Rank-73802 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 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 1090789510

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:

$$\ell_0 = a_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & 0 \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{233073} = \left[\begin{array}{cccc} 1 & 0 & 56 & 0 \\ 0 & 1 & 57 & 0 \end{array}\right]_{233073} = \mathbf{Pl}(57, 0, 56, 0, 0, 1)_{277570}$$

$$\ell_1 = a_2 = \left[\begin{array}{cccc} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17043585} = \left[\begin{array}{cccc} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17043585} = \mathbf{Pl}(0, 1, 0, 1, 0, 0)_{193}$$

$$\ell_2 = a_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{3} & \epsilon^{52} \\ 0 & 1 & \epsilon^{42} & \epsilon^{39} \end{array}\right]_{13348992} = \left[\begin{array}{cccc} 1 & 0 & 8 & 50 \\ 0 & 1 & 56 & 7 \end{array}\right]_{13348992} = \mathbf{Pl}(30, 58, 58, 30, 36, 1)_{9951074}$$

$$\ell_3 = a_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{33} & \epsilon^{26} \\ 0 & 1 & \epsilon^{21} & \epsilon^{51} \end{array}\right]_{6343021} = \left[\begin{array}{cccc} 1 & 0 & 52 & 23 \\ 0 & 1 & 57 & 25 \end{array}\right]_{6343021} = \mathbf{Pl}(40, 35, 35, 40, 11, 1)_{3307545}$$

$$\ell_4 = a_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{6} & \epsilon^{41} \\ 0 & 1 & \epsilon^{21} & \epsilon^{15} \end{array}\right]_{7595226} = \left[\begin{array}{cccc} 1 & 0 & 33 & 28 \\ 0 & 1 & 57 & 21 \end{array}\right]_{7595226} = \mathbf{Pl}(18, 61, 61, 18, 47, 1)_{12844274}$$

$$\ell_5 = a_6 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{24} & \epsilon^{52} \\ 0 & 1 & \epsilon^{21} & \epsilon^{60} \end{array}\right]_{13503270} = \left[\begin{array}{cccc} 1 & 0 & 45 & 50 \\ 0 & 1 & 57 & 12 \end{array}\right]_{13503270} = \mathbf{Pl}(61, 18, 18, 61, 36, 1)_{9794865}$$

$$\ell_6 = b_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{45} & \epsilon^{38} \\ 0 & 1 & 1 & \epsilon^{18} \end{array}\right]_{13736166} = \left[\begin{array}{cccc} 1 & 0 & 37 & 51 \\ 0 & 1 & 1 & 11 \end{array}\right]_{13736166} = \mathbf{Pl}(40, 35, 35, 40, 36, 1)_{9861309}$$

$$\ell_7 = b_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{3} & \epsilon^{38} \\ 0 & 1 & \epsilon^{42} & \epsilon^{39} \end{array}\right]_{13615296} = \left[\begin{array}{cccc} 1 & 0 & 8 & 51 \\ 0 & 1 & 56 & 7 \end{array}\right]_{13615296} = \mathbf{Pl}(18, 61, 61, 18, 36, 1)_{9962843}$$

$$\ell_8 = b_3 = \left[\begin{array}{cccc} 0 & 1 & \epsilon^{21} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17047225} = \left[\begin{array}{cccc} 0 & 1 & 57 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17047225} = \mathbf{Pl}(0, 57, 0, 1, 0, 0)_{249}$$

$$\ell_9 = b_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{27} & \epsilon^{13} \\ 0 & 1 & 1 & \epsilon^{36} \end{array}\right]_{7916527} = \left[\begin{array}{cccc} 1 & 0 & 46 & 29 \\ 0 & 1 & 1 & 36 \end{array}\right]_{7916527} = \mathbf{Pl}(30, 58, 58, 30, 47, 1)_{12832631}$$

$$\ell_{10} = b_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{54} & \epsilon^{19} \\ 0 & 1 & 1 & \epsilon^{9} \end{array}\right]_{5903307} = \left[\begin{array}{cccc} 1 & 0 & 10 & 22 \\ 0 & 1 & 1 & 47 \end{array}\right]_{5903307} = \mathbf{Pl}(61, 18, 18, 61, 11, 1)_{3241101}$$

$$\ell_{11} = b_6 = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{array}\right]_{4162} = \left[\begin{array}{cccc} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{array}\right]_{4162} = \mathbf{Pl}(1, 0, 1, 0, 0, 1)_{270529}$$

