Rank-65904 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^3 + X_2^3 + X_3^3 + X_0^2X_2 + X_0^2X_3 + X_1^2X_2 + X_0X_1X_2 = 0$$

(1, 0, 1, 1, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is -2130173882

General information

Number of lines	27
Number of points	4545
Number of singular points	0
Number of Eckardt points	1
Number of double points	132
Number of single points	1488
Number of points off lines	2924
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^{27}
Type of lines on points	3, 2^{132}, 1^{1488}, 0^{2924}

Singular Points

The surface has 0 singular points:

The 27 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = a_1 = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{18} \\ 0 & 1 & 0 & 0 \end{array}\right]_{2929344} = \left[\begin{array}{cccc} 1 & 0 & 0 & 11 \\ 0 & 1 & 0 & 0 \end{array}\right]_{2929344} = \mathbf{Pl}(37,0,0,1,0,0)_{166}$$

$$\ell_1 = a_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{18} & 0 \\ 0 & 1 & \epsilon^{9} & 1 \end{array}\right]_{45882} = \left[\begin{array}{cccc} 1 & 0 & 11 & 0 \\ 0 & 1 & 47 & 1 \end{array}\right]_{45882} = \mathbf{Pl}(1,1,47,0,37,1)_{9974418}$$

$$\ell_2 = a_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{36} & 0 \\ 0 & 1 & \epsilon^{45} & \epsilon^{18} \end{array}\right]_{150537} = \left[\begin{array}{cccc} 1 & 0 & 36 & 0 \\ 0 & 1 & 37 & 11 \end{array}\right]_{150537} = \mathbf{Pl}(37, 11, 46, 0, 37, 1)_{9974391}$$

$$\ell_3 = a_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{60} & \epsilon^{23} \\ 0 & 1 & \epsilon^{43} & \epsilon^{17} \end{array}\right]_{10172893} = \left[\begin{array}{cccc} 1 & 0 & 12 & 38 \\ 0 & 1 & 17 & 53 \end{array}\right]_{10172893} = \mathbf{Pl}(39, 20, 41, 23, 44, 1)_{11981321}$$

$$\ell_4 = a_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{41} & \epsilon^{50} \\ 0 & 1 & \epsilon^{29} & \epsilon^{10} \end{array}\right]_{16098807} = \left[\begin{array}{cccc} 1 & 0 & 28 & 60 \\ 0 & 1 & 27 & 63 \end{array}\right]_{16098807} = \mathbf{Pl}(8, 12, 10, 47, 26, 1)_{7143457}$$

$$\ell_5 = a_6 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{51} & \epsilon^{29} \\ 0 & 1 & \epsilon^{46} & \epsilon^{5} \end{array}\right]_{7296324} = \left[\begin{array}{cccc} 1 & 0 & 25 & 27 \\ 0 & 1 & 43 & 32 \end{array}\right]_{7296324} = \mathbf{Pl}(26, 13, 19, 28, 53, 1)_{14252332}$$

$$\ell_6 = b_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{52} & \epsilon^{25} \\ 0 & 1 & \epsilon^{46} & \epsilon^{5} \end{array}\right]_{15922077} = \left[\begin{array}{cccc} 1 & 0 & 50 & 59 \\ 0 & 1 & 43 & 32 \end{array}\right]_{15922077} = \mathbf{Pl}(52, 54, 46, 36, 42, 1)_{11477208}$$

$$\ell_7 = b_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{19} & \epsilon^{37} \\ 0 & 1 & \epsilon^{58} & \epsilon^{20} \end{array}\right]_{11012825} = \left[\begin{array}{cccc} 1 & 0 & 22 & 41 \\ 0 & 1 & 3 & 44 \end{array}\right]_{11012825} = \mathbf{Pl}(33, 49, 37, 11, 2, 1)_{957701}$$

$$\ell_8 = b_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{57} & \epsilon^{46} \\ 0 & 1 & \epsilon^{23} & \epsilon^{34} \end{array}\right]_{11655575} = \left[\begin{array}{cccc} 1 & 0 & 49 & 43 \\ 0 & 1 & 38 & 9 \end{array}\right]_{11655575} = \mathbf{Pl}(42, 55, 31, 50, 14, 1)_{4078478}$$

$$\ell_9 = b_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{36} & 0 \\ 0 & 1 & \epsilon^{18} & 1 \end{array}\right]_{149871} = \left[\begin{array}{cccc} 1 & 0 & 36 & 0 \\ 0 & 1 & 11 & 1 \end{array}\right]_{149871} = \mathbf{Pl}(1, 1, 11, 0, 46, 1)_{12330870}$$

$$\ell_{10} = b_5 = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{36} \\ 0 & 1 & \epsilon^{27} & \epsilon^{36} \end{array}\right]_{9593455} = \left[\begin{array}{cccc} 1 & 0 & 1 & 36 \\ 0 & 1 & 46 & 36 \end{array}\right]_{9593455} = \mathbf{Pl}(11, 37, 46, 36, 36, 1)_{9903931}$$

