Rank-65760 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^3 + X_2^3 + X_3^3 + X_0^2X_1 + X_0^2X_3 + X_0X_1^2 + X_0X_1X_2 = 0$$

(1, 0, 1, 1, 1, 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 1107828806

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:

$$\ell_0 = a_1 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{21} \end{bmatrix}_{17043513} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 57 \end{bmatrix}_{17043513} = \mathbf{Pl}(0,0,0,57,0,1)_{285641}$$

$$\ell_1 = a_2 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{21} & \epsilon^{21} \end{bmatrix}_{7866} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 57 & 57 \end{bmatrix}_{7866} = \mathbf{Pl}(56,57,1,0,57,1)_{15213175}$$

$$\ell_2 = a_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{45} & \epsilon^{54} \\ 0 & 1 & \epsilon^{45} & \epsilon^{45} \end{array}\right]_{2819402} = \left[\begin{array}{cccc} 1 & 0 & 37 & 10 \\ 0 & 1 & 37 & 37 \end{array}\right]_{2819402} = \mathbf{Pl}(10, 47, 10, 47, 1, 1)_{590577}$$

$$\ell_3 = a_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{27} & \epsilon^{45} \\ 0 & 1 & \epsilon^{27} & \epsilon^{27} \end{array}\right]_{10047644} = \left[\begin{array}{cccc} 1 & 0 & 46 & 37 \\ 0 & 1 & 46 & 46 \end{array}\right]_{10047644} = \mathbf{Pl}(37, 11, 37, 11, 1, 1)_{693798}$$

$$\ell_4 = a_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{54} & \epsilon^{27} \\ 0 & 1 & \epsilon^{54} & \epsilon^{54} \end{array}\right]_{12292244} = \left[\begin{array}{cccc} 1 & 0 & 10 & 46 \\ 0 & 1 & 10 & 10 \end{array}\right]_{12292244} = \mathbf{Pl}(46, 36, 46, 36, 1, 1)_{730536}$$

$$\ell_5 = a_6 = \left[\begin{array}{cccc} 1 & \epsilon^{42} & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{42} \end{array}\right]_{237168} = \left[\begin{array}{cccc} 1 & 56 & 0 & 0 \\ 0 & 0 & 1 & 56 \end{array}\right]_{237168} = \mathbf{Pl}(0, 0, 57, 56, 1, 1)_{551690}$$

$$\ell_6 = b_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & 1 \\ 0 & 1 & 1 & \epsilon^{42} \end{array}\right]_{507066} = \left[\begin{array}{cccc} 1 & 0 & 57 & 1 \\ 0 & 1 & 1 & 56 \end{array}\right]_{507066} = \mathbf{Pl}(57, 0, 57, 56, 57, 1)_{15228227}$$

$$\ell_7 = b_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & 1 \\ 0 & 1 & 1 & \epsilon^{21} \end{array}\right]_{502969} = \left[\begin{array}{cccc} 1 & 0 & 56 & 1 \\ 0 & 1 & 1 & 57 \end{array}\right]_{502969} = \mathbf{Pl}(56, 0, 56, 57, 56, 1)_{14966019}$$

$$\ell_8 = b_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{3} & \epsilon^{54} \\ 0 & 1 & \epsilon^{30} & \epsilon^{51} \end{array}\right]_{2697982} = \left[\begin{array}{cccc} 1 & 0 & 8 & 10 \\ 0 & 1 & 54 & 25 \end{array}\right]_{2697982} = \mathbf{Pl}(61, 18, 62, 25, 15, 1)_{4463301}$$

$$\ell_9 = b_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{48} & \epsilon^{45} \\ 0 & 1 & \epsilon^{39} & \epsilon^{60} \end{array}\right]_{9916438} = \left[\begin{array}{cccc} 1 & 0 & 15 & 37 \\ 0 & 1 & 7 & 12 \end{array}\right]_{9916438} = \mathbf{Pl}(35, 40, 8, 12, 62, 1)_{16567150}$$

