Rank-65872 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is 1091051590

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:

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

$$\ell_1 = a_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{25} & \epsilon^{40} \\ 0 & 1 & \epsilon^{29} & \epsilon^{10} \end{array}\right]_{3977814} = \left[\begin{array}{cccc} 1 & 0 & 59 & 14 \\ 0 & 1 & 27 & 63 \end{array}\right]_{3977814} = \mathbf{Pl}(60,29,15,21,15,1)_{4276883}$$

$$\ell_2 = a_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{28} & \epsilon^{21} \\ 0 & 1 & \epsilon^{9} & 1 \end{array}\right]_{15433260} = \left[\begin{array}{cccc} 1 & 0 & 61 & 57 \\ 0 & 1 & 47 & 1 \end{array}\right]_{15433260} = \mathbf{Pl}(63,5,35,40,18,1)_{5140931}$$

$$\ell_3 = a_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{20} & \epsilon^{39} \\ 0 & 1 & \epsilon^{45} & \epsilon^{18} \end{array}\right]_{2047953} = \left[\begin{array}{cccc} 1 & 0 & 44 & 7 \\ 0 & 1 & 37 & 11 \end{array}\right]_{2047953} = \mathbf{Pl}(27,9,34,22,24,1)_{6711926}$$

$$\ell_4 = a_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{11} & \epsilon^{5} \\ 0 & 1 & \epsilon^{43} & \epsilon^{17} \end{array}\right]_{8654128} = \left[\begin{array}{cccc} 1 & 0 & 31 & 32 \\ 0 & 1 & 17 & 53 \end{array}\right]_{8654128} = \mathbf{Pl}(19,28,33,49,33,1)_{9066795}$$

$$\ell_5 = a_6 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{37} & \epsilon^{34} \\ 0 & 1 & \epsilon^{53} & \epsilon^{40} \end{array}\right]_{2568238} = \left[\begin{array}{cccc} 1 & 0 & 41 & 9 \\ 0 & 1 & 5 & 14 \end{array}\right]_{2568238} = \mathbf{Pl}(31,50,8,12,8,1)_{2418354}$$

$$\ell_6 = b_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{20} & \epsilon^{39} \\ 0 & 1 & \epsilon^{53} & \epsilon^{40} \end{array}\right]_{2048113} = \left[\begin{array}{cccc} 1 & 0 & 44 & 7 \\ 0 & 1 & 5 & 14 \end{array}\right]_{2048113} = \mathbf{Pl}(49,33,34,22,44,1)_{11952477}$$

$$\ell_7 = b_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{7} & \epsilon^{21} \\ 0 & 1 & \epsilon^{18} & 1 \end{array}\right]_{15325038} = \left[\begin{array}{cccc} 1 & 0 & 35 & 57 \\ 0 & 1 & 11 & 1 \end{array}\right]_{15325038} = \mathbf{Pl}(9,27,30,58,40,1)_{10888493}$$

$$\ell_8 = b_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{17} & \epsilon^{30} \\ 0 & 1 & \epsilon^{23} & \epsilon^{34} \end{array}\right]_{14601563} = \left[\begin{array}{cccc} 1 & 0 & 53 & 54 \\ 0 & 1 & 38 & 9 \end{array}\right]_{14601563} = \mathbf{Pl}(7,45,60,29,53,1)_{14411325}$$

$$\ell_9 = b_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{10} & \epsilon^{51} \\ 0 & 1 & \epsilon^{58} & \epsilon^{20} \end{array}\right]_{6922562} = \left[\begin{array}{cccc} 1 & 0 & 63 & 25 \\ 0 & 1 & 3 & 44 \end{array}\right]_{6922562} = \mathbf{Pl}(12,8,19,28,63,1)_{16874378}$$

$$\ell_{10} = b_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{40} & \epsilon^{15} \\ 0 & 1 & \epsilon^{27} & \epsilon^{36} \end{array}\right]_{5652988} = \left[\begin{array}{cccc} 1 & 0 & 14 & 21 \\ 0 & 1 & 46 & 36 \end{array}\right]_{5652988} = \mathbf{Pl}(3,32,59,51,6,1)_{2091104}$$