$$\ell_{11} = b_6 = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{9} \\ 0 & 1 & 0 & 0 \end{array}\right]_{12516288} = \left[\begin{array}{cccc} 1 & 0 & 0 & 47 \\ 0 & 1 & 0 & 0 \end{array}\right]_{12516288} = \mathbf{Pl}(10, 0, 0, 1, 0, 0)_{139}$$

$$\ell_{12} = c_{12} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{15} & \epsilon^{53} \\ 0 & 1 & \epsilon^{58} & \epsilon^{20} \end{array}\right]_{1421720} = \left[\begin{array}{cccc} 1 & 0 & 21 & 5 \\ 0 & 1 & 3 & 44 \end{array}\right]_{1421720} = \mathbf{Pl}(4, 24, 59, 51, 32, 1)_{8905311}$$

$$\ell_{13} = c_{13} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{26} & \epsilon^{44} \\ 0 & 1 & \epsilon^{23} & \epsilon^{34} \end{array}\right]_{9150653} = \left[\begin{array}{cccc} 1 & 0 & 23 & 34 \\ 0 & 1 & 38 & 9 \end{array}\right]_{9150653} = \mathbf{Pl}(15, 21, 37, 11, 39, 1)_{10654328}$$

$$\ell_{14} = c_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{9} & 1 \\ 0 & 1 & \epsilon^{18} & 1 \end{array}\right]_{461946} = \left[\begin{array}{cccc} 1 & 0 & 47 & 1 \\ 0 & 1 & 11 & 1 \end{array}\right]_{461946} = \mathbf{Pl}(36, 46, 47, 10, 10, 1)_{3093845}$$

$$\ell_{15} = c_{15} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{9} & 0 \\ 0 & 1 & \epsilon^{27} & \epsilon^{36} \end{array}\right]_{197917} = \left[\begin{array}{cccc} 1 & 0 & 47 & 0 \\ 0 & 1 & 46 & 36 \end{array}\right]_{197917} = \mathbf{Pl}(46, 36, 10, 0, 46, 1)_{12330852}$$

$$\ell_{16} = c_{16} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{36} \\ 0 & 1 & 0 & 0 \end{array}\right]_{9586944} = \left[\begin{array}{cccc} 1 & 0 & 0 & 36 \\ 0 & 1 & 0 & 0 \end{array}\right]_{9586944} = \mathbf{Pl}(46, 0, 0, 1, 0, 0)_{175}$$

$$\ell_{17} = c_{23} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{38} & \epsilon^{11} \\ 0 & 1 & \epsilon^{53} & \epsilon^{40} \end{array}\right]_{8468536} = \left[\begin{array}{cccc} 1 & 0 & 51 & 31 \\ 0 & 1 & 5 & 14 \end{array}\right]_{8468536} = \mathbf{Pl}(62, 25, 46, 36, 4, 1)_{1516414}$$

$$\ell_{18} = c_{24} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{9} & 0 \\ 0 & 1 & \epsilon^{36} & 1 \end{array}\right]_{195667} = \left[\begin{array}{cccc} 1 & 0 & 47 & 0 \\ 0 & 1 & 36 & 1 \end{array}\right]_{195667} = \mathbf{Pl}(1, 1, 36, 0, 10, 1)_{2897565}$$

$$\ell_{19} = c_{25} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{18} & 0 \\ 0 & 1 & \epsilon^{54} & \epsilon^{9} \end{array}\right]_{48789} = \left[\begin{array}{cccc} 1 & 0 & 11 & 0 \\ 0 & 1 & 10 & 47 \end{array}\right]_{48789} = \mathbf{Pl}(10, 47, 37, 0, 10, 1)_{2897637}$$

$$\ell_{20} = c_{26} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{36} & 1 \\ 0 & 1 & \epsilon^{9} & 1 \end{array}\right]_{416211} = \left[\begin{array}{cccc} 1 & 0 & 36 & 1 \\ 0 & 1 & 47 & 1 \end{array}\right]_{416211} = \mathbf{Pl}(11, 37, 36, 46, 46, 1)_{12485041}$$

$$\ell_{21} = c_{34} = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{9} \\ 0 & 1 & \epsilon^{54} & \epsilon^{9} \end{array}\right]_{12523467} = \left[\begin{array}{cccc} 1 & 0 & 1 & 47 \\ 0 & 1 & 10 & 47 \end{array}\right]_{12523467} = \mathbf{Pl}(36, 46, 10, 47, 47, 1)_{12643952}$$

$$\ell_{22} = c_{35} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{18} & 1 \\ 0 & 1 & \epsilon^{36} & 1 \end{array}\right]_{312175} = \left[\begin{array}{cccc} 1 & 0 & 11 & 1 \\ 0 & 1 & 36 & 1 \end{array}\right]_{312175} = \mathbf{Pl}(47, 10, 11, 37, 37, 1)_{10027132}$$

$$\ell_{23} = c_{36} = \begin{bmatrix} 1 & 0 & 1 & \epsilon^{18} \\ 0 & 1 & \epsilon^{45} & \epsilon^{18} \end{bmatrix}_{2934246} = \begin{bmatrix} 1 & 0 & 1 & 11 \\ 0 & 1 & 37 & 11 \end{bmatrix}_{2934246} = \mathbf{Pl}(47, 10, 37, 11, 11, 1)_{3316246}$$