$$\ell_{12} = c_{12} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{45} & \epsilon^{52} \\ 0 & 1 & 1 & \epsilon^{18} \end{array}\right]_{13469862} = \left[\begin{array}{cccc} 1 & 0 & 37 & 50 \\ 0 & 1 & 1 & 11 \end{array}\right]_{13469862} = \mathbf{Pl}(35, 40, 40, 35, 36, 1)_{9880771}$$

$$\ell_{13} = c_{13} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & 1 \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{499377} = \left[\begin{array}{cccc} 1 & 0 & 56 & 1 \\ 0 & 1 & 57 & 0 \end{array}\right]_{499377} = \mathbf{Pl}(57, 56, 56, 57, 0, 1)_{512315}$$

$$\ell_{14} = c_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{48} & \epsilon^{41} \\ 0 & 1 & \epsilon^{42} & \epsilon^{57} \end{array}\right]_{7522119} = \left[\begin{array}{cccc} 1 & 0 & 15 & 28 \\ 0 & 1 & 56 & 49 \end{array}\right]_{7522119} = \mathbf{Pl}(40, 35, 35, 40, 47, 1)_{12742740}$$

$$\ell_{15} = c_{15} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{12} & \epsilon^{26} \\ 0 & 1 & \epsilon^{42} & \epsilon^{30} \end{array}\right]_{6386486} = \left[\begin{array}{cccc} 1 & 0 & 62 & 23 \\ 0 & 1 & 56 & 54 \end{array}\right]_{6386486} = \mathbf{Pl}(58, 30, 30, 58, 11, 1)_{3288033}$$

$$\ell_{16} = c_{16} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & 0 \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{237233} = \left[\begin{array}{cccc} 1 & 0 & 57 & 0 \\ 0 & 1 & 56 & 0 \end{array}\right]_{237233} = \mathbf{Pl}(56, 0, 57, 0, 0, 1)_{277696}$$

$$\ell_{17} = c_{23} = \left[\begin{array}{cccc} 0 & 1 & \epsilon^{42} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17047160} = \left[\begin{array}{cccc} 0 & 1 & 56 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{17047160} = \mathbf{Pl}(0, 56, 0, 1, 0, 0)_{248}$$

$$\ell_{18} = c_{24} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{27} & \epsilon^{41} \\ 0 & 1 & 1 & \epsilon^{36} \end{array}\right]_{7650223} = \left[\begin{array}{cccc} 1 & 0 & 46 & 28 \\ 0 & 1 & 1 & 36 \end{array}\right]_{7650223} = \mathbf{Pl}(58, 30, 30, 58, 47, 1)_{12723228}$$

$$\ell_{19} = c_{25} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{54} & \epsilon^{26} \\ 0 & 1 & 1 & \epsilon^{9} \end{array}\right]_{6169611} = \left[\begin{array}{cccc} 1 & 0 & 10 & 23 \\ 0 & 1 & 1 & 47 \end{array}\right]_{6169611} = \mathbf{Pl}(18, 61, 61, 18, 11, 1)_{3409079}$$

$$\ell_{20} = c_{26} = \left[\begin{array}{cccc} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{array}\right]_{270466} = \left[\begin{array}{cccc} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{array}\right]_{270466} = \mathbf{Pl}(1, 1, 1, 1, 0, 1)_{286530}$$

$$\ell_{21} = c_{34} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{33} & \epsilon^{19} \\ 0 & 1 & \epsilon^{21} & \epsilon^{51} \end{array}\right]_{6076717} = \left[\begin{array}{cccc} 1 & 0 & 52 & 22 \\ 0 & 1 & 57 & 25 \end{array}\right]_{6076717} = \mathbf{Pl}(30, 58, 58, 30, 11, 1)_{3397310}$$

$$\ell_{22} = c_{35} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{6} & \epsilon^{13} \\ 0 & 1 & \epsilon^{21} & \epsilon^{15} \end{array}\right]_{7861530} = \left[\begin{array}{cccc} 1 & 0 & 33 & 29 \\ 0 & 1 & 57 & 21 \end{array}\right]_{7861530} = \mathbf{Pl}(35, 40, 40, 35, 47, 1)_{12762328}$$

