Rank-140 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
The point rank of the equation over GF(64) is -2113396592

General information

Number of lines	27
Number of points	4545
Number of singular points	0
Number of Eckardt points	45
Number of double points	0
Number of single points	1620
Number of points off lines	2880
Number of Hesse planes	40
Number of axes	240
Type of points on lines	65^{27}
Type of lines on points	3^{45}, 1^{1620}, 0^{2880}

Singular Points

The surface has 0 singular points:

The 27 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = a_1 = \begin{bmatrix} 1 & \epsilon^{18} & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{49868} = \begin{bmatrix} 1 & 11 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{49868} = \mathbf{Pl}(0,0,1,1,37,1)_{9979458}$$

$$\ell_1 = a_2 = \begin{bmatrix} 1 & 0 & \epsilon^{9} & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{195631} = \begin{bmatrix} 1 & 0 & 47 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}_{195631} = \mathbf{Pl}(1,1,0,0,10,1)_{2895297}$$

$$\ell_2 = a_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{7} & \epsilon^{22} \\ 0 & 1 & \epsilon^{33} & \epsilon^{57} \end{array}\right]_{5208599} = \left[\begin{array}{cccc} 1 & 0 & 35 & 19 \\ 0 & 1 & 52 & 49 \end{array}\right]_{5208599} = \mathbf{Pl}(25, 62, 15, 21, 60, 1)_{16070511}$$

$$\ell_3 = a_4 = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{18} \\ 0 & 1 & \epsilon^{27} & \epsilon^{18} \end{array}\right]_{2934255} = \left[\begin{array}{cccc} 1 & 0 & 1 & 11 \\ 0 & 1 & 46 & 11 \end{array}\right]_{2934255} = \mathbf{Pl}(36, 46, 37, 11, 11, 1)_{3316802}$$

$$\ell_4 = a_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{50} & \epsilon^{56} \\ 0 & 1 & \epsilon^{15} & \epsilon^{12} \end{array}\right]_{10905809} = \left[\begin{array}{cccc} 1 & 0 & 60 & 40 \\ 0 & 1 & 21 & 62 \end{array}\right]_{10905809} = \mathbf{Pl}(45, 7, 49, 33, 59, 1)_{15943586}$$

$$\ell_5 = a_6 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{11} & \epsilon^{35} \\ 0 & 1 & \epsilon^{60} & \epsilon^{48} \end{array}\right]_{4923435} = \left[\begin{array}{cccc} 1 & 0 & 31 & 18 \\ 0 & 1 & 12 & 15 \end{array}\right]_{4923435} = \mathbf{Pl}(52, 54, 7, 45, 41, 1)_{11061408}$$

$$\ell_6 = b_1 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{35} & \epsilon^{11} \\ 0 & 1 & \epsilon^{48} & \epsilon^{60} \end{array}\right]_{8331105} = \left[\begin{array}{cccc} 1 & 0 & 18 & 31 \\ 0 & 1 & 15 & 12 \end{array}\right]_{8331105} = \mathbf{Pl}(49, 33, 45, 7, 59, 1)_{15927903}$$

$$\ell_7 = b_2 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{14} & \epsilon^{44} \\ 0 & 1 & \epsilon^{3} & \epsilon^{51} \end{array}\right]_{9297282} = \left[\begin{array}{cccc} 1 & 0 & 58 & 34 \\ 0 & 1 & 8 & 25 \end{array}\right]_{9297282} = \mathbf{Pl}(7, 45, 52, 54, 41, 1)_{11237196}$$

$$\ell_8 = b_3 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{36} & 1 \\ 0 & 1 & \epsilon^{36} & \epsilon^{54} \end{array}\right]_{416776} = \left[\begin{array}{cccc} 1 & 0 & 36 & 1 \\ 0 & 1 & 36 & 10 \end{array}\right]_{416776} = \mathbf{Pl}(37, 11, 36, 46, 11, 1)_{3312960}$$

