Rank-73801 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

$$X_1^3 + X_2^3 + X_0^2X_3 + X_0X_3^2 + X_0X_1X_2 = 0$$

(0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is 1090789509

General information

Number of lines	27
Number of points	4545
Number of singular points	0
Number of Eckardt points	13
Number of double points	96
Number of single points	1524
Number of points off lines	2912
Number of Hesse planes	0
Number of axes	16
Type of points on lines	65^{27}
Type of lines on points	3^{13}, 2^{96}, 1^{1524}, 0^{2912}

Singular Points

The surface has 0 singular points:

The 27 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = a_1 = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{21} \\ 0 & 1 & 1 & 0 \end{array}\right]_{15183490} = \left[\begin{array}{cccc} 1 & 0 & 1 & 57 \\ 0 & 1 & 1 & 0 \end{array}\right]_{15183490} = \mathbf{Pl}(56, 57, 1, 57, 0, 1)_{508849}$$

$$\ell_1 = a_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{27} & \epsilon^{36} \\ 0 & 1 & 1 & \epsilon^{36} \end{array}\right]_{9780655} = \left[\begin{array}{cccc} 1 & 0 & 46 & 36 \\ 0 & 1 & 1 & 36 \end{array}\right]_{9780655} = \mathbf{Pl}(37, 11, 10, 47, 47, 1)_{12645591}$$

$$\ell_2 = a_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{54} & \epsilon^{27} \\ 0 & 1 & 1 & \epsilon^{9} \end{array}\right]_{12294603} = \left[\begin{array}{cccc} 1 & 0 & 10 & 46 \\ 0 & 1 & 1 & 47 \end{array}\right]_{12294603} = \mathbf{Pl}(37, 11, 46, 36, 11, 1)_{3351957}$$

$$\ell_3 = a_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{45} & \epsilon^{54} \\ 0 & 1 & 1 & \epsilon^{18} \end{array}\right]_{2817702} = \left[\begin{array}{cccc} 1 & 0 & 37 & 10 \\ 0 & 1 & 1 & 11 \end{array}\right]_{2817702} = \mathbf{Pl}(46, 36, 10, 47, 36, 1)_{9761082}$$

$$\ell_4 = a_5 = \left[\begin{array}{cccc} 0 & 1 & \epsilon^{42} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17047160} = \left[\begin{array}{cccc} 0 & 1 & 56 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17047160} = \mathbf{Pl}(0, 56, 0, 1, 0, 0)_{248}$$

$$\ell_5 = a_6 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{6} & \epsilon^{36} \\ 0 & 1 & \epsilon^{21} & \epsilon^{15} \end{array}\right]_{9725658} = \left[\begin{array}{cccc} 1 & 0 & 33 & 36 \\ 0 & 1 & 57 & 21 \end{array}\right]_{9725658} = \mathbf{Pl}(8, 12, 52, 54, 47, 1)_{12809614}$$

$$\ell_6 = b_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{48} & \epsilon^{45} \\ 0 & 1 & \epsilon^{42} & \epsilon^{57} \end{array}\right]_{9918855} = \left[\begin{array}{cccc} 1 & 0 & 15 & 37 \\ 0 & 1 & 56 & 49 \end{array}\right]_{9918855} = \mathbf{Pl}(52, 54, 8, 12, 47, 1)_{12637857}$$

$$\ell_7 = b_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & \epsilon^{21} \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{15416561} = \left[\begin{array}{cccc} 1 & 0 & 57 & 57 \\ 0 & 1 & 56 & 0 \end{array}\right]_{15416561} = \mathbf{Pl}(57, 56, 57, 1, 0, 1)_{290114}$$

$$\ell_8 = b_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{3} & \epsilon^{18} \\ 0 & 1 & \epsilon^{42} & \epsilon^{39} \end{array}\right]_{2963136} = \left[\begin{array}{cccc} 1 & 0 & 8 & 11 \\ 0 & 1 & 56 & 7 \end{array}\right]_{2963136} = \mathbf{Pl}(52, 54, 15, 21, 36, 1)_{9780681}$$