$$\ell_{24} = c_{45} = \begin{bmatrix} 1 & 0 & \epsilon^{30} & \epsilon^{43} \\ 0 & 1 & \epsilon^{53} & \epsilon^{40} \end{bmatrix}_{4752763} = \begin{bmatrix} 1 & 0 & 54 & 17 \\ 0 & 1 & 5 & 14 \end{bmatrix}_{4752763} = \mathbf{Pl}(16, 6, 60, 29, 63, 1)_{17033331}$$

$$\ell_{25} = c_{46} = \begin{bmatrix} 1 & 0 & \epsilon^{13} & \epsilon^{22} \\ 0 & 1 & \epsilon^{43} & \epsilon^{17} \end{bmatrix}_{5183854} = \begin{bmatrix} 1 & 0 & 29 & 19 \\ 0 & 1 & 17 & 53 \end{bmatrix}_{5183854} = \mathbf{Pl}(45, 7, 10, 47, 16, 1)_{4519985}$$

$$\ell_{26} = c_{56} = \begin{bmatrix} 1 & 0 & \epsilon^{39} & \epsilon^{58} \\ 0 & 1 & \epsilon^{29} & \epsilon^{10} \end{bmatrix}_{832098} = \begin{bmatrix} 1 & 0 & 7 & 3 \\ 0 & 1 & 27 & 63 \end{bmatrix}_{832098} = \mathbf{Pl}(2, 48, 34, 22, 9, 1)_{2781205}$$

Rank of lines: (2929344, 45882, 150537, 10172893, 16098807, 7296324, 15922077, 11012825, 11655575, 149871, 9593455, 12516288, 1421720, 9150653, 461946, 197917, 9586944, 8468536, 195667, 48789, 416211, 12523467, 312175, 2934246, 4752763, 5183854, 832098)
Rank of points on Klein quadric: (166, 9974418, 9974391, 11981321, 7143457, 14252332, 11477208, 957701, 4078478, 12330870, 9903931, 139, 8905311, 10654328, 3093845, 12330852, 175, 1516414, 2897565, 2897637, 12485041, 12643952, 10027132, 3316246, 17033331, 4519985, 2781205)

Eckardt Points

The surface has 1 Eckardt points:
$0 : E_{16} = a_1 \cap b_6 \cap c_{16} = P_1 = \mathbf{P}(0, 1, 0, 0) = \mathbf{P}(0, 1, 0, 0).$

Double Points

The surface has 132 Double points:
The double points on the surface are:

$P_{6311} = (37, 33, 0, 1) = \ell_0 \cap \ell_7 = a_1 \cap b_2$
$P_{6887} = (37, 42, 0, 1) = \ell_0 \cap \ell_8 = a_1 \cap b_3$
$P_{4263} = (37, 1, 0, 1) = \ell_0 \cap \ell_9 = a_1 \cap b_4$
$P_{4903} = (37, 11, 0, 1) = \ell_0 \cap \ell_{10} = a_1 \cap b_5$
$P_{4455} = (37, 4, 0, 1) = \ell_0 \cap \ell_{12} = a_1 \cap c_{12}$
$P_{5159} = (37, 15, 0, 1) = \ell_0 \cap \ell_{13} = a_1 \cap c_{13}$
$P_{6503} = (37, 36, 0, 1) = \ell_0 \cap \ell_{14} = a_1 \cap c_{14}$
$P_{7143} = (37, 46, 0, 1) = \ell_0 \cap \ell_{15} = a_1 \cap c_{15}$
$P_{131235} = (34, 1, 31, 1) = \ell_1 \cap \ell_6 = a_2 \cap b_1$
$P_{118957} = (44, 1, 28, 1) = \ell_1 \cap \ell_8 = a_2 \cap b_3$
$P_{45231} = (46, 1, 10, 1) = \ell_1 \cap \ell_9 = a_2 \cap b_4$
$P_{8368} = (47, 1, 1, 1) = \ell_1 \cap \ell_{10} = a_2 \cap b_5$
$P_{4236} = (10, 1, 0, 1) = \ell_1 \cap \ell_{11} = a_2 \cap b_6$
$P_{123018} = (9, 1, 29, 1) = \ell_1 \cap \ell_{12} = a_2 \cap c_{12}$
$P_{245930} = (41, 1, 59, 1) = \ell_1 \cap \ell_{17} = a_2 \cap c_{23}$
$P_{192678} = (37, 1, 46, 1) = \ell_1 \cap \ell_{18} = a_2 \cap c_{24}$
$P_{104} = (37, 0, 1, 0) = \ell_1 \cap \ell_{19} = a_2 \cap c_{25}$
$P_{196737} = (0, 1, 47, 1) = \ell_1 \cap \ell_{20} = a_2 \cap c_{26}$
$P_{174473} = (8, 37, 41, 1) = \ell_2 \cap \ell_6 = a_3 \cap b_1$
$P_{121259} = (42, 37, 28, 1) = \ell_2 \cap \ell_7 = a_3 \cap b_2$
$P_{113} = (46, 0, 1, 0) = \ell_2 \cap \ell_9 = a_3 \cap b_4$
$P_{153996} = (11, 37, 36, 1) = \ell_2 \cap \ell_{10} = a_3 \cap b_5$
$P_{6540} = (10, 37, 0, 1) = \ell_2 \cap \ell_{11} = a_3 \cap b_6$
$P_{125317} = (4, 37, 29, 1) = \ell_2 \cap \ell_{13} = a_3 \cap c_{13}$
$P_{145838} = (45, 37, 34, 1) = \ell_2 \cap \ell_{17} = a_3 \cap c_{23}$
$P_{51632} = (47, 37, 11, 1) = \ell_2 \cap \ell_{21} = a_3 \cap c_{34}$
$P_{10661} = (36, 37, 1, 1) = \ell_2 \cap \ell_{22} = a_3 \cap c_{35}$
$P_{194945} = (0, 37, 46, 1) = \ell_2 \cap \ell_{23} = a_3 \cap c_{36}$
$P_{117244} = (59, 38, 27, 1) = \ell_3 \cap \ell_6 = a_4 \cap b_1$
$P_{161236} = (19, 22, 38, 1) = \ell_3 \cap \ell_7 = a_4 \cap b_2$
$P_{206554} = (25, 26, 49, 1) = \ell_3 \cap \ell_8 = a_4 \cap b_3$
$P_{247952} = (15, 33, 59, 1) = \ell_3 \cap \ell_{10} = a_4 \cap b_5$
$P_{6668} = (10, 39, 0, 1) = \ell_3 \cap \ell_{11} = a_4 \cap b_6$
$P_{251872} = (31, 30, 60, 1) = \ell_3 \cap \ell_{14} = a_4 \cap c_{14}$
$P_{209088} = (63, 1, 50, 1) = \ell_3 \cap \ell_{18} = a_4 \cap c_{24}$
$P_{213571} = (2, 8, 51, 1) = \ell_3 \cap \ell_{21} = a_4 \cap c_{34}$
$P_{56050} = (49, 42, 12, 1) = \ell_3 \cap \ell_{24} = a_4 \cap c_{45}$
$P_{101121} = (0, 43, 23, 1) = \ell_3 \cap \ell_{25} = a_4 \cap c_{46}$
$P_{33942} = (21, 17, 7, 1) = \ell_4 \cap \ell_6 = a_5 \cap b_1$
$P_{92663} = (54, 38, 21, 1) = \ell_4 \cap \ell_7 = a_5 \cap b_2$
$P_{19261} = (60, 43, 3, 1) = \ell_4 \cap \ell_8 = a_5 \cap b_3$
$P_{82108} = (59, 1, 19, 1) = \ell_4 \cap \ell_9 = a_5 \cap b_4$
$P_{4684} = (10, 8, 0, 1) = \ell_4 \cap \ell_{11} = a_5 \cap b_6$
$P_{134114} = (33, 46, 31, 1) = \ell_4 \cap \ell_{15} = a_5 \cap c_{15}$
$P_{209640} = (39, 10, 50, 1) = \ell_4 \cap \ell_{19} = a_5 \cap c_{25}$
$P_{216438} = (53, 52, 51, 1) = \ell_4 \cap \ell_{22} = a_5 \cap c_{35}$
$P_{75616} = (31, 28, 17, 1) = \ell_4 \cap \ell_{24} = a_5 \cap c_{45}$
$P_{94593} = (0, 5, 22, 1) = \ell_4 \cap \ell_{26} = a_5 \cap c_{56}$