$$\ell_9 = b_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{37} & \epsilon^{49} \\ 0 & 1 & \epsilon^{30} & \epsilon^{24} \end{array}\right]_{8162655} = \left[\begin{array}{cccc} 1 & 0 & 41 & 30 \\ 0 & 1 & 54 & 45 \end{array}\right]_{8162655} = \mathbf{Pl}(15, 21, 25, 62, 60, 1)_{16109624}$$

$$\ell_{10} = b_5 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{18} & 0 \\ 0 & 1 & 0 & 1 \end{array}\right]_{45835} = \left[\begin{array}{cccc} 1 & 0 & 11 & 0 \\ 0 & 1 & 0 & 1 \end{array}\right]_{45835} = \mathbf{Pl}(1, 1, 0, 0, 37, 1)_{9971457}$$

$$\ell_{11} = b_6 = \left[\begin{array}{cccc} 1 & \epsilon^{9} & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{199664} = \left[\begin{array}{cccc} 1 & 47 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{199664} = \mathbf{Pl}(0, 0, 1, 1, 10, 1)_{2903298}$$

$$\ell_{12} = c_{12} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{44} & \epsilon^{14} \\ 0 & 1 & \epsilon^{51} & \epsilon^{3} \end{array}\right]_{15587643} = \left[\begin{array}{cccc} 1 & 0 & 34 & 58 \\ 0 & 1 & 25 & 8 \end{array}\right]_{15587643} = \mathbf{Pl}(33, 49, 54, 52, 19, 1)_{5477636}$$

$$\ell_{13} = c_{13} = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{36} \\ 0 & 1 & \epsilon^{54} & \epsilon^{36} \end{array}\right]_{9593419} = \left[\begin{array}{cccc} 1 & 0 & 1 & 36 \\ 0 & 1 & 10 & 36 \end{array}\right]_{9593419} = \mathbf{Pl}(47, 10, 46, 36, 36, 1)_{9901699}$$

$$\ell_{14} = c_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{49} & \epsilon^{37} \\ 0 & 1 & \epsilon^{24} & \epsilon^{30} \end{array}\right]_{11046795} = \left[\begin{array}{cccc} 1 & 0 & 30 & 41 \\ 0 & 1 & 45 & 54 \end{array}\right]_{11046795} = \mathbf{Pl}(12, 8, 62, 25, 34, 1)_{9441701}$$

$$\ell_{15} = c_{15} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{18} \\ 0 & 1 & 1 & 0 \end{array}\right]_{2929345} = \left[\begin{array}{cccc} 1 & 0 & 0 & 11 \\ 0 & 1 & 1 & 0 \end{array}\right]_{2929345} = \mathbf{Pl}(1, 1, 37, 1, 0, 0)_{2524}$$

$$\ell_{16} = c_{16} = \left[\begin{array}{cccc} 1 & \epsilon^{36} & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{153893} = \left[\begin{array}{cccc} 1 & 36 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{array}\right]_{153893} = \mathbf{Pl}(0, 0, 1, 1, 46, 1)_{12338178}$$

$$\ell_{17} = c_{23} = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{9} \\ 0 & 1 & \epsilon^{45} & \epsilon^{9} \end{array}\right]_{12523494} = \left[\begin{array}{cccc} 1 & 0 & 1 & 47 \\ 0 & 1 & 37 & 47 \end{array}\right]_{12523494} = \mathbf{Pl}(11, 37, 10, 47, 47, 1)_{12645628}$$

$$\ell_{18} = c_{24} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{28} & \epsilon^{25} \\ 0 & 1 & \epsilon^{6} & \epsilon^{39} \end{array}\right]_{15966238} = \left[\begin{array}{cccc} 1 & 0 & 61 & 59 \\ 0 & 1 & 33 & 7 \end{array}\right]_{15966238} = \mathbf{Pl}(21, 15, 8, 12, 31, 1)_{8445113}$$