$$\ell_9 = b_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{12} & \epsilon^{9} \\ 0 & 1 & \epsilon^{42} & \epsilon^{30} \end{array}\right]_{12777782} = \left[\begin{array}{cccc} 1 & 0 & 62 & 47 \\ 0 & 1 & 56 & 54 \end{array}\right]_{12777782} = \mathbf{Pl}(33, 49, 8, 12, 11, 1)_{3203588}$$

$$\ell_{10} = b_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{6} & \epsilon^{45} \\ 0 & 1 & \epsilon^{21} & \epsilon^{15} \end{array}\right]_{9991962} = \left[\begin{array}{cccc} 1 & 0 & 33 & 37 \\ 0 & 1 & 57 & 21 \end{array}\right]_{9991962} = \mathbf{Pl}(62, 25, 45, 7, 47, 1)_{12782389}$$

$$\ell_{11} = b_6 = \left[\begin{array}{cccc} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17043585} = \left[\begin{array}{cccc} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17043585} = \mathbf{Pl}(0, 1, 0, 1, 0, 0)_{193}$$

$$\ell_{12} = c_{12} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & \epsilon^{21} \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{15412401} = \left[\begin{array}{cccc} 1 & 0 & 56 & 57 \\ 0 & 1 & 57 & 0 \end{array}\right]_{15412401} = \mathbf{Pl}(1, 1, 56, 56, 0, 1)_{508290}$$

$$\ell_{13} = c_{13} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{24} & \epsilon^{54} \\ 0 & 1 & \epsilon^{21} & \epsilon^{60} \end{array}\right]_{2851110} = \left[\begin{array}{cccc} 1 & 0 & 45 & 10 \\ 0 & 1 & 57 & 12 \end{array}\right]_{2851110} = \mathbf{Pl}(15, 21, 52, 54, 36, 1)_{9925103}$$

$$\ell_{14} = c_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{33} & \epsilon^{27} \\ 0 & 1 & \epsilon^{21} & \epsilon^{51} \end{array}\right]_{12468013} = \left[\begin{array}{cccc} 1 & 0 & 52 & 46 \\ 0 & 1 & 57 & 25 \end{array}\right]_{12468013} = \mathbf{Pl}(8, 12, 33, 49, 11, 1)_{3301150}$$

$$\ell_{15} = c_{15} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{48} & \epsilon^{36} \\ 0 & 1 & \epsilon^{42} & \epsilon^{57} \end{array}\right]_{9652551} = \left[\begin{array}{cccc} 1 & 0 & 15 & 36 \\ 0 & 1 & 56 & 49 \end{array}\right]_{9652551} = \mathbf{Pl}(45, 7, 62, 25, 47, 1)_{12848711}$$

$$\ell_{16} = c_{16} = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{42} \\ 0 & 1 & 1 & 0 \end{array}\right]_{14917186} = \left[\begin{array}{cccc} 1 & 0 & 1 & 56 \\ 0 & 1 & 1 & 0 \end{array}\right]_{14917186} = \mathbf{Pl}(57, 56, 1, 56, 0, 1)_{504881}$$

$$\ell_{17} = c_{23} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{33} & \epsilon^{9} \\ 0 & 1 & \epsilon^{21} & \epsilon^{51} \end{array}\right]_{12734317} = \left[\begin{array}{cccc} 1 & 0 & 52 & 47 \\ 0 & 1 & 57 & 25 \end{array}\right]_{12734317} = \mathbf{Pl}(15, 21, 45, 7, 11, 1)_{3348092}$$

$$\ell_{18} = c_{24} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{24} & \epsilon^{18} \\ 0 & 1 & \epsilon^{21} & \epsilon^{60} \end{array}\right]_{3117414} = \left[\begin{array}{cccc} 1 & 0 & 45 & 11 \\ 0 & 1 & 57 & 12 \end{array}\right]_{3117414} = \mathbf{Pl}(62, 25, 33, 49, 36, 1)_{9850999}$$