$$\ell_{23} = c_{36} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{24} & \epsilon^{38} \\ 0 & 1 & \epsilon^{21} & \epsilon^{60} \end{array}\right]_{13769574} = \left[\begin{array}{cccc} 1 & 0 & 45 & 51 \\ 0 & 1 & 57 & 12 \end{array}\right]_{13769574} = \mathbf{Pl}(58,30,30,58,36,1)_{9841797}$$

$$\ell_{24} = c_{45} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & 1 \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{503537} = \left[\begin{array}{cccc} 1 & 0 & 57 & 1 \\ 0 & 1 & 56 & 0 \end{array}\right]_{503537} = \mathbf{Pl}(56,57,57,56,0,1)_{508408}$$

$$\ell_{25} = c_{46} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{12} & \epsilon^{19} \\ 0 & 1 & \epsilon^{42} & \epsilon^{30} \end{array}\right]_{6120182} = \left[\begin{array}{cccc} 1 & 0 & 62 & 22 \\ 0 & 1 & 56 & 54 \end{array}\right]_{6120182} = \mathbf{Pl}(35,40,40,35,11,1)_{3327007}$$

$$\ell_{26} = c_{56} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{48} & \epsilon^{13} \\ 0 & 1 & \epsilon^{42} & \epsilon^{57} \end{array}\right]_{7788423} = \left[\begin{array}{cccc} 1 & 0 & 15 & 29 \\ 0 & 1 & 56 & 49 \end{array}\right]_{7788423} = \mathbf{Pl}(61,18,18,61,47,1)_{12676422}$$

Rank of lines: (233073, 17043585, 13348992, 6343021, 7595226, 13503270, 13736166, 13615296, 17047225, 7916527, 5903307, 4162, 13469862, 499377, 7522119, 6386486, 237233, 17047160, 7650223, 6169611, 270466, 6076717, 7861530, 13769574, 503537, 6120182, 7788423)
Rank of points on Klein quadric: (277570, 193, 9951074, 3307545, 12844274, 9794865, 9861309, 9962843, 249, 12832631, 3241101, 270529, 9880771, 512315, 12742740, 3288033, 277696, 248, 12723228, 3409079, 286530, 3397310, 12762328, 9841797, 508408, 3327007, 12676422)

Eckardt Points

The surface has 13 Eckardt points:
$0 : E_{23} = a_2 \cap b_3 \cap c_{23} = P_3 = \mathbf{P}(0,0,0,1) = \mathbf{P}(0,0,0,1)$,
$1 : E_{26} = a_2 \cap b_6 \cap c_{26} = P_{131} = \mathbf{P}(0,1,1,0) = \mathbf{P}(0,1,1,0)$,
$2 : E_{13} = a_1 \cap b_3 \cap c_{13} = P_{3651} = \mathbf{P}(0,\epsilon^{42},1,0) = \mathbf{P}(0,56,1,0)$,
$3 : E_{16,23,45} = c_{16} \cap c_{23} \cap c_{45} = P_{3715} = \mathbf{P}(0,\epsilon^{21},1,0) = \mathbf{P}(0,57,1,0)$,
$4 : E_{32} = a_3 \cap b_2 \cap c_{23} = P_{39809} = \mathbf{P}(0,\epsilon^{24},\epsilon^{3},1) = \mathbf{P}(0,45,8,1)$,
$5 : E_{25} = a_2 \cap b_5 \cap c_{25} = P_{45761} = \mathbf{P}(0,\epsilon^{54},\epsilon^{54},1) = \mathbf{P}(0,10,10,1)$,
$6 : E_{14,23,56} = c_{14} \cap c_{23} \cap c_{56} = P_{67713} = \mathbf{P}(0,\epsilon^{6},\epsilon^{48},1) = \mathbf{P}(0,33,15,1)$,
$7 : E_{53} = a_5 \cap b_3 \cap c_{35} = P_{140289} = \mathbf{P}(0,\epsilon^{48},\epsilon^{6},1) = \mathbf{P}(0,15,33,1)$,
$8 : E_{21} = a_2 \cap b_1 \cap c_{12} = P_{158081} = \mathbf{P}(0,\epsilon^{45},\epsilon^{45},1) = \mathbf{P}(0,37,37,1)$,
$9 : E_{63} = a_6 \cap b_3 \cap c_{36} = P_{188993} = \mathbf{P}(0,\epsilon^{3},\epsilon^{24},1) = \mathbf{P}(0,8,45,1)$,
$10 : E_{24} = a_2 \cap b_4 \cap c_{24} = P_{195521} = \mathbf{P}(0,\epsilon^{27},\epsilon^{27},1) = \mathbf{P}(0,46,46,1)$,
$11 : E_{43} = a_4 \cap b_3 \cap c_{34} = P_{221121} = \mathbf{P}(0,\epsilon^{12},\epsilon^{33},1) = \mathbf{P}(0,62,52,1)$,
$12 : E_{15,23,46} = c_{15} \cap c_{23} \cap c_{46} = P_{261441} = \mathbf{P}(0,\epsilon^{33},\epsilon^{12},1) = \mathbf{P}(0,52,62,1)$.