$$\ell_{19} = c_{25} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{36} & 0 \\ 0 & 1 & 0 & 1 \end{array}\right]_{149860} = \left[\begin{array}{cccc} 1 & 0 & 36 & 0 \\ 0 & 1 & 0 & 1 \end{array}\right]_{149860} = \mathbf{Pl}(1, 1, 0, 0, 46, 1)_{12330177}$$

$$\ell_{20} = c_{26} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{9} \\ 0 & 1 & 1 & 0 \end{array}\right]_{12516289} = \left[\begin{array}{cccc} 1 & 0 & 0 & 47 \\ 0 & 1 & 1 & 0 \end{array}\right]_{12516289} = \mathbf{Pl}(1, 1, 10, 1, 0, 0)_{823}$$

$$\ell_{21} = c_{34} = \left[\begin{array}{cccc} 1 & 0 & 0 & \epsilon^{36} \\ 0 & 1 & 1 & 0 \end{array}\right]_{9586945} = \left[\begin{array}{cccc} 1 & 0 & 0 & 36 \\ 0 & 1 & 1 & 0 \end{array}\right]_{9586945} = \mathbf{Pl}(1, 1, 46, 1, 0, 0)_{3091}$$

$$\ell_{22} = c_{35} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{25} & \epsilon^{28} \\ 0 & 1 & \epsilon^{39} & \epsilon^{6} \end{array}\right]_{16492162} = \left[\begin{array}{cccc} 1 & 0 & 59 & 61 \\ 0 & 1 & 7 & 33 \end{array}\right]_{16492162} = \mathbf{Pl}(62, 25, 12, 8, 34, 1)_{9246388}$$

$$\ell_{23} = c_{36} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{22} & \epsilon^{7} \\ 0 & 1 & \epsilon^{57} & \epsilon^{33} \end{array}\right]_{9403076} = \left[\begin{array}{cccc} 1 & 0 & 19 & 35 \\ 0 & 1 & 49 & 52 \end{array}\right]_{9403076} = \mathbf{Pl}(8,12,21,15,31,1)_{8495941}$$

$$\ell_{24} = c_{45} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{9} & 1 \\ 0 & 1 & \epsilon^{9} & \epsilon^{45} \end{array}\right]_{464286} = \left[\begin{array}{cccc} 1 & 0 & 47 & 1 \\ 0 & 1 & 47 & 37 \end{array}\right]_{464286} = \mathbf{Pl}(46,36,47,10,36,1)_{9905667}$$

$$\ell_{25} = c_{46} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{18} & 1 \\ 0 & 1 & \epsilon^{18} & \epsilon^{27} \end{array}\right]_{315030} = \left[\begin{array}{cccc} 1 & 0 & 11 & 1 \\ 0 & 1 & 11 & 46 \end{array}\right]_{315030} = \mathbf{Pl}(10,47,11,37,47,1)_{12649470}$$

$$\ell_{26} = c_{56} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{56} & \epsilon^{50} \\ 0 & 1 & \epsilon^{12} & \epsilon^{15} \end{array}\right]_{16146086} = \left[\begin{array}{cccc} 1 & 0 & 40 & 60 \\ 0 & 1 & 62 & 21 \end{array}\right]_{16146086} = \mathbf{Pl}(54,52,33,49,19,1)_{5395568}$$

Rank of lines: (49868, 195631, 5208599, 2934255, 10905809, 4923435, 8331105, 9297282, 416776, 8162655, 45835, 199664, 15587643, 9593419, 11046795, 2929345, 153893, 12523494, 15966238, 149860, 12516289, 9586945, 16492162, 9403076, 464286, 315030, 16146086)
Rank of points on Klein quadric: (9979458, 2895297, 16070511, 3316802, 15943586, 11061408, 15927903, 11237196, 3312960, 16109624, 9971457, 2903298, 5477636, 9901699, 9441701, 2524, 12338178, 12645628, 8445113, 12330177, 823, 3091, 9246388, 8495941, 9905667, 12649470, 5395568)