$$\ell_{19} = c_{25} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & \epsilon^{42} \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{15150257} = \left[\begin{array}{cccc} 1 & 0 & 57 & 56 \\ 0 & 1 & 56 & 0 \end{array}\right]_{15150257} = \mathbf{Pl}(1, 1, 57, 57, 0, 1)_{512322}$$

$$\ell_{20} = c_{26} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{27} & \epsilon^{45} \\ 0 & 1 & 1 & \epsilon^{36} \end{array}\right]_{10046959} = \left[\begin{array}{cccc} 1 & 0 & 46 & 37 \\ 0 & 1 & 1 & 36 \end{array}\right]_{10046959} = \mathbf{Pl}(10, 47, 37, 11, 47, 1)_{12751089}$$

$$\ell_{21} = c_{34} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & \epsilon^{42} \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{15146097} = \left[\begin{array}{cccc} 1 & 0 & 56 & 56 \\ 0 & 1 & 57 & 0 \end{array}\right]_{15146097} = \mathbf{Pl}(56, 57, 56, 1, 0, 1)_{290050}$$

$$\ell_{22} = c_{35} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{3} & \epsilon^{54} \\ 0 & 1 & \epsilon^{42} & \epsilon^{39} \end{array}\right]_{2696832} = \left[\begin{array}{cccc} 1 & 0 & 8 & 10 \\ 0 & 1 & 56 & 7 \end{array}\right]_{2696832} = \mathbf{Pl}(33, 49, 62, 25, 36, 1)_{9964181}$$

$$\ell_{23} = c_{36} = \begin{bmatrix} 1 & 0 & \epsilon^{54} & \epsilon^{9} \\ 0 & 1 & 1 & \epsilon^{9} \end{bmatrix}_{12560907} = \begin{bmatrix} 1 & 0 & 10 & 47 \\ 0 & 1 & 1 & 47 \end{bmatrix}_{12560907} = \mathbf{Pl}(46, 36, 37, 11, 11, 1)_{3316875}$$

$$\ell_{24} = c_{45} = \begin{bmatrix} 1 & 0 & \epsilon^{12} & \epsilon^{27} \\ 0 & 1 & \epsilon^{42} & \epsilon^{30} \end{bmatrix}_{12511478} = \begin{bmatrix} 1 & 0 & 62 & 46 \\ 0 & 1 & 56 & 54 \end{bmatrix}_{12511478} = \mathbf{Pl}(45, 7, 15, 21, 11, 1)_{3230879}$$

$$\ell_{25} = c_{46} = \begin{bmatrix} 1 & 0 & \epsilon^{45} & \epsilon^{18} \\ 0 & 1 & 1 & \epsilon^{18} \end{bmatrix}_{3084006} = \begin{bmatrix} 1 & 0 & 37 & 11 \\ 0 & 1 & 1 & 11 \end{bmatrix}_{3084006} = \mathbf{Pl}(10, 47, 46, 36, 36, 1)_{9901725}$$

$$\ell_{26} = c_{56} = \begin{bmatrix} 0 & 1 & \epsilon^{21} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047225} = \begin{bmatrix} 0 & 1 & 57 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047225} = \mathbf{Pl}(0, 57, 0, 1, 0, 0)_{249}$$

Rank of lines: (15183490, 9780655, 12294603, 2817702, 17047160, 9725658, 9918855, 15416561, 2963136, 12777782, 9991962, 17043585, 15412401, 2851110, 12468013, 9652551, 14917186, 12734317, 3117414, 15150257, 10046959, 15146097, 2696832, 12560907, 12511478, 3084006, 17047225)
Rank of points on Klein quadric: (508849, 12645591, 3351957, 9761082, 248, 12809614, 12637857, 290114, 9780681, 3203588, 12782389, 193, 508290, 9925103, 3301150, 12848711, 504881, 3348092, 9850999, 512322, 12751089, 290050, 9964181, 3316875, 3230879, 9901725, 249)