$P_{119041} = (0, 3, 28, 1) = \ell_5 \cap \ell_6 = a_6 \cap b_1$
$P_{26410} = (41, 27, 5, 1) = \ell_5 \cap \ell_7 = a_6 \cap b_2$
$P_{106696} = (7, 2, 25, 1) = \ell_5 \cap \ell_8 = a_6 \cap b_3$
$P_{94351} = (14, 1, 22, 1) = \ell_5 \cap \ell_9 = a_6 \cap b_4$
$P_{102353} = (16, 62, 23, 1) = \ell_5 \cap \ell_{10} = a_6 \cap b_5$
$P_{5872} = (46, 26, 0, 1) = \ell_5 \cap \ell_{16} = a_6 \cap c_{16}$
$P_{133411} = (34, 35, 31, 1) = \ell_5 \cap \ell_{20} = a_6 \cap c_{26}$
$P_{174985} = (8, 45, 41, 1) = \ell_5 \cap \ell_{23} = a_6 \cap c_{36}$
$P_{116668} = (59, 29, 27, 1) = \ell_5 \cap \ell_{25} = a_6 \cap c_{46}$
$P_{33110} = (21, 4, 7, 1) = \ell_5 \cap \ell_{26} = a_6 \cap c_{56}$
$P_{27882} = (41, 50, 5, 1) = \ell_6 \cap \ell_{12} = b_1 \cap c_{12}$
$P_{106888} = (7, 5, 25, 1) = \ell_6 \cap \ell_{13} = b_1 \cap c_{13}$
$P_{95247} = (14, 15, 22, 1) = \ell_6 \cap \ell_{14} = b_1 \cap c_{14}$
$P_{101329} = (16, 46, 23, 1) = \ell_6 \cap \ell_{15} = b_1 \cap c_{15}$
$P_{7536} = (46, 52, 0, 1) = \ell_6 \cap \ell_{16} = b_1 \cap c_{16}$
$P_{214145} = (0, 17, 51, 1) = \ell_7 \cap \ell_{12} = b_2 \cap c_{12}$
$P_{228109} = (12, 43, 54, 1) = \ell_7 \cap \ell_{17} = b_2 \cap c_{23}$
$P_{143549} = (60, 1, 34, 1) = \ell_7 \cap \ell_{18} = b_2 \cap c_{24}$
$P_{82687} = (62, 10, 19, 1) = \ell_7 \cap \ell_{19} = b_2 \cap c_{25}$
$P_{123466} = (9, 8, 29, 1) = \ell_7 \cap \ell_{20} = b_2 \cap c_{26}$
$P_{210689} = (0, 27, 50, 1) = \ell_8 \cap \ell_{13} = b_3 \cap c_{13}$
$P_{183587} = (34, 51, 43, 1) = \ell_8 \cap \ell_{17} = b_3 \cap c_{23}$
$P_{253941} = (52, 62, 60, 1) = \ell_8 \cap \ell_{21} = b_3 \cap c_{34}$
$P_{173268} = (19, 18, 41, 1) = \ell_8 \cap \ell_{22} = b_3 \cap c_{35}$
$P_{125061} = (4, 33, 29, 1) = \ell_8 \cap \ell_{23} = b_3 \cap c_{36}$
$P_{49281} = (0, 1, 11, 1) = \ell_9 \cap \ell_{14} = b_4 \cap c_{14}$
$P_{155787} = (10, 1, 37, 1) = \ell_9 \cap \ell_{18} = b_4 \cap c_{24}$
$P_{8332} = (11, 1, 1, 1) = \ell_9 \cap \ell_{21} = b_4 \cap c_{34}$
$P_{98465} = (32, 1, 23, 1) = \ell_9 \cap \ell_{24} = b_4 \cap c_{45}$
$P_{250016} = (31, 1, 60, 1) = \ell_9 \cap \ell_{25} = b_4 \cap c_{46}$
$P_{48065} = (0, 46, 10, 1) = \ell_{10} \cap \ell_{15} = b_5 \cap c_{15}$
$P_{197349} = (36, 10, 47, 1) = \ell_{10} \cap \ell_{19} = b_5 \cap c_{25}$
$P_{717} = (10, 10, 1, 0) = \ell_{10} \cap \ell_{22} = b_5 \cap c_{35}$
$P_{97627} = (26, 52, 22, 1) = \ell_{10} \cap \ell_{24} = b_5 \cap c_{45}$
$P_{132130} = (33, 15, 31, 1) = \ell_{10} \cap \ell_{26} = b_5 \cap c_{56}$
$P_{4876} = (10, 11, 0, 1) = \ell_{11} \cap \ell_{20} = b_6 \cap c_{26}$
$P_{7180} = (10, 47, 0, 1) = \ell_{11} \cap \ell_{23} = b_6 \cap c_{36}$
$P_{7052} = (10, 45, 0, 1) = \ell_{11} \cap \ell_{25} = b_6 \cap c_{46}$
$P_{4300} = (10, 2, 0, 1) = \ell_{11} \cap \ell_{26} = b_6 \cap c_{56}$
$P_{85375} = (62, 52, 19, 1) = \ell_{12} \cap \ell_{21} = c_{12} \cap c_{34}$
$P_{147389} = (60, 61, 34, 1) = \ell_{12} \cap \ell_{22} = c_{12} \cap c_{35}$
$P_{119851} = (42, 15, 28, 1) = \ell_{12} \cap \ell_{23} = c_{12} \cap c_{36}$
$P_{227853} = (12, 39, 54, 1) = \ell_{12} \cap \ell_{24} = c_{12} \cap c_{45}$
$P_{160148} = (19, 5, 38, 1) = \ell_{12} \cap \ell_{25} = c_{12} \cap c_{46}$