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

$$\ell_{12} = c_{12} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{56} & \epsilon^{42} \\ 0 & 1 & \epsilon^{18} & 1 \end{array}\right]_{15079539} = \left[\begin{array}{cccc} 1 & 0 & 40 & 56 \\ 0 & 1 & 11 & 1 \end{array}\right]_{15079539} = \mathbf{Pl}(44,17,58,30,35,1)_{9686866}$$

$$\ell_{13} = c_{13} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{22} & \epsilon^{10} \\ 0 & 1 & \epsilon^{23} & \epsilon^{34} \end{array}\right]_{16856825} = \left[\begin{array}{cccc} 1 & 0 & 19 & 63 \\ 0 & 1 & 38 & 9 \end{array}\right]_{16856825} = \mathbf{Pl}(34,22,62,25,62,1)_{16778514}$$

$$\ell_{14} = c_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{50} & \epsilon^{17} \\ 0 & 1 & \epsilon^{58} & \epsilon^{20} \end{array}\right]_{14366591} = \left[\begin{array}{cccc} 1 & 0 & 60 & 53 \\ 0 & 1 & 3 & 44 \end{array}\right]_{14366591} = \mathbf{Pl}(41,23,52,54,52,1)_{14119795}$$

$$\ell_{15} = c_{15} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{5} & \epsilon^{57} \\ 0 & 1 & \epsilon^{27} & \epsilon^{36} \end{array}\right]_{13184398} = \left[\begin{array}{cccc} 1 & 0 & 32 & 49 \\ 0 & 1 & 46 & 36 \end{array}\right]_{13184398} = \mathbf{Pl}(38,14,31,50,13,1)_{3815701}$$

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

$$\ell_{17} = c_{23} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{49} & \epsilon^{21} \\ 0 & 1 & \epsilon^{36} & 1 \end{array}\right]_{15304258} = \left[\begin{array}{cccc} 1 & 0 & 30 & 57 \\ 0 & 1 & 36 & 1 \end{array}\right]_{15304258} = \mathbf{Pl}(14,38,61,18,58,1)_{15727843}$$

$$\ell_{18} = c_{24} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{10} & \epsilon^{51} \\ 0 & 1 & \epsilon^{54} & \epsilon^{9} \end{array}\right]_{6922761} = \left[\begin{array}{cccc} 1 & 0 & 63 & 25 \\ 0 & 1 & 10 & 47 \end{array}\right]_{6922761} = \mathbf{Pl}(43,53,19,28,48,1)_{12942957}$$

$$\ell_{19} = c_{25} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{34} & \epsilon^{60} \\ 0 & 1 & \epsilon^{46} & \epsilon^{5} \end{array}\right]_{3235188} = \left[\begin{array}{cccc} 1 & 0 & 9 & 12 \\ 0 & 1 & 43 & 32 \end{array}\right]_{3235188} = \mathbf{Pl}(21,15,41,23,9,1)_{2806361}$$

$$\ell_{20} = c_{26} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{5} & \epsilon^{57} \\ 0 & 1 & \epsilon^{29} & \epsilon^{10} \end{array}\right]_{13186107} = \left[\begin{array}{cccc} 1 & 0 & 32 & 49 \\ 0 & 1 & 27 & 63 \end{array}\right]_{13186107} = \mathbf{Pl}(54,52,31,50,32,1)_{8796623}$$

$$\ell_{21} = c_{34} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{44} & \epsilon^{20} \\ 0 & 1 & \epsilon^{46} & \epsilon^{5} \end{array}\right]_{11860941} = \left[\begin{array}{cccc} 1 & 0 & 34 & 44 \\ 0 & 1 & 43 & 32 \end{array}\right]_{11860941} = \mathbf{Pl}(59,51,45,7,45,1)_{12259234}$$

$$\ell_{22} = c_{35} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{17} & \epsilon^{30} \\ 0 & 1 & \epsilon^{54} & \epsilon^{9} \end{array}\right]_{14603967} = \left[\begin{array}{cccc} 1 & 0 & 53 & 54 \\ 0 & 1 & 10 & 47 \end{array}\right]_{14603967} = \mathbf{Pl}(5,63,60,29,20,1)_{5762620}$$