Eckardt Points

The surface has 45 Eckardt points:
$0 : E_{15,26,34} = c_{15} \cap c_{26} \cap c_{34} = P_{131} = \mathbf{P}(0,1,1,0) = \mathbf{P}(0,1,1,0)$,
$1 : E_{25} = a_2 \cap b_5 \cap c_{25} = P_{4226} = \mathbf{P}(0,1,0,1) = \mathbf{P}(0,1,0,1)$,
$2 : E_{16} = a_1 \cap b_6 \cap c_{16} = P_{8258} = \mathbf{P}(0,0,1,1) = \mathbf{P}(0,0,1,1)$,
$3 : E_{26} = a_2 \cap b_6 \cap c_{26} = P_{8331} = \mathbf{P}(\epsilon^{54},1,1,1) = \mathbf{P}(10,1,1,1)$,
$4 : E_{15} = a_1 \cap b_5 \cap c_{15} = P_{8358} = \mathbf{P}(\epsilon^{45},1,1,1) = \mathbf{P}(37,1,1,1)$,
$5 : E_{16,25,34} = c_{16} \cap c_{25} \cap c_{34} = P_{8367} = \mathbf{P}(\epsilon^{27},1,1,1) = \mathbf{P}(46,1,1,1)$,
$6 : E_{14} = a_1 \cap b_4 \cap c_{14} = P_{8463} = \mathbf{P}(\epsilon^{40},\epsilon^{58},1,1) = \mathbf{P}(14,3,1,1)$,
$7 : E_{61} = a_6 \cap b_1 \cap c_{16} = P_{8630} = \mathbf{P}(\epsilon^{17},\epsilon^{53},1,1) = \mathbf{P}(53,5,1,1)$,
$8 : E_{13} = a_1 \cap b_3 \cap c_{13} = P_{8933} = \mathbf{P}(\epsilon^{36},\epsilon^{54},1,1) = \mathbf{P}(36,10,1,1)$,
$9 : E_{36} = a_3 \cap b_6 \cap c_{36} = P_{9354} = \mathbf{P}(\epsilon^{34},\epsilon^{43},1,1) = \mathbf{P}(9,17,1,1)$,
$10 : E_{56} = a_5 \cap b_6 \cap c_{56} = P_{10029} = \mathbf{P}(\epsilon^{20},\epsilon^{29},1,1) = \mathbf{P}(44,27,1,1)$,
$11 : E_{16,23,45} = c_{16} \cap c_{23} \cap c_{45} = P_{10672} = \mathbf{P}(\epsilon^{9},\epsilon^{45},1,1) = \mathbf{P}(47,37,1,1)$,
$12 : E_{12} = a_1 \cap b_2 \cap c_{12} = P_{10721} = \mathbf{P}(\epsilon^{5},\epsilon^{23},1,1) = \mathbf{P}(32,38,1,1)$,
$13 : E_{16,24,35} = c_{16} \cap c_{24} \cap c_{35} = P_{11072} = \mathbf{P}(\epsilon^{10},\epsilon^{46},1,1) = \mathbf{P}(63,43,1,1)$,
$14 : E_{46} = a_4 \cap b_6 \cap c_{46} = P_{11212} = \mathbf{P}(\epsilon^{18},\epsilon^{27},1,1) = \mathbf{P}(11,46,1,1)$,
$15 : E_{35} = a_3 \cap b_5 \cap c_{35} = P_{16527} = \mathbf{P}(\epsilon^{40},1,\epsilon^{58},1) = \mathbf{P}(14,1,3,1)$,
$16 : E_{52} = a_5 \cap b_2 \cap c_{25} = P_{24758} = \mathbf{P}(\epsilon^{17},1,\epsilon^{53},1) = \mathbf{P}(53,1,5,1)$,