$P_{91255} = (54, 16, 21, 1) = \ell_{12} \cap \ell_{26} = c_{12} \cap c_{56}$
$P_{172180} = (19, 1, 41, 1) = \ell_{13} \cap \ell_{18} = c_{13} \cap c_{24}$
$P_{250613} = (52, 10, 60, 1) = \ell_{13} \cap \ell_{19} = c_{13} \cap c_{25}$
$P_{121773} = (44, 45, 28, 1) = \ell_{13} \cap \ell_{20} = c_{13} \cap c_{26}$
$P_{181411} = (34, 17, 43, 1) = \ell_{13} \cap \ell_{24} = c_{13} \cap c_{45}$
$P_{205082} = (25, 3, 49, 1) = \ell_{13} \cap \ell_{25} = c_{13} \cap c_{46}$
$P_{17981} = (60, 23, 3, 1) = \ell_{13} \cap \ell_{26} = c_{13} \cap c_{56}$
$P_{100513} = (32, 33, 23, 1) = \ell_{14} \cap \ell_{17} = c_{14} \cap c_{23}$
$P_{8908} = (11, 10, 1, 1) = \ell_{14} \cap \ell_{19} = c_{14} \cap c_{25}$
$P_{48175} = (46, 47, 10, 1) = \ell_{14} \cap \ell_{20} = c_{14} \cap c_{26}$
$P_{156427} = (10, 11, 37, 1) = \ell_{14} \cap \ell_{22} = c_{14} \cap c_{35}$
$P_{3057} = (46, 46, 1, 0) = \ell_{14} \cap \ell_{23} = c_{14} \cap c_{36}$
$P_{85756} = (59, 58, 19, 1) = \ell_{14} \cap \ell_{26} = c_{14} \cap c_{56}$
$P_{97243} = (26, 46, 22, 1) = \ell_{15} \cap \ell_{17} = c_{15} \cap c_{23}$
$P_{77} = (10, 0, 1, 0) = \ell_{15} \cap \ell_{18} = c_{15} \cap c_{24}$
$P_{11248} = (47, 46, 1, 1) = \ell_{15} \cap \ell_{20} = c_{15} \cap c_{26}$
$P_{199653} = (36, 46, 47, 1) = \ell_{15} \cap \ell_{21} = c_{15} \cap c_{34}$
$P_{154572} = (11, 46, 36, 1) = \ell_{15} \cap \ell_{23} = c_{15} \cap c_{36}$
$P_{248784} = (15, 46, 59, 1) = \ell_{15} \cap \ell_{25} = c_{15} \cap c_{46}$
$P_{8176} = (46, 62, 0, 1) = \ell_{16} \cap \ell_{17} = c_{16} \cap c_{23}$
$P_{4272} = (46, 1, 0, 1) = \ell_{16} \cap \ell_{18} = c_{16} \cap c_{24}$
$P_{4848} = (46, 10, 0, 1) = \ell_{16} \cap \ell_{19} = c_{16} \cap c_{25}$
$P_{6512} = (46, 36, 0, 1) = \ell_{16} \cap \ell_{21} = c_{16} \cap c_{34}$
$P_{7216} = (46, 47, 0, 1) = \ell_{16} \cap \ell_{22} = c_{16} \cap c_{35}$
$P_{5232} = (46, 16, 0, 1) = \ell_{16} \cap \ell_{24} = c_{16} \cap c_{45}$
$P_{125377} = (0, 38, 29, 1) = \ell_{17} \cap \ell_{24} = c_{23} \cap c_{45}$
$P_{55090} = (49, 27, 12, 1) = \ell_{17} \cap \ell_{25} = c_{23} \cap c_{46}$
$P_{74016} = (31, 3, 17, 1) = \ell_{17} \cap \ell_{26} = c_{23} \cap c_{56}$
$P_{151681} = (0, 1, 36, 1) = \ell_{18} \cap \ell_{22} = c_{24} \cap c_{35}$
$P_{8357} = (36, 1, 1, 1) = \ell_{18} \cap \ell_{23} = c_{24} \cap c_{36}$
$P_{213174} = (53, 1, 51, 1) = \ell_{18} \cap \ell_{26} = c_{24} \cap c_{56}$
$P_{156353} = (0, 10, 37, 1) = \ell_{19} \cap \ell_{21} = c_{25} \cap c_{34}$
$P_{49904} = (47, 10, 11, 1) = \ell_{19} \cap \ell_{23} = c_{25} \cap c_{36}$
$P_{213699} = (2, 10, 51, 1) = \ell_{19} \cap \ell_{25} = c_{25} \cap c_{46}$
$P_{2472} = (37, 37, 1, 0) = \ell_{20} \cap \ell_{21} = c_{26} \cap c_{34}$
$P_{194918} = (37, 36, 46, 1) = \ell_{20} \cap \ell_{22} = c_{26} \cap c_{35}$
$P_{248426} = (41, 40, 59, 1) = \ell_{20} \cap \ell_{24} = c_{26} \cap c_{45}$
$P_{211880} = (39, 45, 50, 1) = \ell_{21} \cap \ell_{26} = c_{34} \cap c_{56}$
$P_{212992} = (63, 62, 50, 1) = \ell_{22} \cap \ell_{25} = c_{35} \cap c_{46}$
$P_{143982} = (45, 8, 34, 1) = \ell_{23} \cap \ell_{24} = c_{36} \cap c_{45}$