$$\ell_{23} = c_{36} = \begin{bmatrix} 1 & 0 & \epsilon^{35} & \epsilon^{42} \\ 0 & 1 & \epsilon^{9} & 1 \end{bmatrix}_{14988033} = \begin{bmatrix} 1 & 0 & 18 & 56 \\ 0 & 1 & 47 & 1 \end{bmatrix}_{14988033} = \mathbf{Pl}(53, 43, 40, 35, 61, 1)_{16432285}$$

$$\ell_{24} = c_{45} = \begin{bmatrix} 1 & 0 & \epsilon^{14} & \epsilon^{42} \\ 0 & 1 & \epsilon^{36} & 1 \end{bmatrix}_{15154462} = \begin{bmatrix} 1 & 0 & 58 & 56 \\ 0 & 1 & 36 & 1 \end{bmatrix}_{15154462} = \mathbf{Pl}(32, 3, 18, 61, 30, 1)_{8219332}$$

$$\ell_{25} = c_{46} = \begin{bmatrix} 1 & 0 & \epsilon^{34} & \epsilon^{60} \\ 0 & 1 & \epsilon^{45} & \epsilon^{18} \end{bmatrix}_{3233838} = \begin{bmatrix} 1 & 0 & 9 & 12 \\ 0 & 1 & 37 & 11 \end{bmatrix}_{3233838} = \mathbf{Pl}(17, 44, 41, 23, 55, 1)_{14861344}$$

$$\ell_{26} = c_{56} = \begin{bmatrix} 1 & 0 & \epsilon^{40} & \epsilon^{15} \\ 0 & 1 & \epsilon^{43} & \epsilon^{17} \end{bmatrix}_{5654047} = \begin{bmatrix} 1 & 0 & 14 & 21 \\ 0 & 1 & 17 & 53 \end{bmatrix}_{5654047} = \mathbf{Pl}(25, 62, 59, 51, 14, 1)_{4186191}$$

Rank of lines: (2929344, 3977814, 15433260, 2047953, 8654128, 2568238, 2048113, 15325038, 14601563, 6922562, 5652988, 12516288, 15079539, 16856825, 14366591, 13184398, 9586944, 15304258, 6922761, 3235188, 13186107, 11860941, 14603967, 14988033, 15154462, 3233838, 5654047)
Rank of points on Klein quadric: (166, 4276883, 5140931, 6711926, 9066795, 2418354, 11952477, 10888493, 14411325, 16874378, 2091104, 139, 9686866, 16778514, 14119795, 3815701, 175, 15727843, 12942957, 2806361, 8796623, 12259234, 5762620, 16432285, 8219332, 14861344, 4186191)

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:

$P_{4775} = (37, 9, 0, 1) = \ell_0 \cap \ell_7 = a_1 \cap b_2$
$P_{4647} = (37, 7, 0, 1) = \ell_0 \cap \ell_8 = a_1 \cap b_3$
$P_{4967} = (37, 12, 0, 1) = \ell_0 \cap \ell_9 = a_1 \cap b_4$
$P_{4391} = (37, 3, 0, 1) = \ell_0 \cap \ell_{10} = a_1 \cap b_5$
$P_{7015} = (37, 44, 0, 1) = \ell_0 \cap \ell_{12} = a_1 \cap c_{12}$
$P_{6375} = (37, 34, 0, 1) = \ell_0 \cap \ell_{13} = a_1 \cap c_{13}$
$P_{6823} = (37, 41, 0, 1) = \ell_0 \cap \ell_{14} = a_1 \cap c_{14}$
$P_{6631} = (37, 38, 0, 1) = \ell_0 \cap \ell_{15} = a_1 \cap c_{15}$
$P_{75424} = (31, 25, 17, 1) = \ell_1 \cap \ell_6 = a_2 \cap b_1$
$P_{19581} = (60, 48, 3, 1) = \ell_1 \cap \ell_8 = a_2 \cap b_3$
$P_{90807} = (54, 9, 21, 1) = \ell_1 \cap \ell_9 = a_2 \cap b_4$
$P_{133282} = (33, 33, 31, 1) = \ell_1 \cap \ell_{10} = a_2 \cap b_5$
$P_{8012} = (10, 60, 0, 1) = \ell_1 \cap \ell_{11} = a_2 \cap b_6$
$P_{83132} = (59, 17, 19, 1) = \ell_1 \cap \ell_{12} = a_2 \cap c_{12}$
$P_{216310} = (53, 50, 51, 1) = \ell_1 \cap \ell_{17} = a_2 \cap c_{23}$
$P_{212456} = (39, 54, 50, 1) = \ell_1 \cap \ell_{18} = a_2 \cap c_{24}$
$P_{34902} = (21, 32, 7, 1) = \ell_1 \cap \ell_{19} = a_2 \cap c_{25}$
$P_{94593} = (0, 5, 22, 1) = \ell_1 \cap \ell_{20} = a_2 \cap c_{26}$
$P_{245994} = (41, 2, 59, 1) = \ell_2 \cap \ell_6 = a_3 \cap b_1$
$P_{46063} = (46, 14, 10, 1) = \ell_2 \cap \ell_7 = a_3 \cap b_2$
$P_{124298} = (9, 21, 29, 1) = \ell_2 \cap \ell_9 = a_3 \cap b_4$
$P_{11824} = (47, 55, 1, 1) = \ell_2 \cap \ell_{10} = a_3 \cap b_5$
$P_{8204} = (10, 63, 0, 1) = \ell_2 \cap \ell_{11} = a_3 \cap b_6$
$P_{120749} = (44, 29, 28, 1) = \ell_2 \cap \ell_{13} = a_3 \cap c_{13}$
$P_{193190} = (37, 9, 46, 1) = \ell_2 \cap \ell_{17} = a_3 \cap c_{23}$
$P_{131491} = (34, 5, 31, 1) = \ell_2 \cap \ell_{21} = a_3 \cap c_{34}$
$P_{616} = (37, 8, 1, 0) = \ell_2 \cap \ell_{22} = a_3 \cap c_{35}$
$P_{196737} = (0, 1, 47, 1) = \ell_2 \cap \ell_{23} = a_3 \cap c_{36}$
$P_{143470} = (45, 0, 34, 1) = \ell_3 \cap \ell_6 = a_4 \cap b_1$
$P_{1073} = (46, 15, 1, 0) = \ell_3 \cap \ell_7 = a_4 \cap b_2$
$P_{123141} = (4, 3, 29, 1) = \ell_3 \cap \ell_8 = a_4 \cap b_3$
$P_{153804} = (11, 34, 36, 1) = \ell_3 \cap \ell_{10} = a_4 \cap b_5$
$P_{5900} = (10, 27, 0, 1) = \ell_3 \cap \ell_{11} = a_4 \cap b_6$
$P_{119659} = (42, 12, 28, 1) = \ell_3 \cap \ell_{14} = a_4 \cap c_{14}$
$P_{50480} = (47, 19, 11, 1) = \ell_3 \cap \ell_{18} = a_4 \cap c_{24}$
$P_{172617} = (8, 8, 41, 1) = \ell_3 \cap \ell_{21} = a_4 \cap c_{34}$
$P_{9573} = (36, 20, 1, 1) = \ell_3 \cap \ell_{24} = a_4 \cap c_{45}$
$P_{194945} = (0, 37, 46, 1) = \ell_3 \cap \ell_{25} = a_4 \cap c_{46}$
$P_{54258} = (49, 14, 12, 1) = \ell_4 \cap \ell_6 = a_5 \cap b_1$
$P_{251680} = (31, 27, 60, 1) = \ell_4 \cap \ell_7 = a_5 \cap b_2$
$P_{207706} = (25, 44, 49, 1) = \ell_4 \cap \ell_8 = a_5 \cap b_3$
$P_{161108} = (19, 20, 38, 1) = \ell_4 \cap \ell_9 = a_5 \cap b_4$
$P_{5388} = (10, 19, 0, 1) = \ell_4 \cap \ell_{11} = a_5 \cap b_6$
$P_{246800} = (15, 15, 59, 1) = \ell_4 \cap \ell_{15} = a_5 \cap c_{15}$
$P_{118268} = (59, 54, 27, 1) = \ell_4 \cap \ell_{19} = a_5 \cap c_{25}$
$P_{214659} = (2, 25, 51, 1) = \ell_4 \cap \ell_{22} = a_5 \cap c_{35}$
$P_{212288} = (63, 51, 50, 1) = \ell_4 \cap \ell_{24} = a_5 \cap c_{45}$
$P_{101121} = (0, 43, 23, 1) = \ell_4 \cap \ell_{26} = a_5 \cap c_{56}$