Eckardt Points

The surface has 13 Eckardt points:
$0 : E_{56} = a_5 \cap b_6 \cap c_{56} = P_3 = \mathbf{P}(0,0,0,1) = \mathbf{P}(0,0,0,1)$,
$1 : E_{16} = a_1 \cap b_6 \cap c_{16} = P_{131} = \mathbf{P}(0,1,1,0) = \mathbf{P}(0,1,1,0)$,
$2 : E_{12,34,56} = c_{12} \cap c_{34} \cap c_{56} = P_{3651} = \mathbf{P}(0,\epsilon^{42},1,0) = \mathbf{P}(0,56,1,0)$,
$3 : E_{52} = a_5 \cap b_2 \cap c_{25} = P_{3715} = \mathbf{P}(0,\epsilon^{21},1,0) = \mathbf{P}(0,57,1,0)$,
$4 : E_{53} = a_5 \cap b_3 \cap c_{35} = P_{39809} = \mathbf{P}(0,\epsilon^{24},\epsilon^{3},1) = \mathbf{P}(0,45,8,1)$,
$5 : E_{36} = a_3 \cap b_6 \cap c_{36} = P_{45761} = \mathbf{P}(0,\epsilon^{54},\epsilon^{54},1) = \mathbf{P}(0,10,10,1)$,
$6 : E_{51} = a_5 \cap b_1 \cap c_{15} = P_{67713} = \mathbf{P}(0,\epsilon^{6},\epsilon^{48},1) = \mathbf{P}(0,33,15,1)$,
$7 : E_{65} = a_6 \cap b_5 \cap c_{56} = P_{140289} = \mathbf{P}(0,\epsilon^{48},\epsilon^{6},1) = \mathbf{P}(0,15,33,1)$,
$8 : E_{46} = a_4 \cap b_6 \cap c_{46} = P_{158081} = \mathbf{P}(0,\epsilon^{45},\epsilon^{45},1) = \mathbf{P}(0,37,37,1)$,
$9 : E_{13,24,56} = c_{13} \cap c_{24} \cap c_{56} = P_{188993} = \mathbf{P}(0,\epsilon^{3},\epsilon^{24},1) = \mathbf{P}(0,8,45,1)$,
$10 : E_{26} = a_2 \cap b_6 \cap c_{26} = P_{195521} = \mathbf{P}(0,\epsilon^{27},\epsilon^{27},1) = \mathbf{P}(0,46,46,1)$,
$11 : E_{14,23,56} = c_{14} \cap c_{23} \cap c_{56} = P_{221121} = \mathbf{P}(0,\epsilon^{12},\epsilon^{33},1) = \mathbf{P}(0,62,52,1)$,
$12 : E_{54} = a_5 \cap b_4 \cap c_{45} = P_{261441} = \mathbf{P}(0,\epsilon^{33},\epsilon^{12},1) = \mathbf{P}(0,52,62,1)$.

Double Points

The surface has 96 Double points:
The double points on the surface are:

$P_{237753} = (56,1,57,1) = \ell_0 \cap \ell_7 = a_1 \cap b_2$
$P_{185721} = (56,20,44,1) = \ell_0 \cap \ell_8 = a_1 \cap b_3$
$P_{222137} = (56,13,53,1) = \ell_0 \cap \ell_9 = a_1 \cap b_4$
$P_{104569} = (56,32,24,1) = \ell_0 \cap \ell_{10} = a_1 \cap b_5$
$P_{11961} = (56,57,1,1) = \ell_0 \cap \ell_{12} = a_1 \cap c_{12}$
$P_{88953} = (56,44,20,1) = \ell_0 \cap \ell_{13} = a_1 \cap c_{13}$
$P_{60857} = (56,53,13,1) = \ell_0 \cap \ell_{14} = a_1 \cap c_{14}$
$P_{136825} = (56,24,32,1) = \ell_0 \cap \ell_{15} = a_1 \cap c_{15}$
$P_{169213} = (60,18,40,1) = \ell_1 \cap \ell_6 = a_2 \cap b_1$
$P_{25130} = (41,7,5,1) = \ell_1 \cap \ell_8 = a_2 \cap b_3$
$P_{15520} = (31,49,2,1) = \ell_1 \cap \ell_9 = a_2 \cap b_4$
$P_{151444} = (19,61,35,1) = \ell_1 \cap \ell_{10} = a_2 \cap b_5$
$P_{230905} = (56,22,55,1) = \ell_1 \cap \ell_{12} = a_2 \cap c_{12}$
$P_{165308} = (59,21,39,1) = \ell_1 \cap \ell_{17} = a_2 \cap c_{23}$
$P_{181091} = (34,12,43,1) = \ell_1 \cap \ell_{18} = a_2 \cap c_{24}$
$P_{103994} = (57,23,24,1) = \ell_1 \cap \ell_{19} = a_2 \cap c_{25}$
$P_{91296} = (31,17,21,1) = \ell_2 \cap \ell_6 = a_3 \cap b_1$
$P_{209401} = (56,6,50,1) = \ell_2 \cap \ell_7 = a_3 \cap b_2$
$P_{149482} = (41,30,35,1) = \ell_2 \cap \ell_9 = a_3 \cap b_4$
$P_{206652} = (59,27,49,1) = \ell_2 \cap \ell_{10} = a_3 \cap b_5$
$P_{228093} = (60,42,54,1) = \ell_2 \cap \ell_{13} = a_3 \cap c_{13}$
$P_{171747} = (34,58,40,1) = \ell_2 \cap \ell_{17} = a_3 \cap c_{23}$
$P_{213946} = (57,13,51,1) = \ell_2 \cap \ell_{21} = a_3 \cap c_{34}$
$P_{106836} = (19,4,25,1) = \ell_2 \cap \ell_{22} = a_3 \cap c_{35}$