$17 : E_{12,35,46} = c_{12} \cap c_{35} \cap c_{46} = P_{36174} = \mathbf{P}(\epsilon^{31},\epsilon^{33},\epsilon^{39},1) = \mathbf{P}(13,52,7,1)$,
$18 : E_{41} = a_4 \cap b_1 \cap c_{14} = P_{38321} = \mathbf{P}(\epsilon^{62},\epsilon^{15},\epsilon^{3},1) = \mathbf{P}(48,21,8,1)$,
$19 : E_{62} = a_6 \cap b_2 \cap c_{26} = P_{41611} = \mathbf{P}(\epsilon^{54},\epsilon^{34},\epsilon^{34},1) = \mathbf{P}(10,9,9,1)$,
$20 : E_{45} = a_4 \cap b_5 \cap c_{45} = P_{45221} = \mathbf{P}(\epsilon^{36},1,\epsilon^{54},1) = \mathbf{P}(36,1,10,1)$,
$21 : E_{43} = a_4 \cap b_3 \cap c_{34} = P_{49967} = \mathbf{P}(\epsilon^{27},\epsilon^{18},\epsilon^{18},1) = \mathbf{P}(46,11,11,1)$,
$22 : E_{64} = a_6 \cap b_4 \cap c_{46} = P_{57287} = \mathbf{P}(\epsilon^{59},\epsilon^{12},\epsilon^{60},1) = \mathbf{P}(6,62,12,1)$,
$23 : E_{51} = a_5 \cap b_1 \cap c_{15} = P_{62438} = \mathbf{P}(\epsilon^{45},\epsilon^{40},\epsilon^{40},1) = \mathbf{P}(37,14,14,1)$,
$24 : E_{13,24,56} = c_{13} \cap c_{24} \cap c_{56} = P_{67256} = \mathbf{P}(\epsilon^{47},\epsilon^{51},\epsilon^{48},1) = \mathbf{P}(55,25,15,1)$,
$25 : E_{24} = a_2 \cap b_4 \cap c_{24} = P_{73866} = \mathbf{P}(\epsilon^{34},1,\epsilon^{43},1) = \mathbf{P}(9,1,17,1)$,
$26 : E_{53} = a_5 \cap b_3 \cap c_{35} = P_{90737} = \mathbf{P}(\epsilon^{62},\epsilon^{3},\epsilon^{15},1) = \mathbf{P}(48,8,21,1)$,
$27 : E_{12,36,45} = c_{12} \cap c_{36} \cap c_{45} = P_{107576} = \mathbf{P}(\epsilon^{47},\epsilon^{48},\epsilon^{51},1) = \mathbf{P}(55,15,25,1)$,
$28 : E_{21} = a_2 \cap b_1 \cap c_{12} = P_{114861} = \mathbf{P}(\epsilon^{20},1,\epsilon^{29},1) = \mathbf{P}(44,1,27,1)$,
$29 : E_{15,24,36} = c_{15} \cap c_{24} \cap c_{36} = P_{137318} = \mathbf{P}(\epsilon^{45},\epsilon^{5},\epsilon^{5},1) = \mathbf{P}(37,32,32,1)$,
$30 : E_{31} = a_3 \cap b_1 \cap c_{13} = P_{142809} = \mathbf{P}(\epsilon^{61},\epsilon^{30},\epsilon^{6},1) = \mathbf{P}(24,54,33,1)$,
$31 : E_{13,26,45} = c_{13} \cap c_{26} \cap c_{45} = P_{153931} = \mathbf{P}(\epsilon^{54},\epsilon^{36},\epsilon^{36},1) = \mathbf{P}(10,36,36,1)$,
$32 : E_{13,25,46} = c_{13} \cap c_{25} \cap c_{46} = P_{155824} = \mathbf{P}(\epsilon^{9},1,\epsilon^{45},1) = \mathbf{P}(47,1,37,1)$,