$P_{125377} = (0, 38, 29, 1) = \ell_5 \cap \ell_6 = a_6 \cap b_1$
$P_{99809} = (32, 22, 23, 1) = \ell_5 \cap \ell_7 = a_6 \cap b_2$
$P_{181667} = (34, 21, 43, 1) = \ell_5 \cap \ell_8 = a_6 \cap b_3$
$P_{228173} = (12, 44, 54, 1) = \ell_5 \cap \ell_9 = a_6 \cap b_4$
$P_{97435} = (26, 49, 22, 1) = \ell_5 \cap \ell_{10} = a_6 \cap b_5$
$P_{6192} = (46, 31, 0, 1) = \ell_5 \cap \ell_{16} = a_6 \cap c_{16}$
$P_{74208} = (31, 6, 17, 1) = \ell_5 \cap \ell_{20} = a_6 \cap c_{26}$
$P_{248618} = (41, 43, 59, 1) = \ell_5 \cap \ell_{23} = a_6 \cap c_{36}$
$P_{146350} = (45, 45, 34, 1) = \ell_5 \cap \ell_{25} = a_6 \cap c_{46}$
$P_{57394} = (49, 63, 12, 1) = \ell_5 \cap \ell_{26} = a_6 \cap c_{56}$
$P_{101857} = (32, 54, 23, 1) = \ell_6 \cap \ell_{12} = b_1 \cap c_{12}$
$P_{183843} = (34, 55, 43, 1) = \ell_6 \cap \ell_{13} = b_1 \cap c_{13}$
$P_{227405} = (12, 32, 54, 1) = \ell_6 \cap \ell_{14} = b_1 \cap c_{14}$
$P_{97051} = (26, 43, 22, 1) = \ell_6 \cap \ell_{15} = b_1 \cap c_{15}$
$P_{7344} = (46, 49, 0, 1) = \ell_6 \cap \ell_{16} = b_1 \cap c_{16}$
$P_{49281} = (0, 1, 11, 1) = \ell_7 \cap \ell_{12} = b_2 \cap c_{12}$
$P_{159755} = (10, 63, 37, 1) = \ell_7 \cap \ell_{17} = b_2 \cap c_{23}$
$P_{8652} = (11, 6, 1, 1) = \ell_7 \cap \ell_{18} = b_2 \cap c_{24}$
$P_{95887} = (14, 25, 22, 1) = \ell_7 \cap \ell_{19} = b_2 \cap c_{25}$
$P_{84732} = (59, 42, 19, 1) = \ell_7 \cap \ell_{20} = b_2 \cap c_{26}$
$P_{210689} = (0, 27, 50, 1) = \ell_8 \cap \ell_{13} = b_3 \cap c_{13}$
$P_{173140} = (19, 16, 41, 1) = \ell_8 \cap \ell_{17} = b_3 \cap c_{23}$
$P_{107144} = (7, 9, 25, 1) = \ell_8 \cap \ell_{21} = b_3 \cap c_{34}$
$P_{249973} = (52, 0, 60, 1) = \ell_8 \cap \ell_{22} = b_3 \cap c_{35}$
$P_{122029} = (44, 49, 28, 1) = \ell_8 \cap \ell_{23} = b_3 \cap c_{36}$
$P_{214145} = (0, 17, 51, 1) = \ell_9 \cap \ell_{14} = b_4 \cap c_{14}$
$P_{82047} = (62, 0, 19, 1) = \ell_9 \cap \ell_{18} = b_4 \cap c_{24}$
$P_{27818} = (41, 49, 5, 1) = \ell_9 \cap \ell_{21} = b_4 \cap c_{34}$
$P_{145149} = (60, 26, 34, 1) = \ell_9 \cap \ell_{24} = b_4 \cap c_{45}$
$P_{121323} = (42, 38, 28, 1) = \ell_9 \cap \ell_{25} = b_4 \cap c_{46}$