$$\ell_{10} = b_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{12} & \epsilon^{27} \\ 0 & 1 & \epsilon^{57} & \epsilon^{15} \end{array}\right]_{12509359} = \left[\begin{array}{cccc} 1 & 0 & 62 & 46 \\ 0 & 1 & 49 & 21 \end{array}\right]_{12509359} = \mathbf{Pl}(30, 58, 15, 21, 8, 1)_{2444813}$$

$$\ell_{11} = b_6 = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{17043457} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{17043457} = \mathbf{Pl}(0, 0, 0, 1, 0, 1)_{278529}$$

$$\ell_{12} = c_{12} = \left[\begin{array}{cccc} 1 & \epsilon^{21} & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{21} \end{array}\right]_{241330} = \left[\begin{array}{cccc} 1 & 57 & 0 & 0 \\ 0 & 0 & 1 & 57 \end{array}\right]_{241330} = \mathbf{Pl}(0, 0, 56, 57, 1, 1)_{551563}$$

$$\ell_{13} = c_{13} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{28} & \epsilon^{21} \\ 0 & 1 & \epsilon^{46} & \epsilon^{4} \end{array}\right]_{15434216} = \left[\begin{array}{cccc} 1 & 0 & 61 & 57 \\ 0 & 1 & 43 & 16 \end{array}\right]_{15434216} = \mathbf{Pl}(41, 23, 35, 40, 7, 1)_{2258911}$$

$$\ell_{14} = c_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{7} & \epsilon^{21} \\ 0 & 1 & \epsilon^{43} & \epsilon \end{array}\right]_{15325108} = \left[\begin{array}{cccc} 1 & 0 & 35 & 57 \\ 0 & 1 & 17 & 2 \end{array}\right]_{15325108} = \mathbf{Pl}(59, 51, 30, 58, 49, 1)_{13248145}$$

$$\ell_{15} = c_{15} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{49} & \epsilon^{21} \\ 0 & 1 & \epsilon^{58} & \epsilon^{16} \end{array}\right]_{15306849} = \left[\begin{array}{cccc} 1 & 0 & 30 & 57 \\ 0 & 1 & 3 & 42 \end{array}\right]_{15306849} = \mathbf{Pl}(19, 28, 61, 18, 54, 1)_{14680725}$$

$$\ell_{16} = c_{16} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \epsilon^{42} \end{array}\right]_{17043512} = \left[\begin{array}{cccc} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 56 \end{array}\right]_{17043512} = \mathbf{Pl}(0, 0, 0, 56, 0, 1)_{285514}$$

$$\ell_{17} = c_{23} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{35} & \epsilon^{42} \\ 0 & 1 & \epsilon^{53} & \epsilon^{32} \end{array}\right]_{14989591} = \left[\begin{array}{cccc} 1 & 0 & 18 & 56 \\ 0 & 1 & 5 & 26 \end{array}\right]_{14989591} = \mathbf{Pl}(34, 22, 40, 35, 12, 1)_{3591543}$$

$$\ell_{18} = c_{24} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{56} & \epsilon^{42} \\ 0 & 1 & \epsilon^{29} & \epsilon^{8} \end{array}\right]_{15081987} = \left[\begin{array}{cccc} 1 & 0 & 40 & 56 \\ 0 & 1 & 27 & 39 \end{array}\right]_{15081987} = \mathbf{Pl}(31, 50, 58, 30, 21, 1)_{6018930}$$

$$\ell_{19} = c_{25} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{14} & \epsilon^{42} \\ 0 & 1 & \epsilon^{23} & \epsilon^{2} \end{array}\right]_{15154656} = \left[\begin{array}{cccc} 1 & 0 & 58 & 56 \\ 0 & 1 & 38 & 4 \end{array}\right]_{15154656} = \mathbf{Pl}(60, 29, 18, 61, 25, 1)_{6910724}$$

$$\ell_{20} = c_{26} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{42} & \epsilon^{42} \end{array}\right]_{7801} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 56 & 56 \end{array}\right]_{7801} = \mathbf{Pl}(57, 56, 1, 0, 56, 1)_{14951096}$$