Double Points

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

$P_{2346} = (39,35,1,0) = \ell_0 \cap \ell_7 = a_1 \cap b_2$
$P_{1222} = (3,18,1,0) = \ell_0 \cap \ell_9 = a_1 \cap b_4$
$P_{2670} = (43,40,1,0) = \ell_0 \cap \ell_{10} = a_1 \cap b_5$
$P_{3771} = (56,57,1,0) = \ell_0 \cap \ell_{11} = a_1 \cap b_6$
$P_{3796} = (17,58,1,0) = \ell_0 \cap \ell_{12} = a_1 \cap c_{12}$
$P_{1991} = (4,30,1,0) = \ell_0 \cap \ell_{14} = a_1 \cap c_{14}$
$P_{3997} = (26,61,1,0) = \ell_0 \cap \ell_{15} = a_1 \cap c_{15}$
$P_{132} = (1,1,1,0) = \ell_0 \cap \ell_{16} = a_1 \cap c_{16}$
$P_{221168} = (47,62,52,1) = \ell_2 \cap \ell_6 = a_3 \cap b_1$
$P_{212261} = (36,51,50,1) = \ell_2 \cap \ell_9 = a_3 \cap b_4$
$P_{170287} = (46,35,40,1) = \ell_2 \cap \ell_{10} = a_3 \cap b_5$
$P_{1238} = (19,18,1,0) = \ell_2 \cap \ell_{11} = a_3 \cap b_6$
$P_{89154} = (1,48,20,1) = \ell_2 \cap \ell_{13} = a_3 \cap c_{13}$
$P_{63564} = (11,32,14,1) = \ell_2 \cap \ell_{21} = a_3 \cap c_{34}$
$P_{81803} = (10,61,18,1) = \ell_2 \cap \ell_{22} = a_3 \cap c_{35}$
$P_{195558} = (37,46,46,1) = \ell_2 \cap \ell_{23} = a_3 \cap c_{36}$
$P_{99788} = (11,22,23,1) = \ell_3 \cap \ell_6 = a_4 \cap b_1$
$P_{130799} = (46,58,30,1) = \ell_3 \cap \ell_7 = a_4 \cap b_2$
$P_{67749} = (36,33,15,1) = \ell_3 \cap \ell_{10} = a_4 \cap b_5$
$P_{2018} = (31,30,1,0) = \ell_3 \cap \ell_{11} = a_4 \cap b_6$
$P_{185008} = (47,9,44,1) = \ell_3 \cap \ell_{14} = a_4 \cap c_{14}$
$P_{255206} = (37,18,61,1) = \ell_3 \cap \ell_{18} = a_4 \cap c_{24}$
$P_{29570} = (1,13,6,1) = \ell_3 \cap \ell_{24} = a_4 \cap c_{45}$
$P_{158091} = (10,37,37,1) = \ell_3 \cap \ell_{25} = a_4 \cap c_{46}$