$P_{48065} = (0, 46, 10, 1) = \ell_{10} \cap \ell_{15} = b_5 \cap c_{15}$
$P_{98705} = (16, 5, 23, 1) = \ell_{10} \cap \ell_{19} = b_5 \cap c_{25}$
$P_{200485} = (36, 59, 47, 1) = \ell_{10} \cap \ell_{22} = b_5 \cap c_{35}$
$P_{3405} = (10, 52, 1, 0) = \ell_{10} \cap \ell_{24} = b_5 \cap c_{45}$
$P_{245840} = (15, 0, 59, 1) = \ell_{10} \cap \ell_{26} = b_5 \cap c_{56}$
$P_{7628} = (10, 54, 0, 1) = \ell_{11} \cap \ell_{20} = b_6 \cap c_{26}$
$P_{7564} = (10, 53, 0, 1) = \ell_{11} \cap \ell_{23} = b_6 \cap c_{36}$
$P_{5260} = (10, 17, 0, 1) = \ell_{11} \cap \ell_{25} = b_6 \cap c_{46}$
$P_{5772} = (10, 25, 0, 1) = \ell_{11} \cap \ell_{26} = b_6 \cap c_{56}$
$P_{95759} = (14, 23, 22, 1) = \ell_{12} \cap \ell_{21} = c_{12} \cap c_{34}$
$P_{9100} = (11, 13, 1, 1) = \ell_{12} \cap \ell_{22} = c_{12} \cap c_{35}$
$P_{47215} = (46, 32, 10, 1) = \ell_{12} \cap \ell_{23} = c_{12} \cap c_{36}$
$P_{159115} = (10, 53, 37, 1) = \ell_{12} \cap \ell_{24} = c_{12} \cap c_{45}$
$P_{2225} = (46, 33, 1, 0) = \ell_{12} \cap \ell_{25} = c_{12} \cap c_{46}$
$P_{250208} = (31, 4, 60, 1) = \ell_{12} \cap \ell_{26} = c_{12} \cap c_{56}$
$P_{253301} = (52, 52, 60, 1) = \ell_{13} \cap \ell_{18} = c_{13} \cap c_{24}$
$P_{107464} = (7, 14, 25, 1) = \ell_{13} \cap \ell_{19} = c_{13} \cap c_{25}$
$P_{17277} = (60, 12, 3, 1) = \ell_{13} \cap \ell_{20} = c_{13} \cap c_{26}$
$P_{172308} = (19, 3, 41, 1) = \ell_{13} \cap \ell_{24} = c_{13} \cap c_{45}$
$P_{123397} = (4, 7, 29, 1) = \ell_{13} \cap \ell_{25} = c_{13} \cap c_{46}$
$P_{208282} = (25, 53, 49, 1) = \ell_{13} \cap \ell_{26} = c_{13} \cap c_{56}$
$P_{145917} = (60, 38, 34, 1) = \ell_{14} \cap \ell_{17} = c_{14} \cap c_{23}$
$P_{26218} = (41, 24, 5, 1) = \ell_{14} \cap \ell_{19} = c_{14} \cap c_{25}$
$P_{94263} = (54, 63, 21, 1) = \ell_{14} \cap \ell_{20} = c_{14} \cap c_{26}$
$P_{86015} = (62, 62, 19, 1) = \ell_{14} \cap \ell_{22} = c_{14} \cap c_{35}$
$P_{124746} = (9, 28, 29, 1) = \ell_{14} \cap \ell_{23} = c_{14} \cap c_{36}$
$P_{160276} = (19, 7, 38, 1) = \ell_{14} \cap \ell_{26} = c_{14} \cap c_{56}$