$$\ell_{21} = c_{34} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{33} & \epsilon^{27} \\ 0 & 1 & \epsilon^{15} & \epsilon^{57} \end{array}\right]_{12469513} = \left[\begin{array}{cccc} 1 & 0 & 52 & 46 \\ 0 & 1 & 21 & 49 \end{array}\right]_{12469513} = \mathbf{Pl}(58, 30, 33, 49, 45, 1)_{12210345}$$

$$\ell_{22} = c_{35} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{6} & \epsilon^{45} \\ 0 & 1 & \epsilon^{60} & \epsilon^{39} \end{array}\right]_{9991021} = \left[\begin{array}{cccc} 1 & 0 & 33 & 37 \\ 0 & 1 & 12 & 7 \end{array}\right]_{9991021} = \mathbf{Pl}(40, 35, 45, 7, 52, 1)_{14091192}$$

$$\ell_{23} = c_{36} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{9} \\ 0 & 1 & \epsilon^{9} & \epsilon^{9} \end{array}\right]_{12519343} = \left[\begin{array}{cccc} 1 & 0 & 0 & 47 \\ 0 & 1 & 47 & 47 \end{array}\right]_{12519343} = \mathbf{Pl}(10,47,1,1,1,0)_{20363}$$

$$\ell_{24} = c_{45} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{24} & \epsilon^{54} \\ 0 & 1 & \epsilon^{51} & \epsilon^{30} \end{array}\right]_{2853766} = \left[\begin{array}{cccc} 1 & 0 & 45 & 10 \\ 0 & 1 & 25 & 54 \end{array}\right]_{2853766} = \mathbf{Pl}(18,61,52,54,33,1)_{9139811}$$

$$\ell_{25} = c_{46} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{18} \\ 0 & 1 & \epsilon^{18} & \epsilon^{18} \end{array}\right]_{2930059} = \left[\begin{array}{cccc} 1 & 0 & 0 & 11 \\ 0 & 1 & 11 & 11 \end{array}\right]_{2930059} = \mathbf{Pl}(37,11,1,1,1,0)_{20390}$$

$$\ell_{26} = c_{56} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{36} \\ 0 & 1 & \epsilon^{36} & \epsilon^{36} \end{array}\right]_{9589284} = \left[\begin{array}{cccc} 1 & 0 & 0 & 36 \\ 0 & 1 & 36 & 36 \end{array}\right]_{9589284} = \mathbf{Pl}(46,36,1,1,1,0)_{20399}$$

Rank of lines: (17043513, 7866, 2819402, 10047644, 12292244, 237168, 507066, 502969, 2697982, 9916438, 12509359, 17043457, 241330, 15434216, 15325108, 15306849, 17043512, 14989591, 15081987, 15154656, 7801, 12469513, 9991021, 12519343, 2853766, 2930059, 9589284)
Rank of points on Klein quadric: (285641, 15213175, 590577, 693798, 730536, 551690, 15228227, 14966019, 4463301, 16567150, 2444813, 278529, 551563, 2258911, 13248145, 14680725, 285514, 3591543, 6018930, 6910724, 14951096, 12210345, 14091192, 20363, 9139811, 20390, 20399)

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:

$P_{237121} = (0,56,56,1) = \ell_0 \cap \ell_7 = a_1 \cap b_2$
$P_{237505} = (0,62,56,1) = \ell_0 \cap \ell_8 = a_1 \cap b_3$
$P_{234049} = (0,8,56,1) = \ell_0 \cap \ell_9 = a_1 \cap b_4$
$P_{234497} = (0,15,56,1) = \ell_0 \cap \ell_{10} = a_1 \cap b_5$
$P_{233537} = (0,0,56,1) = \ell_0 \cap \ell_{12} = a_1 \cap c_{12}$
$P_{233921} = (0,6,56,1) = \ell_0 \cap \ell_{13} = a_1 \cap c_{13}$
$P_{236609} = (0,48,56,1) = \ell_0 \cap \ell_{14} = a_1 \cap c_{14}$
$P_{237057} = (0,55,56,1) = \ell_0 \cap \ell_{15} = a_1 \cap c_{15}$
$P_{241273} = (56,56,57,1) = \ell_1 \cap \ell_6 = a_2 \cap b_1$
$P_{175721} = (40,56,41,1) = \ell_1 \cap \ell_8 = a_2 \cap b_3$
$P_{249467} = (58,56,59,1) = \ell_1 \cap \ell_9 = a_2 \cap b_4$
$P_{85587} = (18,56,19,1) = \ell_1 \cap \ell_{10} = a_2 \cap b_5$
$P_{11841} = (0,56,1,1) = \ell_1 \cap \ell_{11} = a_2 \cap b_6$
$P_{237178} = (57,56,56,1) = \ell_1 \cap \ell_{12} = a_2 \cap c_{12}$
$P_{147044} = (35,56,34,1) = \ell_1 \cap \ell_{17} = a_2 \cap c_{23}$
$P_{134751} = (30,56,31,1) = \ell_1 \cap \ell_{18} = a_2 \cap c_{24}$
$P_{253566} = (61,56,60,1) = \ell_1 \cap \ell_{19} = a_2 \cap c_{25}$
$P_{68} = (1,0,1,0) = \ell_1 \cap \ell_{20} = a_2 \cap c_{26}$
$P_{240949} = (52,51,57,1) = \ell_2 \cap \ell_6 = a_3 \cap b_1$
$P_{236799} = (62,50,56,1) = \ell_2 \cap \ell_7 = a_3 \cap b_2$
$P_{208646} = (5,59,49,1) = \ell_2 \cap \ell_9 = a_3 \cap b_4$
$P_{53716} = (19,6,12,1) = \ell_2 \cap \ell_{10} = a_3 \cap b_5$
$P_{8961} = (0,11,1,1) = \ell_2 \cap \ell_{11} = a_3 \cap b_6$
$P_{162673} = (48,44,38,1) = \ell_2 \cap \ell_{13} = a_3 \cap c_{13}$
$P_{17045} = (20,9,3,1) = \ell_2 \cap \ell_{17} = a_3 \cap c_{23}$
$P_{33725} = (60,13,7,1) = \ell_2 \cap \ell_{21} = a_3 \cap c_{34}$
$P_{92204} = (43,31,21,1) = \ell_2 \cap \ell_{22} = a_3 \cap c_{35}$
$P_{154597} = (36,46,36,1) = \ell_2 \cap \ell_{23} = a_3 \cap c_{36}$
$P_{239470} = (45,28,57,1) = \ell_3 \cap \ell_6 = a_4 \cap b_1$
$P_{235401} = (8,29,56,1) = \ell_3 \cap \ell_7 = a_4 \cap b_2$
$P_{93290} = (41,48,21,1) = \ell_3 \cap \ell_8 = a_4 \cap b_3$
$P_{226588} = (27,19,54,1) = \ell_3 \cap \ell_{10} = a_4 \cap b_5$
$P_{10561} = (0,36,1,1) = \ell_3 \cap \ell_{11} = a_4 \cap b_6$
$P_{26744} = (55,32,5,1) = \ell_3 \cap \ell_{14} = a_4 \cap c_{14}$
$P_{181209} = (24,14,43,1) = \ell_3 \cap \ell_{18} = a_4 \cap c_{24}$
$P_{110418} = (17,60,25,1) = \ell_3 \cap \ell_{21} = a_4 \cap c_{34}$
$P_{206179} = (34,20,49,1) = \ell_3 \cap \ell_{24} = a_4 \cap c_{45}$
$P_{197360} = (47,10,47,1) = \ell_3 \cap \ell_{25} = a_4 \cap c_{46}$
$P_{239138} = (33,23,57,1) = \ell_4 \cap \ell_6 = a_5 \cap b_1$
$P_{234960} = (15,22,56,1) = \ell_4 \cap \ell_7 = a_5 \cap b_2$
$P_{35495} = (38,41,7,1) = \ell_4 \cap \ell_8 = a_5 \cap b_3$
$P_{110140} = (59,55,25,1) = \ell_4 \cap \ell_9 = a_5 \cap b_4$
$P_{11265} = (0,47,1,1) = \ell_4 \cap \ell_{11} = a_5 \cap b_6$
$P_{118151} = (6,53,27,1) = \ell_4 \cap \ell_{15} = a_5 \cap c_{15}$
$P_{77838} = (13,63,17,1) = \ell_4 \cap \ell_{19} = a_5 \cap c_{25}$
$P_{226912} = (31,24,54,1) = \ell_4 \cap \ell_{22} = a_5 \cap c_{35}$
$P_{55492} = (3,34,12,1) = \ell_4 \cap \ell_{24} = a_5 \cap c_{45}$
$P_{51596} = (11,37,11,1) = \ell_4 \cap \ell_{26} = a_5 \cap c_{56}$