Single Points

The surface has 1488 single points:
Too many to print.

Points on surface but on no line

The surface has 2924 points not on any line:
Too many to print.

Line Intersection Graph

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
		a_1	a_2	a_3	a_4	a_5	a_6	b_1	b_2	b_3	b_4	b_5	b_6	c_{12}	c_{13}	c_{14}	c_{15}	c_{16}	c_{23}	c_{24}	c_{25}	c_{26}	c_{34}	c_{35}	c_{36}	c_{45}	c_{46}	c_{56}
0	a_1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
1	a_2	0	0	0	0	0	0	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0
2	a_3	0	0	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0	1	0	0	0	1	1	1	0	0	0
3	a_4	0	0	0	0	0	0	1	1	1	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	0
4	a_5	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	0	1
5	a_6	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1
6	b_1	0	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
7	b_2	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0
8	b_3	1	1	0	1	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	1	0	0	0
9	b_4	1	1	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	1	0
10	b_5	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	1
11	b_6	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1
12	c_{12}	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
13	c_{13}	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1
14	c_{14}	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	1	1	0	0	1
15	c_{15}	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	1	1	0	1	0	1	0
16	c_{16}	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1	1	1	0	1	1	0	1	0	0
17	c_{23}	0	1	1	0	0	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	1
18	c_{24}	0	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	1
19	c_{25}	0	1	0	0	1	0	0	1	0	0	1	0	0	1	1	0	1	0	0	0	0	1	0	1	0	1	0
20	c_{26}	0	1	0	0	0	1	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0	1	1	0	1	0	0
21	c_{34}	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	1
22	c_{35}	0	0	1	0	1	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	1	0
23	c_{36}	0	0	1	0	0	1	0	0	1	0	0	1	1	0	1	1	0	0	1	1	0	0	0	0	1	0	0
24	c_{45}	0	0	0	1	1	0	0	0	0	1	1	0	1	1	0	0	1	1	0	0	1	0	0	1	0	0	0
25	c_{46}	0	0	0	1	0	1	0	0	0	1	0	1	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0
26	c_{56}	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}
in point	P_{6311}	P_{6887}	P_{4263}	P_{4903}	P_1	P_{4455}	P_{5159}	P_{6503}	P_{7143}	P_1

Line 1 intersects

Line	ℓ_6	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}
in point	P_{131235}	P_{118957}	P_{45231}	P_{8368}	P_{4236}	P_{123018}	P_{245930}	P_{192678}	P_{104}	P_{196737}

Line 2 intersects

Line	ℓ_6	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{13}	ℓ_{17}	ℓ_{21}	ℓ_{22}	ℓ_{23}
in point	P_{174473}	P_{121259}	P_{113}	P_{153996}	P_{6540}	P_{125317}	P_{145838}	P_{51632}	P_{10661}	P_{194945}

Line 3 intersects

Line	ℓ_6	ℓ_7	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{14}	ℓ_{18}	ℓ_{21}	ℓ_{24}	ℓ_{25}
in point	P_{117244}	P_{161236}	P_{206554}	P_{247952}	P_{6668}	P_{251872}	P_{209088}	P_{213571}	P_{56050}	P_{101121}

Line 4 intersects

Line	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{15}	ℓ_{19}	ℓ_{22}	ℓ_{24}	ℓ_{26}
in point	P_{33942}	P_{92663}	P_{19261}	P_{82108}	P_{4684}	P_{134114}	P_{209640}	P_{216438}	P_{75616}	P_{94593}

Line 5 intersects

Line	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{16}	ℓ_{20}	ℓ_{23}	ℓ_{25}	ℓ_{26}
in point	P_{119041}	P_{26410}	P_{106696}	P_{94351}	P_{102353}	P_{5872}	P_{133411}	P_{174985}	P_{116668}	P_{33110}

Line 6 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}
in point	P_{131235}	P_{174473}	P_{117244}	P_{33942}	P_{119041}	P_{27882}	P_{106888}	P_{95247}	P_{101329}	P_{7536}

Line 7 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_{12}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}
in point	P_{6311}	P_{121259}	P_{161236}	P_{92663}	P_{26410}	P_{214145}	P_{228109}	P_{143549}	P_{82687}	P_{123466}

Line 8 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_{13}	ℓ_{17}	ℓ_{21}	ℓ_{22}	ℓ_{23}
in point	P_{6887}	P_{118957}	P_{206554}	P_{19261}	P_{106696}	P_{210689}	P_{183587}	P_{253941}	P_{173268}	P_{125061}

Line 9 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_4	ℓ_5	ℓ_{14}	ℓ_{18}	ℓ_{21}	ℓ_{24}	ℓ_{25}
in point	P_{4263}	P_{45231}	P_{113}	P_{82108}	P_{94351}	P_{49281}	P_{155787}	P_{8332}	P_{98465}	P_{250016}

Line 10 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_5	ℓ_{15}	ℓ_{19}	ℓ_{22}	ℓ_{24}	ℓ_{26}
in point	P_{4903}	P_{8368}	P_{153996}	P_{247952}	P_{102353}	P_{48065}	P_{197349}	P_{717}	P_{97627}	P_{132130}

Line 11 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_{16}	ℓ_{20}	ℓ_{23}	ℓ_{25}	ℓ_{26}
in point	P_1	P_{4236}	P_{6540}	P_{6668}	P_{4684}	P_1	P_{4876}	P_{7180}	P_{7052}	P_{4300}

Line 12 intersects

Line	ℓ_0	ℓ_1	ℓ_6	ℓ_7	ℓ_{21}	ℓ_{22}	ℓ_{23}	ℓ_{24}	ℓ_{25}	ℓ_{26}
in point	P_{4455}	P_{123018}	P_{27882}	P_{214145}	P_{85375}	P_{147389}	P_{119851}	P_{227853}	P_{160148}	P_{91255}

Line 13 intersects

Line	ℓ_0	ℓ_2	ℓ_6	ℓ_8	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{24}	ℓ_{25}	ℓ_{26}
in point	P_{5159}	P_{125317}	P_{106888}	P_{210689}	P_{172180}	P_{250613}	P_{121773}	P_{181411}	P_{205082}	P_{17981}