$P_{55018} = (41, 26, 12, 1) = \ell_3 \cap \ell_6 = a_4 \cap b_1$
$P_{126073} = (56, 48, 29, 1) = \ell_3 \cap \ell_7 = a_4 \cap b_2$
$P_{131004} = (59, 61, 30, 1) = \ell_3 \cap \ell_8 = a_4 \cap b_3$
$P_{33891} = (34, 16, 7, 1) = \ell_3 \cap \ell_{10} = a_4 \cap b_5$
$P_{227796} = (19, 38, 54, 1) = \ell_3 \cap \ell_{14} = a_4 \cap c_{14}$
$P_{242912} = (31, 18, 58, 1) = \ell_3 \cap \ell_{18} = a_4 \cap c_{24}$
$P_{120186} = (57, 20, 28, 1) = \ell_3 \cap \ell_{21} = a_4 \cap c_{34}$
$P_{106813} = (60, 3, 25, 1) = \ell_3 \cap \ell_{24} = a_4 \cap c_{45}$
$P_{128980} = (19, 30, 30, 1) = \ell_5 \cap \ell_6 = a_6 \cap b_1$
$P_{99321} = (56, 14, 23, 1) = \ell_5 \cap \ell_7 = a_6 \cap b_2$
$P_{246563} = (34, 11, 59, 1) = \ell_5 \cap \ell_8 = a_6 \cap b_3$
$P_{252284} = (59, 36, 60, 1) = \ell_5 \cap \ell_9 = a_6 \cap b_4$
$P_{65082} = (57, 55, 14, 1) = \ell_5 \cap \ell_{16} = a_6 \cap c_{16}$
$P_{80509} = (60, 40, 18, 1) = \ell_5 \cap \ell_{20} = a_6 \cap c_{26}$
$P_{75168} = (31, 21, 17, 1) = \ell_5 \cap \ell_{23} = a_6 \cap c_{36}$
$P_{111466} = (41, 12, 26, 1) = \ell_5 \cap \ell_{25} = a_6 \cap c_{46}$
$P_{63033} = (56, 23, 14, 1) = \ell_6 \cap \ell_{12} = b_1 \cap c_{12}$
$P_{53027} = (34, 59, 11, 1) = \ell_6 \cap \ell_{13} = b_1 \cap c_{13}$
$P_{155516} = (59, 60, 36, 1) = \ell_6 \cap \ell_{14} = b_1 \cap c_{14}$
$P_{230394} = (57, 14, 55, 1) = \ell_6 \cap \ell_{16} = b_1 \cap c_{16}$
$P_{237177} = (56, 56, 56, 1) = \ell_7 \cap \ell_{12} = b_2 \cap c_{12}$
$P_{217145} = (56, 63, 51, 1) = \ell_7 \cap \ell_{17} = b_2 \cap c_{23}$
$P_{119481} = (56, 9, 28, 1) = \ell_7 \cap \ell_{18} = b_2 \cap c_{24}$
$P_{97849} = (56, 55, 22, 1) = \ell_7 \cap \ell_{20} = b_2 \cap c_{26}$
$P_{170592} = (31, 40, 40, 1) = \ell_8 \cap \ell_{13} = b_3 \cap c_{13}$
$P_{146452} = (19, 47, 34, 1) = \ell_8 \cap \ell_{17} = b_3 \cap c_{23}$
$P_{125818} = (57, 44, 29, 1) = \ell_8 \cap \ell_{21} = b_3 \cap c_{34}$
$P_{179709} = (60, 54, 42, 1) = \ell_8 \cap \ell_{23} = b_3 \cap c_{36}$
$P_{79075} = (34, 18, 18, 1) = \ell_9 \cap \ell_{14} = b_4 \cap c_{14}$
$P_{175165} = (60, 47, 41, 1) = \ell_9 \cap \ell_{18} = b_4 \cap c_{24}$
$P_{212410} = (57, 53, 50, 1) = \ell_9 \cap \ell_{21} = b_4 \cap c_{34}$
$P_{163284} = (19, 54, 38, 1) = \ell_9 \cap \ell_{25} = b_4 \cap c_{46}$
$P_{245501} = (60, 58, 58, 1) = \ell_{10} \cap \ell_{15} = b_5 \cap c_{15}$
$P_{136698} = (57, 22, 32, 1) = \ell_{10} \cap \ell_{19} = b_5 \cap c_{25}$
$P_{51242} = (41, 31, 11, 1) = \ell_{10} \cap \ell_{22} = b_5 \cap c_{35}$
$P_{152864} = (31, 19, 36, 1) = \ell_{10} \cap \ell_{24} = b_5 \cap c_{45}$
$P_{42873} = (56, 28, 9, 1) = \ell_{12} \cap \ell_{22} = c_{12} \cap c_{35}$
$P_{31993} = (56, 50, 6, 1) = \ell_{12} \cap \ell_{23} = c_{12} \cap c_{36}$