$P_{237754} = (57, 1, 57, 1) = \ell_5 \cap \ell_6 = a_6 \cap b_1$
$P_{61} = (57, 1, 0, 0) = \ell_5 \cap \ell_7 = a_6 \cap b_2$
$P_{238942} = (29, 20, 57, 1) = \ell_5 \cap \ell_8 = a_6 \cap b_3$
$P_{239191} = (22, 24, 57, 1) = \ell_5 \cap \ell_9 = a_6 \cap b_4$
$P_{238515} = (50, 13, 57, 1) = \ell_5 \cap \ell_{10} = a_6 \cap b_5$
$P_{237633} = (0, 0, 57, 1) = \ell_5 \cap \ell_{16} = a_6 \cap c_{16}$
$P_{241337} = (56, 57, 57, 1) = \ell_5 \cap \ell_{20} = a_6 \cap c_{26}$
$P_{241653} = (52, 62, 57, 1) = \ell_5 \cap \ell_{23} = a_6 \cap c_{36}$
$P_{238190} = (45, 8, 57, 1) = \ell_5 \cap \ell_{25} = a_6 \cap c_{46}$
$P_{238626} = (33, 15, 57, 1) = \ell_5 \cap \ell_{26} = a_6 \cap c_{56}$
$P_{60} = (56, 1, 0, 0) = \ell_6 \cap \ell_{12} = b_1 \cap c_{12}$
$P_{240734} = (29, 48, 57, 1) = \ell_6 \cap \ell_{13} = b_1 \cap c_{13}$
$P_{241175} = (22, 55, 57, 1) = \ell_6 \cap \ell_{14} = b_1 \cap c_{14}$
$P_{238067} = (50, 6, 57, 1) = \ell_6 \cap \ell_{15} = b_1 \cap c_{15}$
$P_{241281} = (0, 57, 57, 1) = \ell_6 \cap \ell_{16} = b_1 \cap c_{16}$
$P_{233657} = (56, 1, 56, 1) = \ell_7 \cap \ell_{12} = b_2 \cap c_{12}$
$P_{234845} = (28, 20, 56, 1) = \ell_7 \cap \ell_{17} = b_2 \cap c_{23}$
$P_{235096} = (23, 24, 56, 1) = \ell_7 \cap \ell_{18} = b_2 \cap c_{24}$
$P_{234420} = (51, 13, 56, 1) = \ell_7 \cap \ell_{19} = b_2 \cap c_{25}$
$P_{237242} = (57, 57, 56, 1) = \ell_7 \cap \ell_{20} = b_2 \cap c_{26}$
$P_{242491} = (58, 11, 58, 1) = \ell_8 \cap \ell_{13} = b_3 \cap c_{13}$
$P_{152587} = (10, 15, 36, 1) = \ell_8 \cap \ell_{17} = b_3 \cap c_{23}$
$P_{164974} = (45, 16, 39, 1) = \ell_8 \cap \ell_{21} = b_3 \cap c_{34}$
$P_{178704} = (15, 39, 42, 1) = \ell_8 \cap \ell_{22} = b_3 \cap c_{35}$
$P_{163569} = (48, 58, 38, 1) = \ell_8 \cap \ell_{23} = b_3 \cap c_{36}$
$P_{80211} = (18, 36, 18, 1) = \ell_9 \cap \ell_{14} = b_4 \cap c_{14}$
$P_{200678} = (37, 62, 47, 1) = \ell_9 \cap \ell_{18} = b_4 \cap c_{24}$
$P_{70015} = (62, 4, 16, 1) = \ell_9 \cap \ell_{21} = b_4 \cap c_{34}$
$P_{20706} = (33, 2, 4, 1) = \ell_9 \cap \ell_{24} = b_4 \cap c_{45}$
$P_{25848} = (55, 18, 5, 1) = \ell_9 \cap \ell_{25} = b_4 \cap c_{46}$