$P_{4045} = (10, 62, 1, 0) = \ell_{15} \cap \ell_{17} = c_{15} \cap c_{23}$
$P_{198693} = (36, 31, 47, 1) = \ell_{15} \cap \ell_{18} = c_{15} \cap c_{24}$
$P_{131170} = (33, 0, 31, 1) = \ell_{15} \cap \ell_{20} = c_{15} \cap c_{26}$
$P_{99729} = (16, 21, 23, 1) = \ell_{15} \cap \ell_{21} = c_{15} \cap c_{34}$
$P_{9840} = (47, 24, 1, 1) = \ell_{15} \cap \ell_{23} = c_{15} \cap c_{36}$
$P_{154252} = (11, 41, 36, 1) = \ell_{15} \cap \ell_{25} = c_{15} \cap c_{46}$
$P_{5104} = (46, 14, 0, 1) = \ell_{16} \cap \ell_{17} = c_{16} \cap c_{23}$
$P_{6960} = (46, 43, 0, 1) = \ell_{16} \cap \ell_{18} = c_{16} \cap c_{24}$
$P_{5552} = (46, 21, 0, 1) = \ell_{16} \cap \ell_{19} = c_{16} \cap c_{25}$
$P_{7984} = (46, 59, 0, 1) = \ell_{16} \cap \ell_{21} = c_{16} \cap c_{34}$
$P_{4528} = (46, 5, 0, 1) = \ell_{16} \cap \ell_{22} = c_{16} \cap c_{35}$
$P_{6256} = (46, 32, 0, 1) = \ell_{16} \cap \ell_{24} = c_{16} \cap c_{45}$
$P_{151681} = (0, 1, 36, 1) = \ell_{17} \cap \ell_{24} = c_{23} \cap c_{45}$
$P_{11365} = (36, 48, 1, 1) = \ell_{17} \cap \ell_{25} = c_{23} \cap c_{46}$
$P_{209792} = (63, 12, 50, 1) = \ell_{17} \cap \ell_{26} = c_{23} \cap c_{56}$
$P_{156353} = (0, 10, 37, 1) = \ell_{18} \cap \ell_{22} = c_{24} \cap c_{35}$
$P_{2984} = (37, 45, 1, 0) = \ell_{18} \cap \ell_{23} = c_{24} \cap c_{36}$
$P_{214787} = (2, 27, 51, 1) = \ell_{18} \cap \ell_{26} = c_{24} \cap c_{56}$
$P_{119041} = (0, 3, 28, 1) = \ell_{19} \cap \ell_{21} = c_{25} \cap c_{34}$
$P_{133667} = (34, 39, 31, 1) = \ell_{19} \cap \ell_{23} = c_{25} \cap c_{36}$
$P_{172105} = (8, 0, 41, 1) = \ell_{19} \cap \ell_{25} = c_{25} \cap c_{46}$
$P_{36246} = (21, 53, 7, 1) = \ell_{20} \cap \ell_{21} = c_{26} \cap c_{34}$
$P_{210088} = (39, 17, 50, 1) = \ell_{20} \cap \ell_{22} = c_{26} \cap c_{35}$
$P_{213558} = (53, 7, 51, 1) = \ell_{20} \cap \ell_{24} = c_{26} \cap c_{45}$
$P_{115644} = (59, 13, 27, 1) = \ell_{21} \cap \ell_{26} = c_{34} \cap c_{56}$
$P_{53104} = (47, 60, 11, 1) = \ell_{22} \cap \ell_{25} = c_{35} \cap c_{46}$
$P_{195430} = (37, 44, 46, 1) = \ell_{23} \cap \ell_{24} = c_{36} \cap c_{45}$

