, 39, 1)$ lies on line ℓ_4

266 : $P_{167746} = (1, 60, 39, 1)$ lies on line ℓ_3

267 : $P_{169154} = (1, 18, 40, 1)$ lies on line ℓ_3

268 : $P_{171714} = (1, 58, 40, 1)$ lies on line ℓ_4

269 : $P_{172290} = (1, 3, 41, 1)$ lies on line ℓ_4

270 : $P_{174786} = (1, 42, 41, 1)$ lies on line ℓ_3

271 : $P_{176386} = (1, 3, 42, 1)$ lies on line ℓ_3

272 : $P_{178818} = (1, 41, 42, 1)$ lies on line ℓ_4

273 : $P_{181314} = (1, 16, 43, 1)$ lies on line ℓ_4

274 : $P_{184066} = (1, 59, 43, 1)$ lies on line ℓ_3

275 : $P_{186178} = (1, 28, 44, 1)$ lies on line ℓ_4

276 : $P_{187458} = (1, 48, 44, 1)$ lies on line ℓ_3

277 : $P_{188994} = (1, 8, 45, 1)$ lies on line ℓ_3

278 : $P_{190850} = (1, 37, 45, 1)$ lies on line ℓ_4

279 : $P_{193538} = (1, 15, 46, 1)$ lies on line ℓ_4

280 : $P_{194690} = (1, 33, 46, 1)$ lies on line ℓ_3

281 : $P_{198274} = (1, 25, 47, 1)$ lies on line ℓ_3

282 : $P_{200130} = (1, 54, 47, 1)$ lies on line ℓ_4

283 : $P_{202562} = (1, 28, 48, 1)$ lies on line ℓ_3

284 : $P_{203586} = (1, 44, 48, 1)$ lies on line ℓ_4

285 : $P_{206210} = (1, 21, 49, 1)$ lies on line ℓ_4

286 : $P_{207170} = (1, 36, 49, 1)$ lies on line ℓ_3

287 : $P_{209794} = (1, 13, 50, 1)$ lies on line ℓ_3

288 : $P_{212994} = (1, 63, 50, 1)$ lies on line ℓ_4

289 : $P_{213442} = (1, 6, 51, 1)$ lies on line ℓ_4

290 : $P_{216450} = (1, 53, 51, 1)$ lies on line ℓ_3

291 : $P_{217794} = (1, 10, 52, 1)$ lies on line ℓ_4

292 : $P_{221122} = (1, 62, 52, 1)$ lies on line ℓ_3

293 : $P_{221634} = (1, 6, 53, 1)$ lies on line ℓ_3

294 : $P_{224514} = (1, 51, 53, 1)$ lies on line ℓ_4

295 : $P_{226946} = (1, 25, 54, 1)$ lies on line ℓ_4

296 : $P_{228354} = (1, 47, 54, 1)$ lies on line ℓ_3

297 : $P_{230914} = (1, 23, 55, 1)$ lies on line ℓ_3

298 : $P_{231490} = (1, 32, 55, 1)$ lies on line ℓ_4

299 : $P_{233602} = (1, 1, 56, 1)$ lies on line ℓ_4

300 : $P_{237186} = (1, 57, 56, 1)$ lies on line ℓ_3

301 : $P_{237698} = (1, 1, 57, 1)$ lies on line ℓ_3

302 : $P_{241218} = (1, 56, 57, 1)$ lies on line ℓ_4

303 : $P_{242882} = (1, 18, 58, 1)$ lies on line ℓ_4

304 : $P_{244290} = (1, 40, 58, 1)$ lies on line ℓ_3

305 : $P_{246850} = (1, 16, 59, 1)$ lies on line ℓ_3

306 : $P_{248578} = (1, 43, 59, 1)$ lies on line ℓ_4

307 : $P_{251650} = (1, 27, 60, 1)$ lies on line ℓ_3

308 : $P_{252418} = (1, 39, 60, 1)$ lies on line ℓ_4

309 : $P_{255938} = (1, 30, 61, 1)$ lies on line ℓ_4

310 : $P_{256258} = (1, 35, 61, 1)$ lies on line ℓ_3

311 : $P_{258754} = (1, 10, 62, 1)$ lies on line ℓ_3

312 : $P_{261442} = (1, 52, 62, 1)$ lies on line ℓ_4

313 : $P_{263042} = (1, 13, 63, 1)$ lies on line ℓ_4

314 : $P_{265410} = (1, 50, 63, 1)$ lies on line ℓ_3

The single points on the surface are:

Points on surface but on no line

The surface has 3906 points not on any line:
Too many to print.

Line Intersection Graph

```
 |0 1 2 3 4
0|0 1 1 0 1
1|1 0 1 1 0
2|1 1 0 1 1
3|0 1 1 0 1
4|1 0 1 1 0
```

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_4
in point	P_0	P_{3715}	P_{3715}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3
in point	P_0	P_{3651}	P_{3651}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4
in point	P_{3715}	P_{3651}	P_{3651}	P_{3715}

Line 3 intersects

Line	ℓ_1	ℓ_2	ℓ_4
in point	P_{3651}	P_{3651}	P_{4163}

Line 4 intersects

Line	ℓ_0	ℓ_2	ℓ_3
in point	P_{3715}	P_{3715}	P_{4163}

The surface has 4225 points:
Too many to print.