$P_{265529} = (56, 51, 63, 1) = \ell_{12} \cap \ell_{24} = c_{12} \cap c_{45}$
$P_{202681} = (56, 29, 48, 1) = \ell_{12} \cap \ell_{25} = c_{12} \cap c_{46}$
$P_{186298} = (57, 29, 44, 1) = \ell_{13} \cap \ell_{19} = c_{13} \cap c_{25}$
$P_{33194} = (41, 5, 7, 1) = \ell_{13} \cap \ell_{20} = c_{13} \cap c_{26}$
$P_{198868} = (19, 34, 47, 1) = \ell_{13} \cap \ell_{24} = c_{13} \cap c_{45}$
$P_{255996} = (59, 30, 61, 1) = \ell_{13} \cap \ell_{25} = c_{13} \cap c_{46}$
$P_{224506} = (57, 50, 53, 1) = \ell_{14} \cap \ell_{19} = c_{14} \cap c_{25}$
$P_{205024} = (31, 2, 49, 1) = \ell_{14} \cap \ell_{20} = c_{14} \cap c_{26}$
$P_{199357} = (60, 41, 47, 1) = \ell_{14} \cap \ell_{22} = c_{14} \cap c_{35}$
$P_{129322} = (41, 35, 30, 1) = \ell_{14} \cap \ell_{23} = c_{14} \cap c_{36}$
$P_{84320} = (31, 36, 19, 1) = \ell_{15} \cap \ell_{17} = c_{15} \cap c_{23}$
$P_{131882} = (41, 11, 31, 1) = \ell_{15} \cap \ell_{18} = c_{15} \cap c_{24}$
$P_{256276} = (19, 35, 61, 1) = \ell_{15} \cap \ell_{20} = c_{15} \cap c_{26}$
$P_{96378} = (57, 32, 22, 1) = \ell_{15} \cap \ell_{21} = c_{15} \cap c_{34}$
$P_{117948} = (59, 49, 27, 1) = \ell_{15} \cap \ell_{23} = c_{15} \cap c_{36}$
$P_{70179} = (34, 7, 16, 1) = \ell_{15} \cap \ell_{25} = c_{15} \cap c_{46}$
$P_{262650} = (57, 6, 63, 1) = \ell_{16} \cap \ell_{17} = c_{16} \cap c_{23}$
$P_{44154} = (57, 48, 9, 1) = \ell_{16} \cap \ell_{18} = c_{16} \cap c_{24}$
$P_{11898} = (57, 56, 1, 1) = \ell_{16} \cap \ell_{19} = c_{16} \cap c_{25}$
$P_{233658} = (57, 1, 56, 1) = \ell_{16} \cap \ell_{21} = c_{16} \cap c_{34}$
$P_{201402} = (57, 9, 48, 1) = \ell_{16} \cap \ell_{22} = c_{16} \cap c_{35}$
$P_{32826} = (57, 63, 6, 1) = \ell_{16} \cap \ell_{24} = c_{16} \cap c_{45}$
$P_{257962} = (41, 61, 61, 1) = \ell_{17} \cap \ell_{24} = c_{23} \cap c_{45}$
$P_{18109} = (60, 25, 3, 1) = \ell_{17} \cap \ell_{25} = c_{23} \cap c_{46}$
$P_{149820} = (59, 35, 35, 1) = \ell_{18} \cap \ell_{22} = c_{24} \cap c_{35}$
$P_{22164} = (19, 25, 4, 1) = \ell_{18} \cap \ell_{23} = c_{24} \cap c_{36}$
$P_{241338} = (57, 57, 57, 1) = \ell_{19} \cap \ell_{21} = c_{25} \cap c_{34}$
$P_{60730} = (57, 51, 13, 1) = \ell_{19} \cap \ell_{23} = c_{25} \cap c_{36}$
$P_{87930} = (57, 28, 20, 1) = \ell_{19} \cap \ell_{25} = c_{25} \cap c_{46}$
$P_{99962} = (57, 24, 23, 1) = \ell_{20} \cap \ell_{21} = c_{26} \cap c_{34}$
$P_{56099} = (34, 43, 12, 1) = \ell_{20} \cap \ell_{22} = c_{26} \cap c_{35}$
$P_{92732} = (59, 39, 21, 1) = \ell_{20} \cap \ell_{24} = c_{26} \cap c_{45}$
$P_{81632} = (31, 58, 18, 1) = \ell_{22} \cap \ell_{25} = c_{35} \cap c_{46}$
$P_{244323} = (34, 40, 58, 1) = \ell_{23} \cap \ell_{24} = c_{36} \cap c_{45}$