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_{4775}	P_{4647}	P_{4967}	P_{4391}	P_1	P_{7015}	P_{6375}	P_{6823}	P_{6631}	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_{75424}	P_{19581}	P_{90807}	P_{133282}	P_{8012}	P_{83132}	P_{216310}	P_{212456}	P_{34902}	P_{94593}

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_{245994}	P_{46063}	P_{124298}	P_{11824}	P_{8204}	P_{120749}	P_{193190}	P_{131491}	P_{616}	P_{196737}

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_{143470}	P_{1073}	P_{123141}	P_{153804}	P_{5900}	P_{119659}	P_{50480}	P_{172617}	P_{9573}	P_{194945}

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_{54258}	P_{251680}	P_{207706}	P_{161108}	P_{5388}	P_{246800}	P_{118268}	P_{214659}	P_{212288}	P_{101121}

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_{125377}	P_{99809}	P_{181667}	P_{228173}	P_{97435}	P_{6192}	P_{74208}	P_{248618}	P_{146350}	P_{57394}

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_{75424}	P_{245994}	P_{143470}	P_{54258}	P_{125377}	P_{101857}	P_{183843}	P_{227405}	P_{97051}	P_{7344}

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_{4775}	P_{46063}	P_{1073}	P_{251680}	P_{99809}	P_{49281}	P_{159755}	P_{8652}	P_{95887}	P_{84732}

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_{4647}	P_{19581}	P_{123141}	P_{207706}	P_{181667}	P_{210689}	P_{173140}	P_{107144}	P_{249973}	P_{122029}

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_{4967}	P_{90807}	P_{124298}	P_{161108}	P_{228173}	P_{214145}	P_{82047}	P_{27818}	P_{145149}	P_{121323}

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_{4391}	P_{133282}	P_{11824}	P_{153804}	P_{97435}	P_{48065}	P_{98705}	P_{200485}	P_{3405}	P_{245840}

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_{8012}	P_{8204}	P_{5900}	P_{5388}	P_1	P_{7628}	P_{7564}	P_{5260}	P_{5772}

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_{7015}	P_{83132}	P_{101857}	P_{49281}	P_{95759}	P_{9100}	P_{47215}	P_{159115}	P_{2225}	P_{250208}

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_{6375}	P_{120749}	P_{183843}	P_{210689}	P_{253301}	P_{107464}	P_{17277}	P_{172308}	P_{123397}	P_{208282}

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_{6823}	P_{119659}	P_{227405}	P_{214145}	P_{145917}	P_{26218}	P_{94263}	P_{86015}	P_{124746}	P_{160276}

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_{6631}	P_{246800}	P_{97051}	P_{48065}	P_{4045}	P_{198693}	P_{131170}	P_{99729}	P_{9840}	P_{154252}

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_{6192}	P_{7344}	P_1	P_{5104}	P_{6960}	P_{5552}	P_{7984}	P_{4528}	P_{6256}

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_{216310}	P_{193190}	P_{159755}	P_{173140}	P_{145917}	P_{4045}	P_{5104}	P_{151681}	P_{11365}	P_{209792}

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_{212456}	P_{50480}	P_{8652}	P_{82047}	P_{253301}	P_{198693}	P_{6960}	P_{156353}	P_{2984}	P_{214787}

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_{34902}	P_{118268}	P_{95887}	P_{98705}	P_{107464}	P_{26218}	P_{5552}	P_{119041}	P_{133667}	P_{172105}

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_{94593}	P_{74208}	P_{84732}	P_{7628}	P_{17277}	P_{94263}	P_{131170}	P_{36246}	P_{210088}	P_{213558}

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_{131491}	P_{172617}	P_{107144}	P_{27818}	P_{95759}	P_{99729}	P_{7984}	P_{119041}	P_{36246}	P_{115644}

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_{616}	P_{214659}	P_{249973}	P_{200485}	P_{9100}	P_{86015}	P_{4528}	P_{156353}	P_{210088}	P_{53104}

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_{196737}	P_{248618}	P_{122029}	P_{7564}	P_{47215}	P_{124746}	P_{9840}	P_{2984}	P_{133667}	P_{195430}

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_{9573}	P_{212288}	P_{145149}	P_{3405}	P_{159115}	P_{172308}	P_{6256}	P_{151681}	P_{213558}	P_{195430}

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_{194945}	P_{146350}	P_{121323}	P_{5260}	P_{2225}	P_{123397}	P_{154252}	P_{11365}	P_{172105}	P_{53104}

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_{101121}	P_{57394}	P_{245840}	P_{5772}	P_{250208}	P_{208282}	P_{160276}	P_{209792}	P_{214787}	P_{115644}

The surface has 4545 points:
Too many to print.