$P_{171049} = (40, 47, 40, 1) = \ell_{10} \cap \ell_{15} = b_5 \cap c_{15}$
$P_{49775} = (46, 8, 11, 1) = \ell_{10} \cap \ell_{19} = b_5 \cap c_{25}$
$P_{113397} = (52, 42, 26, 1) = \ell_{10} \cap \ell_{22} = b_5 \cap c_{35}$
$P_{14025} = (8, 26, 2, 1) = \ell_{10} \cap \ell_{24} = b_5 \cap c_{45}$
$P_{117319} = (6, 40, 27, 1) = \ell_{10} \cap \ell_{26} = b_5 \cap c_{56}$
$P_{11905} = (0, 57, 1, 1) = \ell_{11} \cap \ell_{20} = b_6 \cap c_{26}$
$P_{8897} = (0, 10, 1, 1) = \ell_{11} \cap \ell_{23} = b_6 \cap c_{36}$
$P_{10625} = (0, 37, 1, 1) = \ell_{11} \cap \ell_{25} = b_6 \cap c_{46}$
$P_{11201} = (0, 46, 1, 1) = \ell_{11} \cap \ell_{26} = b_6 \cap c_{56}$
$P_{233972} = (51, 6, 56, 1) = \ell_{12} \cap \ell_{21} = c_{12} \cap c_{34}$
$P_{237080} = (23, 55, 56, 1) = \ell_{12} \cap \ell_{22} = c_{12} \cap c_{35}$
$P_{236927} = (62, 52, 56, 1) = \ell_{12} \cap \ell_{23} = c_{12} \cap c_{36}$
$P_{236637} = (28, 48, 56, 1) = \ell_{12} \cap \ell_{24} = c_{12} \cap c_{45}$
$P_{236425} = (8, 45, 56, 1) = \ell_{12} \cap \ell_{25} = c_{12} \cap c_{46}$
$P_{235664} = (15, 33, 56, 1) = \ell_{12} \cap \ell_{26} = c_{12} \cap c_{56}$
$P_{176336} = (15, 2, 42, 1) = \ell_{13} \cap \ell_{18} = c_{13} \cap c_{24}$
$P_{165614} = (45, 26, 39, 1) = \ell_{13} \cap \ell_{19} = c_{13} \cap c_{25}$
$P_{175785} = (40, 57, 41, 1) = \ell_{13} \cap \ell_{20} = c_{13} \cap c_{26}$
$P_{153739} = (10, 33, 36, 1) = \ell_{13} \cap \ell_{24} = c_{13} \cap c_{45}$
$P_{90986} = (41, 12, 21, 1) = \ell_{13} \cap \ell_{25} = c_{13} \cap c_{46}$
$P_{33383} = (38, 8, 7, 1) = \ell_{13} \cap \ell_{26} = c_{13} \cap c_{56}$
$P_{23074} = (33, 39, 4, 1) = \ell_{14} \cap \ell_{17} = c_{14} \cap c_{23}$
$P_{72447} = (62, 42, 16, 1) = \ell_{14} \cap \ell_{19} = c_{14} \cap c_{25}$
$P_{249531} = (58, 57, 59, 1) = \ell_{14} \cap \ell_{20} = c_{14} \cap c_{26}$
$P_{200038} = (37, 52, 47, 1) = \ell_{14} \cap \ell_{22} = c_{14} \cap c_{35}$
$P_{205830} = (5, 15, 49, 1) = \ell_{14} \cap \ell_{23} = c_{14} \cap c_{36}$
$P_{107964} = (59, 21, 25, 1) = \ell_{14} \cap \ell_{26} = c_{14} \cap c_{56}$