$33 : E_{65} = a_6 \cap b_5 \cap c_{56} = P_{159905} = \mathbf{P}(\epsilon^5, 1, \epsilon^{23}, 1) = \mathbf{P}(32, 1, 38, 1),$
$34 : E_{14,25,36} = c_{14} \cap c_{25} \cap c_{36} = P_{180416} = \mathbf{P}(\epsilon^{10}, 1, \epsilon^{46}, 1) = \mathbf{P}(63, 1, 43, 1),$
$35 : E_{14,26,35} = c_{14} \cap c_{26} \cap c_{35} = P_{187211} = \mathbf{P}(\epsilon^{54}, \epsilon^{20}, \epsilon^{20}, 1) = \mathbf{P}(10, 44, 44, 1),$
$36 : E_{42} = a_4 \cap b_2 \cap c_{24} = P_{191637} = \mathbf{P}(\epsilon^{55}, \epsilon^{57}, \epsilon^{24}, 1) = \mathbf{P}(20, 49, 45, 1),$
$37 : E_{23} = a_2 \cap b_3 \cap c_{23} = P_{192652} = \mathbf{P}(\epsilon^{18}, 1, \epsilon^{27}, 1) = \mathbf{P}(11, 1, 46, 1),$
$38 : E_{15,23,46} = c_{15} \cap c_{23} \cap c_{46} = P_{199718} = \mathbf{P}(\epsilon^{45}, \epsilon^{9}, \epsilon^{9}, 1) = \mathbf{P}(37, 47, 47, 1),$
$39 : E_{63} = a_6 \cap b_3 \cap c_{36} = P_{207765} = \mathbf{P}(\epsilon^{55}, \epsilon^{24}, \epsilon^{57}, 1) = \mathbf{P}(20, 45, 49, 1),$
$40 : E_{14,23,56} = c_{14} \cap c_{23} \cap c_{56} = P_{217614} = \mathbf{P}(\epsilon^{31}, \epsilon^{39}, \epsilon^{33}, 1) = \mathbf{P}(13, 7, 52, 1),$
$41 : E_{34} = a_3 \cap b_4 \cap c_{34} = P_{224687} = \mathbf{P}(\epsilon^{27}, \epsilon^{17}, \epsilon^{17}, 1) = \mathbf{P}(46, 53, 53, 1),$
$42 : E_{54} = a_5 \cap b_4 \cap c_{45} = P_{227481} = \mathbf{P}(\epsilon^{61}, \epsilon^{6}, \epsilon^{30}, 1) = \mathbf{P}(24, 33, 54, 1),$
$43 : E_{32} = a_3 \cap b_2 \cap c_{23} = P_{258887} = \mathbf{P}(\epsilon^{59}, \epsilon^{60}, \epsilon^{12}, 1) = \mathbf{P}(6, 12, 62, 1),$
$44 : E_{12,34,56} = c_{12} \cap c_{34} \cap c_{56} = P_{266287} = \mathbf{P}(\epsilon^{27}, \epsilon^{10}, \epsilon^{10}, 1) = \mathbf{P}(46, 63, 63, 1).$