$P_{130763} = (10, 58, 30, 1) = \ell_4 \cap \ell_6 = a_5 \cap b_1$
$P_{225317} = (36, 63, 53, 1) = \ell_4 \cap \ell_7 = a_5 \cap b_2$
$P_{39820} = (11, 45, 8, 1) = \ell_4 \cap \ell_9 = a_5 \cap b_4$
$P_{2341} = (34, 35, 1, 0) = \ell_4 \cap \ell_{11} = a_5 \cap b_6$
$P_{150118} = (37, 40, 35, 1) = \ell_4 \cap \ell_{15} = a_5 \cap c_{15}$
$P_{120752} = (47, 29, 28, 1) = \ell_4 \cap \ell_{19} = a_5 \cap c_{25}$
$P_{230978} = (1, 24, 55, 1) = \ell_4 \cap \ell_{24} = a_5 \cap c_{45}$
$P_{45807} = (46, 10, 10, 1) = \ell_4 \cap \ell_{26} = a_5 \cap c_{56}$
$P_{67750} = (37, 33, 15, 1) = \ell_5 \cap \ell_6 = a_6 \cap b_1$
$P_{45808} = (47, 10, 10, 1) = \ell_5 \cap \ell_7 = a_6 \cap b_2$
$P_{170251} = (10, 35, 40, 1) = \ell_5 \cap \ell_9 = a_6 \cap b_4$
$P_{105996} = (11, 55, 24, 1) = \ell_5 \cap \ell_{10} = a_6 \cap b_5$
$P_{2629} = (2, 40, 1, 0) = \ell_5 \cap \ell_{16} = a_6 \cap c_{16}$
$P_{124738} = (1, 28, 29, 1) = \ell_5 \cap \ell_{20} = a_6 \cap c_{26}$
$P_{243695} = (46, 30, 58, 1) = \ell_5 \cap \ell_{25} = a_6 \cap c_{46}$
$P_{265637} = (36, 53, 63, 1) = \ell_5 \cap \ell_{26} = a_6 \cap c_{56}$
$P_{184962} = (1, 9, 44, 1) = \ell_6 \cap \ell_{13} = b_1 \cap c_{13}$
$P_{29605} = (36, 13, 6, 1) = \ell_6 \cap \ell_{14} = b_1 \cap c_{14}$
$P_{255215} = (46, 18, 61, 1) = \ell_6 \cap \ell_{15} = b_1 \cap c_{15}$
$P_{2014} = (27, 30, 1, 0) = \ell_6 \cap \ell_{16} = b_1 \cap c_{16}$
$P_{140326} = (37, 15, 33, 1) = \ell_7 \cap \ell_{12} = b_2 \cap c_{12}$
$P_{150091} = (10, 40, 35, 1) = \ell_7 \cap \ell_{18} = b_2 \cap c_{24}$
$P_{230988} = (11, 24, 55, 1) = \ell_7 \cap \ell_{19} = b_2 \cap c_{25}$
$P_{120706} = (1, 29, 28, 1) = \ell_7 \cap \ell_{20} = b_2 \cap c_{26}$
$P_{221167} = (46, 62, 52, 1) = \ell_9 \cap \ell_{14} = b_4 \cap c_{14}$
$P_{89200} = (47, 48, 20, 1) = \ell_9 \cap \ell_{21} = b_4 \cap c_{34}$
$P_{63554} = (1, 32, 14, 1) = \ell_9 \cap \ell_{24} = b_4 \cap c_{45}$
$P_{81830} = (37, 61, 18, 1) = \ell_9 \cap \ell_{25} = b_4 \cap c_{46}$
$P_{189003} = (10, 8, 45, 1) = \ell_{10} \cap \ell_{15} = b_5 \cap c_{15}$
$P_{243686} = (37, 30, 58, 1) = \ell_{10} \cap \ell_{22} = b_5 \cap c_{35}$
$P_{265602} = (1, 53, 63, 1) = \ell_{10} \cap \ell_{24} = b_5 \cap c_{45}$
$P_{124784} = (47, 28, 29, 1) = \ell_{10} \cap \ell_{26} = b_5 \cap c_{56}$
$P_{3708} = (57, 56, 1, 0) = \ell_{11} \cap \ell_{16} = b_6 \cap c_{16}$
$P_{4031} = (60, 61, 1, 0) = \ell_{11} \cap \ell_{23} = b_6 \cap c_{36}$
$P_{3838} = (59, 58, 1, 0) = \ell_{11} \cap \ell_{25} = b_6 \cap c_{46}$
$P_{2668} = (41, 40, 1, 0) = \ell_{11} \cap \ell_{26} = b_6 \cap c_{56}$
$P_{81839} = (46, 61, 18, 1) = \ell_{12} \cap \ell_{21} = c_{12} \cap c_{34}$