$P_{13385} = (8, 16, 2, 1) = \ell_{15} \cap \ell_{17} = c_{15} \cap c_{23}$
$P_{110965} = (52, 4, 26, 1) = \ell_{15} \cap \ell_{18} = c_{15} \cap c_{24}$
$P_{85651} = (18, 57, 19, 1) = \ell_{15} \cap \ell_{20} = c_{15} \cap c_{26}$
$P_{52143} = (46, 45, 11, 1) = \ell_{15} \cap \ell_{21} = c_{15} \cap c_{34}$
$P_{54932} = (19, 25, 12, 1) = \ell_{15} \cap \ell_{23} = c_{15} \cap c_{36}$
$P_{229340} = (27, 62, 54, 1) = \ell_{15} \cap \ell_{25} = c_{15} \cap c_{46}$
$P_{238465} = (0, 13, 57, 1) = \ell_{16} \cap \ell_{17} = c_{16} \cap c_{23}$
$P_{238913} = (0, 20, 57, 1) = \ell_{16} \cap \ell_{18} = c_{16} \cap c_{24}$
$P_{239169} = (0, 24, 57, 1) = \ell_{16} \cap \ell_{19} = c_{16} \cap c_{25}$
$P_{239745} = (0, 33, 57, 1) = \ell_{16} \cap \ell_{21} = c_{16} \cap c_{34}$
$P_{240513} = (0, 45, 57, 1) = \ell_{16} \cap \ell_{22} = c_{16} \cap c_{35}$
$P_{240961} = (0, 52, 57, 1) = \ell_{16} \cap \ell_{24} = c_{16} \cap c_{45}$
$P_{127775} = (30, 11, 30, 1) = \ell_{17} \cap \ell_{24} = c_{23} \cap c_{45}$
$P_{205347} = (34, 7, 49, 1) = \ell_{17} \cap \ell_{25} = c_{23} \cap c_{46}$
$P_{56196} = (3, 45, 12, 1) = \ell_{17} \cap \ell_{26} = c_{23} \cap c_{56}$
$P_{256382} = (61, 36, 61, 1) = \ell_{18} \cap \ell_{22} = c_{24} \cap c_{35}$
$P_{92332} = (43, 33, 21, 1) = \ell_{18} \cap \ell_{23} = c_{24} \cap c_{36}$
$P_{228512} = (31, 49, 54, 1) = \ell_{18} \cap \ell_{26} = c_{24} \cap c_{56}$
$P_{150564} = (35, 47, 35, 1) = \ell_{19} \cap \ell_{21} = c_{25} \cap c_{34}$
$P_{36349} = (60, 54, 7, 1) = \ell_{19} \cap \ell_{23} = c_{25} \cap c_{36}$
$P_{109906} = (17, 52, 25, 1) = \ell_{19} \cap \ell_{25} = c_{25} \cap c_{46}$
$P_{253630} = (61, 57, 60, 1) = \ell_{20} \cap \ell_{21} = c_{26} \cap c_{34}$
$P_{134815} = (30, 57, 31, 1) = \ell_{20} \cap \ell_{22} = c_{26} \cap c_{35}$
$P_{147108} = (35, 57, 34, 1) = \ell_{20} \cap \ell_{24} = c_{26} \cap c_{45}$
$P_{76046} = (13, 35, 17, 1) = \ell_{21} \cap \ell_{26} = c_{34} \cap c_{56}$
$P_{184217} = (24, 61, 43, 1) = \ell_{22} \cap \ell_{25} = c_{35} \cap c_{46}$
$P_{18389} = (20, 30, 3, 1) = \ell_{23} \cap \ell_{24} = c_{36} \cap c_{45}$