Double Points

The surface has 0 Double points:
The double points on the surface are:

Single Points

The surface has 1620 single points:
Too many to print.

Points on surface but on no line

The surface has 2880 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_{10721}	P_{8933}	P_{8463}	P_{8358}	P_{8258}	P_{10721}	P_{8933}	P_{8463}	P_{8358}	P_{8258}

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_{114861}	P_{192652}	P_{73866}	P_{4226}	P_{8331}	P_{114861}	P_{192652}	P_{73866}	P_{4226}	P_{8331}

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_{142809}	P_{258887}	P_{224687}	P_{16527}	P_{9354}	P_{142809}	P_{258887}	P_{224687}	P_{16527}	P_{9354}

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_{38321}	P_{191637}	P_{49967}	P_{45221}	P_{11212}	P_{38321}	P_{191637}	P_{49967}	P_{45221}	P_{11212}

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_{62438}	P_{24758}	P_{90737}	P_{227481}	P_{10029}	P_{62438}	P_{24758}	P_{90737}	P_{227481}	P_{10029}

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_{8630}	P_{41611}	P_{207765}	P_{57287}	P_{159905}	P_{8630}	P_{41611}	P_{207765}	P_{57287}	P_{159905}

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_{114861}	P_{142809}	P_{38321}	P_{62438}	P_{8630}	P_{114861}	P_{142809}	P_{38321}	P_{62438}	P_{8630}

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_{10721}	P_{258887}	P_{191637}	P_{24758}	P_{41611}	P_{10721}	P_{258887}	P_{191637}	P_{24758}	P_{41611}

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_{8933}	P_{192652}	P_{49967}	P_{90737}	P_{207765}	P_{8933}	P_{192652}	P_{49967}	P_{90737}	P_{207765}

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_{8463}	P_{73866}	P_{224687}	P_{227481}	P_{57287}	P_{8463}	P_{73866}	P_{224687}	P_{227481}	P_{57287}

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_{8358}	P_{4226}	P_{16527}	P_{45221}	P_{159905}	P_{8358}	P_{4226}	P_{16527}	P_{45221}	P_{159905}

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_{8258}	P_{8331}	P_{9354}	P_{11212}	P_{10029}	P_{8258}	P_{8331}	P_{9354}	P_{11212}	P_{10029}

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_{10721}	P_{114861}	P_{114861}	P_{10721}	P_{266287}	P_{36174}	P_{107576}	P_{107576}	P_{36174}	P_{266287}

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_{8933}	P_{142809}	P_{142809}	P_{8933}	P_{67256}	P_{155824}	P_{153931}	P_{153931}	P_{155824}	P_{67256}

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_{8463}	P_{38321}	P_{38321}	P_{8463}	P_{217614}	P_{180416}	P_{187211}	P_{187211}	P_{180416}	P_{217614}

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_{8358}	P_{62438}	P_{62438}	P_{8358}	P_{199718}	P_{137318}	P_{131}	P_{131}	P_{137318}	P_{199718}

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_{8258}	P_{8630}	P_{8630}	P_{8258}	P_{10672}	P_{11072}	P_{8367}	P_{8367}	P_{11072}	P_{10672}

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_{192652}	P_{258887}	P_{258887}	P_{192652}	P_{217614}	P_{199718}	P_{10672}	P_{10672}	P_{199718}	P_{217614}

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_{73866}	P_{191637}	P_{191637}	P_{73866}	P_{67256}	P_{137318}	P_{11072}	P_{11072}	P_{137318}	P_{67256}

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_{4226}	P_{24758}	P_{24758}	P_{4226}	P_{155824}	P_{180416}	P_{8367}	P_{8367}	P_{180416}	P_{155824}

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_{8331}	P_{41611}	P_{41611}	P_{8331}	P_{153931}	P_{187211}	P_{131}	P_{131}	P_{187211}	P_{153931}

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_{224687}	P_{49967}	P_{49967}	P_{224687}	P_{266287}	P_{131}	P_{8367}	P_{8367}	P_{131}	P_{266287}

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_{16527}	P_{90737}	P_{90737}	P_{16527}	P_{36174}	P_{187211}	P_{11072}	P_{11072}	P_{187211}	P_{36174}

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_{9354}	P_{207765}	P_{207765}	P_{9354}	P_{107576}	P_{180416}	P_{137318}	P_{137318}	P_{180416}	P_{107576}

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_{45221}	P_{227481}	P_{227481}	P_{45221}	P_{107576}	P_{153931}	P_{10672}	P_{10672}	P_{153931}	P_{107576}

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_{11212}	P_{57287}	P_{57287}	P_{11212}	P_{36174}	P_{155824}	P_{199718}	P_{199718}	P_{155824}	P_{36174}

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_{10029}	P_{159905}	P_{159905}	P_{10029}	P_{266287}	P_{67256}	P_{217614}	P_{217614}	P_{67256}	P_{266287}

The surface has 4545 points:
Too many to print.