Single Points

The surface has 1524 single points:
Too many to print.

Points on surface but on no line

The surface has 2912 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_{237753}	P_{185721}	P_{222137}	P_{104569}	P_{131}	P_{11961}	P_{88953}	P_{60857}	P_{136825}	P_{131}

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_{169213}	P_{25130}	P_{15520}	P_{151444}	P_{195521}	P_{230905}	P_{165308}	P_{181091}	P_{103994}	P_{195521}

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_{91296}	P_{209401}	P_{149482}	P_{206652}	P_{45761}	P_{228093}	P_{171747}	P_{213946}	P_{106836}	P_{45761}

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_{55018}	P_{126073}	P_{131004}	P_{33891}	P_{158081}	P_{227796}	P_{242912}	P_{120186}	P_{106813}	P_{158081}

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_{67713}	P_{3715}	P_{39809}	P_{261441}	P_3	P_{67713}	P_{3715}	P_{39809}	P_{261441}	P_3

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_{128980}	P_{99321}	P_{246563}	P_{252284}	P_{140289}	P_{65082}	P_{80509}	P_{75168}	P_{111466}	P_{140289}

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_{169213}	P_{91296}	P_{55018}	P_{67713}	P_{128980}	P_{63033}	P_{53027}	P_{155516}	P_{67713}	P_{230394}

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_{237753}	P_{209401}	P_{126073}	P_{3715}	P_{99321}	P_{237177}	P_{217145}	P_{119481}	P_{3715}	P_{97849}

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_{185721}	P_{25130}	P_{131004}	P_{39809}	P_{246563}	P_{170592}	P_{146452}	P_{125818}	P_{39809}	P_{179709}

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_{222137}	P_{15520}	P_{149482}	P_{261441}	P_{252284}	P_{79075}	P_{175165}	P_{212410}	P_{261441}	P_{163284}

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_{104569}	P_{151444}	P_{206652}	P_{33891}	P_{140289}	P_{245501}	P_{136698}	P_{51242}	P_{152864}	P_{140289}

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_{131}	P_{195521}	P_{45761}	P_{158081}	P_3	P_{131}	P_{195521}	P_{45761}	P_{158081}	P_3

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_{11961}	P_{230905}	P_{63033}	P_{237177}	P_{3651}	P_{42873}	P_{31993}	P_{265529}	P_{202681}	P_{3651}

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_{88953}	P_{228093}	P_{53027}	P_{170592}	P_{188993}	P_{186298}	P_{33194}	P_{198868}	P_{255996}	P_{188993}

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_{60857}	P_{227796}	P_{155516}	P_{79075}	P_{221121}	P_{224506}	P_{205024}	P_{199357}	P_{129322}	P_{221121}

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_{136825}	P_{67713}	P_{67713}	P_{245501}	P_{84320}	P_{131882}	P_{256276}	P_{96378}	P_{117948}	P_{70179}

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_{131}	P_{65082}	P_{230394}	P_{131}	P_{262650}	P_{44154}	P_{11898}	P_{233658}	P_{201402}	P_{32826}

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_{165308}	P_{171747}	P_{217145}	P_{146452}	P_{221121}	P_{84320}	P_{262650}	P_{257962}	P_{18109}	P_{221121}

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_{181091}	P_{242912}	P_{119481}	P_{175165}	P_{188993}	P_{131882}	P_{44154}	P_{149820}	P_{22164}	P_{188993}

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_{103994}	P_{3715}	P_{3715}	P_{136698}	P_{186298}	P_{224506}	P_{11898}	P_{241338}	P_{60730}	P_{87930}

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_{195521}	P_{80509}	P_{97849}	P_{195521}	P_{33194}	P_{205024}	P_{256276}	P_{99962}	P_{56099}	P_{92732}

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_{213946}	P_{120186}	P_{125818}	P_{212410}	P_{3651}	P_{96378}	P_{233658}	P_{241338}	P_{99962}	P_{3651}

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_{106836}	P_{39809}	P_{39809}	P_{51242}	P_{42873}	P_{199357}	P_{201402}	P_{149820}	P_{56099}	P_{81632}

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_{45761}	P_{75168}	P_{179709}	P_{45761}	P_{31993}	P_{129322}	P_{117948}	P_{22164}	P_{60730}	P_{244323}

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_{106813}	P_{261441}	P_{261441}	P_{152864}	P_{265529}	P_{198868}	P_{32826}	P_{257962}	P_{92732}	P_{244323}

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_{158081}	P_{111466}	P_{163284}	P_{158081}	P_{202681}	P_{255996}	P_{70179}	P_{18109}	P_{87930}	P_{81632}

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_3	P_{140289}	P_{140289}	P_3	P_{3651}	P_{188993}	P_{221121}	P_{221121}	P_{188993}	P_{3651}

The surface has 4545 points:
Too many to print.