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_{237121}	P_{237505}	P_{234049}	P_{234497}	P_1	P_{233537}	P_{233921}	P_{236609}	P_{237057}	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_{241273}	P_{175721}	P_{249467}	P_{85587}	P_{11841}	P_{237178}	P_{147044}	P_{134751}	P_{253566}	P_{68}

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_{240949}	P_{236799}	P_{208646}	P_{53716}	P_{8961}	P_{162673}	P_{17045}	P_{33725}	P_{92204}	P_{154597}

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_{239470}	P_{235401}	P_{93290}	P_{226588}	P_{10561}	P_{26744}	P_{181209}	P_{110418}	P_{206179}	P_{197360}

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_{239138}	P_{234960}	P_{35495}	P_{110140}	P_{11265}	P_{118151}	P_{77838}	P_{226912}	P_{55492}	P_{51596}

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_{237754}	P_{61}	P_{238942}	P_{239191}	P_{238515}	P_{237633}	P_{241337}	P_{241653}	P_{238190}	P_{238626}

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_{241273}	P_{240949}	P_{239470}	P_{239138}	P_{237754}	P_{60}	P_{240734}	P_{241175}	P_{238067}	P_{241281}

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_{237121}	P_{236799}	P_{235401}	P_{234960}	P_{61}	P_{233657}	P_{234845}	P_{235096}	P_{234420}	P_{237242}

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_{237505}	P_{175721}	P_{93290}	P_{35495}	P_{238942}	P_{242491}	P_{152587}	P_{164974}	P_{178704}	P_{163569}

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_{234049}	P_{249467}	P_{208646}	P_{110140}	P_{239191}	P_{80211}	P_{200678}	P_{70015}	P_{20706}	P_{25848}

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_{234497}	P_{85587}	P_{53716}	P_{226588}	P_{238515}	P_{171049}	P_{49775}	P_{113397}	P_{14025}	P_{117319}

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_{11841}	P_{8961}	P_{10561}	P_{11265}	P_1	P_{11905}	P_{8897}	P_{10625}	P_{11201}

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_{233537}	P_{237178}	P_{60}	P_{233657}	P_{233972}	P_{237080}	P_{236927}	P_{236637}	P_{236425}	P_{235664}

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_{233921}	P_{162673}	P_{240734}	P_{242491}	P_{176336}	P_{165614}	P_{175785}	P_{153739}	P_{90986}	P_{33383}

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_{236609}	P_{26744}	P_{241175}	P_{80211}	P_{23074}	P_{72447}	P_{249531}	P_{200038}	P_{205830}	P_{107964}

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_{237057}	P_{118151}	P_{238067}	P_{171049}	P_{13385}	P_{110965}	P_{85651}	P_{52143}	P_{54932}	P_{229340}

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_{237633}	P_{241281}	P_1	P_{238465}	P_{238913}	P_{239169}	P_{239745}	P_{240513}	P_{240961}

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_{147044}	P_{17045}	P_{234845}	P_{152587}	P_{23074}	P_{13385}	P_{238465}	P_{127775}	P_{205347}	P_{56196}

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_{134751}	P_{181209}	P_{235096}	P_{200678}	P_{176336}	P_{110965}	P_{238913}	P_{256382}	P_{92332}	P_{228512}

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_{253566}	P_{77838}	P_{234420}	P_{49775}	P_{165614}	P_{72447}	P_{239169}	P_{150564}	P_{36349}	P_{109906}

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_{68}	P_{241337}	P_{237242}	P_{11905}	P_{175785}	P_{249531}	P_{85651}	P_{253630}	P_{134815}	P_{147108}

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_{33725}	P_{110418}	P_{164974}	P_{70015}	P_{233972}	P_{52143}	P_{239745}	P_{150564}	P_{253630}	P_{76046}

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_{92204}	P_{226912}	P_{178704}	P_{113397}	P_{237080}	P_{200038}	P_{240513}	P_{256382}	P_{134815}	P_{184217}

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_{154597}	P_{241653}	P_{163569}	P_{8897}	P_{236927}	P_{205830}	P_{54932}	P_{92332}	P_{36349}	P_{18389}

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_{206179}	P_{55492}	P_{20706}	P_{14025}	P_{236637}	P_{153739}	P_{240961}	P_{127775}	P_{147108}	P_{18389}

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_{197360}	P_{238190}	P_{25848}	P_{10625}	P_{236425}	P_{90986}	P_{229340}	P_{205347}	P_{109906}	P_{184217}

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_{51596}	P_{238626}	P_{117319}	P_{11201}	P_{235664}	P_{33383}	P_{107964}	P_{56196}	P_{228512}	P_{76046}

The surface has 4545 points:
Too many to print.