Line 14 intersects

Line	ℓ_0	ℓ_3	ℓ_6	ℓ_9	ℓ_{17}	ℓ_{19}	ℓ_{20}	ℓ_{22}	ℓ_{23}	ℓ_{26}
in point	P_{6503}	P_{251872}	P_{95247}	P_{49281}	P_{100513}	P_{8908}	P_{48175}	P_{156427}	P_{3057}	P_{85756}

Line 15 intersects

Line	ℓ_0	ℓ_4	ℓ_6	ℓ_{10}	ℓ_{17}	ℓ_{18}	ℓ_{20}	ℓ_{21}	ℓ_{23}	ℓ_{25}
in point	P_{7143}	P_{134114}	P_{101329}	P_{48065}	P_{97243}	P_{77}	P_{11248}	P_{199653}	P_{154572}	P_{248784}

Line 16 intersects

Line	ℓ_0	ℓ_5	ℓ_6	ℓ_{11}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{21}	ℓ_{22}	ℓ_{24}
in point	P_1	P_{5872}	P_{7536}	P_1	P_{8176}	P_{4272}	P_{4848}	P_{6512}	P_{7216}	P_{5232}

Line 17 intersects

Line	ℓ_1	ℓ_2	ℓ_7	ℓ_8	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{24}	ℓ_{25}	ℓ_{26}
in point	P_{245930}	P_{145838}	P_{228109}	P_{183587}	P_{100513}	P_{97243}	P_{8176}	P_{125377}	P_{55090}	P_{74016}

Line 18 intersects

Line	ℓ_1	ℓ_3	ℓ_7	ℓ_9	ℓ_{13}	ℓ_{15}	ℓ_{16}	ℓ_{22}	ℓ_{23}	ℓ_{26}
in point	P_{192678}	P_{209088}	P_{143549}	P_{155787}	P_{172180}	P_{77}	P_{4272}	P_{151681}	P_{8357}	P_{213174}

Line 19 intersects

Line	ℓ_1	ℓ_4	ℓ_7	ℓ_{10}	ℓ_{13}	ℓ_{14}	ℓ_{16}	ℓ_{21}	ℓ_{23}	ℓ_{25}
in point	P_{104}	P_{209640}	P_{82687}	P_{197349}	P_{250613}	P_{8908}	P_{4848}	P_{156353}	P_{49904}	P_{213699}

Line 20 intersects

Line	ℓ_1	ℓ_5	ℓ_7	ℓ_{11}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{21}	ℓ_{22}	ℓ_{24}
in point	P_{196737}	P_{133411}	P_{123466}	P_{4876}	P_{121773}	P_{48175}	P_{11248}	P_{2472}	P_{194918}	P_{248426}

Line 21 intersects

Line	ℓ_2	ℓ_3	ℓ_8	ℓ_9	ℓ_{12}	ℓ_{15}	ℓ_{16}	ℓ_{19}	ℓ_{20}	ℓ_{26}
in point	P_{51632}	P_{213571}	P_{253941}	P_{8332}	P_{85375}	P_{199653}	P_{6512}	P_{156353}	P_{2472}	P_{211880}

Line 22 intersects

Line	ℓ_2	ℓ_4	ℓ_8	ℓ_{10}	ℓ_{12}	ℓ_{14}	ℓ_{16}	ℓ_{18}	ℓ_{20}	ℓ_{25}
in point	P_{10661}	P_{216438}	P_{173268}	P_{717}	P_{147389}	P_{156427}	P_{7216}	P_{151681}	P_{194918}	P_{212992}

Line 23 intersects

Line	ℓ_2	ℓ_5	ℓ_8	ℓ_{11}	ℓ_{12}	ℓ_{14}	ℓ_{15}	ℓ_{18}	ℓ_{19}	ℓ_{24}
in point	P_{194945}	P_{174985}	P_{125061}	P_{7180}	P_{119851}	P_{3057}	P_{154572}	P_{8357}	P_{49904}	P_{143982}

Line 24 intersects

Line	ℓ_3	ℓ_4	ℓ_9	ℓ_{10}	ℓ_{12}	ℓ_{13}	ℓ_{16}	ℓ_{17}	ℓ_{20}	ℓ_{23}
in point	P_{56050}	P_{75616}	P_{98465}	P_{97627}	P_{227853}	P_{181411}	P_{5232}	P_{125377}	P_{248426}	P_{143982}

Line 25 intersects

Line	ℓ_3	ℓ_5	ℓ_9	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{15}	ℓ_{17}	ℓ_{19}	ℓ_{22}
in point	P_{101121}	P_{116668}	P_{250016}	P_{7052}	P_{160148}	P_{205082}	P_{248784}	P_{55090}	P_{213699}	P_{212992}

Line 26 intersects

Line	ℓ_4	ℓ_5	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{17}	ℓ_{18}	ℓ_{21}
in point	P_{94593}	P_{33110}	P_{132130}	P_{4300}	P_{91255}	P_{17981}	P_{85756}	P_{74016}	P_{213174}	P_{211880}

The surface has 4545 points:
Too many to print.