$P_{57829} = (36, 6, 13, 1) = \ell_{12} \cap \ell_{22} = c_{12} \cap c_{35}$
$P_{261488} = (47, 52, 62, 1) = \ell_{12} \cap \ell_{23} = c_{12} \cap c_{36}$
$P_{43842} = (1, 44, 9, 1) = \ell_{12} \cap \ell_{24} = c_{12} \cap c_{45}$
$P_{95756} = (11, 23, 22, 1) = \ell_{12} \cap \ell_{25} = c_{12} \cap c_{46}$
$P_{243659} = (10, 30, 58, 1) = \ell_{12} \cap \ell_{26} = c_{12} \cap c_{56}$
$P_{136130} = (1, 14, 32, 1) = \ell_{13} \cap \ell_{18} = c_{13} \cap c_{24}$
$P_{225282} = (1, 63, 53, 1) = \ell_{13} \cap \ell_{19} = c_{13} \cap c_{25}$
$P_{241218} = (1, 56, 57, 1) = \ell_{13} \cap \ell_{20} = c_{13} \cap c_{26}$
$P_4 = (1, 1, 1, 1) = \ell_{13} \cap \ell_{24} = c_{13} \cap c_{45}$
$P_{57794} = (1, 6, 13, 1) = \ell_{13} \cap \ell_{25} = c_{13} \cap c_{46}$
$P_{105986} = (1, 55, 24, 1) = \ell_{13} \cap \ell_{26} = c_{13} \cap c_{56}$
$P_{130790} = (37, 58, 30, 1) = \ell_{14} \cap \ell_{19} = c_{14} \cap c_{25}$
$P_{99778} = (1, 22, 23, 1) = \ell_{14} \cap \ell_{20} = c_{14} \cap c_{26}$
$P_{158092} = (11, 37, 37, 1) = \ell_{14} \cap \ell_{22} = c_{14} \cap c_{35}$
$P_{255179} = (10, 18, 61, 1) = \ell_{14} \cap \ell_{23} = c_{14} \cap c_{36}$
$P_{202096} = (47, 20, 48, 1) = \ell_{15} \cap \ell_{18} = c_{15} \cap c_{24}$
$P_{216258} = (1, 50, 51, 1) = \ell_{15} \cap \ell_{20} = c_{15} \cap c_{26}$
$P_{195557} = (36, 46, 46, 1) = \ell_{15} \cap \ell_{21} = c_{15} \cap c_{34}$
$P_{136140} = (11, 14, 32, 1) = \ell_{15} \cap \ell_{23} = c_{15} \cap c_{36}$
$P_{4009} = (38, 61, 1, 0) = \ell_{16} \cap \ell_{18} = c_{16} \cap c_{24}$
$P_{2312} = (5, 35, 1, 0) = \ell_{16} \cap \ell_{19} = c_{16} \cap c_{25}$
$P_{1235} = (16, 18, 1, 0) = \ell_{16} \cap \ell_{21} = c_{16} \cap c_{34}$
$P_{3821} = (42, 58, 1, 0) = \ell_{16} \cap \ell_{22} = c_{16} \cap c_{35}$
$P_{261487} = (46, 52, 62, 1) = \ell_{18} \cap \ell_{22} = c_{24} \cap c_{35}$
$P_{216293} = (36, 50, 51, 1) = \ell_{18} \cap \ell_{23} = c_{24} \cap c_{36}$
$P_{189004} = (11, 8, 45, 1) = \ell_{18} \cap \ell_{26} = c_{24} \cap c_{56}$
$P_{39819} = (10, 45, 8, 1) = \ell_{19} \cap \ell_{21} = c_{25} \cap c_{34}$
$P_{150127} = (46, 40, 35, 1) = \ell_{19} \cap \ell_{23} = c_{25} \cap c_{36}$
$P_{140325} = (36, 15, 33, 1) = \ell_{19} \cap \ell_{25} = c_{25} \cap c_{46}$
$P_{212226} = (1, 51, 50, 1) = \ell_{20} \cap \ell_{21} = c_{26} \cap c_{34}$
$P_{95746} = (1, 23, 22, 1) = \ell_{20} \cap \ell_{22} = c_{26} \cap c_{35}$
$P_{237186} = (1, 57, 56, 1) = \ell_{20} \cap \ell_{24} = c_{26} \cap c_{45}$
$P_{170278} = (37, 35, 40, 1) = \ell_{21} \cap \ell_{26} = c_{34} \cap c_{56}$
$P_{43888} = (47, 44, 9, 1) = \ell_{22} \cap \ell_{25} = c_{35} \cap c_{46}$
$P_{202050} = (1, 20, 48, 1) = \ell_{23} \cap \ell_{24} = c_{36} \cap c_{45}$

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_{2346}	P_{3651}	P_{1222}	P_{2670}	P_{3771}	P_{3796}	P_{3651}	P_{1991}	P_{3997}	P_{132}

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

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_{221168}	P_{39809}	P_{212261}	P_{170287}	P_{1238}	P_{89154}	P_{39809}	P_{63564}	P_{81803}	P_{195558}

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_{99788}	P_{130799}	P_{221121}	P_{67749}	P_{2018}	P_{185008}	P_{255206}	P_{221121}	P_{29570}	P_{158091}

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_{130763}	P_{225317}	P_{140289}	P_{39820}	P_{2341}	P_{150118}	P_{120752}	P_{140289}	P_{230978}	P_{45807}

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_{67750}	P_{45808}	P_{188993}	P_{170251}	P_{105996}	P_{2629}	P_{124738}	P_{188993}	P_{243695}	P_{265637}

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_{158081}	P_{221168}	P_{99788}	P_{130763}	P_{67750}	P_{158081}	P_{184962}	P_{29605}	P_{255215}	P_{2014}

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_{2346}	P_{39809}	P_{130799}	P_{225317}	P_{45808}	P_{140326}	P_{39809}	P_{150091}	P_{230988}	P_{120706}

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

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_{1222}	P_{195521}	P_{212261}	P_{39820}	P_{170251}	P_{221167}	P_{195521}	P_{89200}	P_{63554}	P_{81830}

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_{2670}	P_{45761}	P_{170287}	P_{67749}	P_{105996}	P_{189003}	P_{45761}	P_{243686}	P_{265602}	P_{124784}

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_{3771}	P_{131}	P_{1238}	P_{2018}	P_{2341}	P_{3708}	P_{131}	P_{4031}	P_{3838}	P_{2668}

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_{3796}	P_{158081}	P_{158081}	P_{140326}	P_{81839}	P_{57829}	P_{261488}	P_{43842}	P_{95756}	P_{243659}

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_{3651}	P_{89154}	P_{184962}	P_{3651}	P_{136130}	P_{225282}	P_{241218}	P_4	P_{57794}	P_{105986}

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_{1991}	P_{185008}	P_{29605}	P_{221167}	P_{67713}	P_{130790}	P_{99778}	P_{158092}	P_{255179}	P_{67713}

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_{3997}	P_{150118}	P_{255215}	P_{189003}	P_{261441}	P_{202096}	P_{216258}	P_{195557}	P_{136140}	P_{261441}

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_{132}	P_{2629}	P_{2014}	P_{3708}	P_{3715}	P_{4009}	P_{2312}	P_{1235}	P_{3821}	P_{3715}

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_3	P_{39809}	P_{39809}	P_3	P_{67713}	P_{261441}	P_{3715}	P_{3715}	P_{261441}	P_{67713}

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_{195521}	P_{255206}	P_{150091}	P_{195521}	P_{136130}	P_{202096}	P_{4009}	P_{261487}	P_{216293}	P_{189004}

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_{45761}	P_{120752}	P_{230988}	P_{45761}	P_{225282}	P_{130790}	P_{2312}	P_{39819}	P_{150127}	P_{140325}

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_{131}	P_{124738}	P_{120706}	P_{131}	P_{241218}	P_{99778}	P_{216258}	P_{212226}	P_{95746}	P_{237186}

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_{63564}	P_{221121}	P_{221121}	P_{89200}	P_{81839}	P_{195557}	P_{1235}	P_{39819}	P_{212226}	P_{170278}

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_{81803}	P_{140289}	P_{140289}	P_{243686}	P_{57829}	P_{158092}	P_{3821}	P_{261487}	P_{95746}	P_{43888}

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_{195558}	P_{188993}	P_{188993}	P_{4031}	P_{261488}	P_{255179}	P_{136140}	P_{216293}	P_{150127}	P_{202050}

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_{29570}	P_{230978}	P_{63554}	P_{265602}	P_{43842}	P_4	P_{3715}	P_{3715}	P_{237186}	P_{202050}

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_{158091}	P_{243695}	P_{81830}	P_{3838}	P_{95756}	P_{57794}	P_{261441}	P_{261441}	P_{140325}	P_{43888}

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_{45807}	P_{265637}	P_{124784}	P_{2668}	P_{243659}	P_{105986}	P_{67713}	P_{67713}	P_{189004}	P_{170278}

The surface has 4545 points:
Too many to print.