Rank-74295 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 1, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is -2113658811

General information

Number of lines	21
Number of points	4481
Number of singular points	1
Number of Eckardt points	0
Number of double points	75
Number of single points	1209
Number of points off lines	3196
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^{21}
Type of lines on points	6, 2^{75}, 1^{1209}, 0^{3196}

Singular Points

The surface has 1 singular points:

$0: \ P_{68} = \mathbf{P}(1,0,1,0) = \mathbf{P}(1,0,1,0)$

The 21 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{4161} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{4161} = \mathbf{Pl}(1,0,0,0,0,1)_{270402}$$

$$\ell_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{65} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{65} = \mathbf{Pl}(1,0,1,0,1,0)_{4353}$$

$$\ell_2 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{42} & 1 \end{bmatrix}_{4281} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 56 & 1 \end{bmatrix}_{4281} = \mathbf{Pl}(1,1,56,0,1,1)_{540105}$$

$$\ell_3 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{21} & 1 \end{bmatrix}_{4282} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 57 & 1 \end{bmatrix}_{4282} = \mathbf{Pl}(1,1,57,0,1,1)_{540168}$$

$$\ell_4 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{45} & \epsilon^{9} \end{bmatrix}_{7206} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 37 & 47 \end{bmatrix}_{7206} = \mathbf{Pl}(10,47,36,0,47,1)_{12594534}$$

$$\ell_5 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{27} & \epsilon^{18} \end{bmatrix}_{4911} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 46 & 11 \end{bmatrix}_{4911} = \mathbf{Pl}(37,11,47,0,11,1)_{3160374}$$

$$\ell_6 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & \epsilon^{54} & \epsilon^{36} \end{bmatrix}_{6475} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 10 & 36 \end{bmatrix}_{6475} = \mathbf{Pl}(46,36,11,0,36,1)_{9710115}$$

$$\ell_7 = \begin{bmatrix} 1 & 0 & \epsilon^{49} & \epsilon^{4} \\ 0 & 1 & \epsilon^{52} & \epsilon^{30} \end{bmatrix}_{4389200} = \begin{bmatrix} 1 & 0 & 30 & 16 \\ 0 & 1 & 50 & 54 \end{bmatrix}_{4389200} = \mathbf{Pl}(15,21,37,11,34,1)_{9342605}$$

$$\ell_8 = \begin{bmatrix} 1 & 0 & \epsilon^{27} & \epsilon^{54} \\ 0 & 1 & \epsilon^{54} & \epsilon^{36} \end{bmatrix}_{2856760} = \begin{bmatrix} 1 & 0 & 46 & 10 \\ 0 & 1 & 10 & 36 \end{bmatrix}_{2856760} = \mathbf{Pl}(10,47,36,46,47,1)_{12747183}$$

$$\ell_9 = \begin{bmatrix} 1 & 0 & \epsilon^{36} & 1 \\ 0 & 1 & \epsilon^{18} & \epsilon^{54} \end{bmatrix}_{416751} = \begin{bmatrix} 1 & 0 & 36 & 1 \\ 0 & 1 & 11 & 10 \end{bmatrix}_{416751} = \mathbf{Pl}(10,47,36,46,11,1)_{3310602}$$

$$\ell_{10} = \begin{bmatrix} 1 & 0 & \epsilon^{28} & \epsilon \\ 0 & 1 & \epsilon^{13} & \epsilon^{39} \end{bmatrix}_{786906} = \begin{bmatrix} 1 & 0 & 61 & 2 \\ 0 & 1 & 29 & 7 \end{bmatrix}_{786906} = \mathbf{Pl}(62,25,46,36,31,1)_{8594653}$$

$$\ell_{11} = \begin{bmatrix} 1 & 0 & \epsilon^{35} & \epsilon^{8} \\ 0 & 1 & \epsilon^{41} & \epsilon^{60} \end{bmatrix}_{10461550} = \begin{bmatrix} 1 & 0 & 18 & 39 \\ 0 & 1 & 28 & 12 \end{bmatrix}_{10461550} = \mathbf{Pl}(52,54,46,36,59,1)_{15932253}$$

$$\ell_{12} = \begin{bmatrix} 1 & 0 & \epsilon^{54} & \epsilon^{45} \\ 0 & 1 & \epsilon^{45} & \epsilon^{9} \end{bmatrix}_{9897903} = \begin{bmatrix} 1 & 0 & 10 & 37 \\ 0 & 1 & 37 & 47 \end{bmatrix}_{9897903} = \mathbf{Pl}(37,11,47,10,11,1)_{3355863}$$

$$\ell_{13} = \begin{bmatrix} 1 & 0 & \epsilon^{9} & 1 \\ 0 & 1 & \epsilon^{36} & \epsilon^{45} \end{bmatrix}_{464275} = \begin{bmatrix} 1 & 0 & 47 & 1 \\ 0 & 1 & 36 & 37 \end{bmatrix}_{464275} = \mathbf{Pl}(37,11,47,10,36,1)_{9907296}$$

$$\ell_{14} = \begin{bmatrix} 1 & 0 & \epsilon^{14} & \epsilon^{32} \\ 0 & 1 & \epsilon^{38} & \epsilon^{51} \end{bmatrix}_{7166893} = \begin{bmatrix} 1 & 0 & 58 & 26 \\ 0 & 1 & 51 & 25 \end{bmatrix}_{7166893} = \mathbf{Pl}(33,49,37,11,41,1)_{11178317}$$

$$\ell_{15} = \begin{bmatrix} 1 & 0 & \epsilon^{45} & \epsilon^{27} \\ 0 & 1 & \epsilon^{27} & \epsilon^{18} \end{bmatrix}_{12404691} = \begin{bmatrix} 1 & 0 & 37 & 46 \\ 0 & 1 & 46 & 11 \end{bmatrix}_{12404691} = \mathbf{Pl}(46,36,11,37,36,1)_{9764988}$$

$$\ell_{16} = \begin{bmatrix} 1 & 0 & \epsilon^{18} & 1 \\ 0 & 1 & \epsilon^{9} & \epsilon^{27} \end{bmatrix}_{315066} = \begin{bmatrix} 1 & 0 & 11 & 1 \\ 0 & 1 & 47 & 46 \end{bmatrix}_{315066} = \mathbf{Pl}(46,36,11,37,47,1)_{12650136}$$

$$\ell_{17} = \begin{bmatrix} 1 & 0 & \epsilon^{56} & \epsilon^{2} \\ 0 & 1 & \epsilon^{26} & \epsilon^{15} \end{bmatrix}_{1233023} = \begin{bmatrix} 1 & 0 & 40 & 4 \\ 0 & 1 & 23 & 21 \end{bmatrix}_{1233023} = \mathbf{Pl}(45,7,10,47,19,1)_{5307863}$$

$$\ell_{18} = \begin{bmatrix} 1 & 0 & \epsilon^{42} & \epsilon^{42} \\ 0 & 1 & \epsilon^{42} & 1 \end{bmatrix}_{15146160} = \begin{bmatrix} 1 & 0 & 56 & 56 \\ 0 & 1 & 56 & 1 \end{bmatrix}_{15146160} = \mathbf{Pl}(56,57,1,1,57,1)_{15232516}$$

$$\ell_{19} = \begin{bmatrix} 1 & 0 & \epsilon^{21} & \epsilon^{21} \\ 0 & 1 & \epsilon^{21} & 1 \end{bmatrix}_{15416626} = \begin{bmatrix} 1 & 0 & 57 & 57 \\ 0 & 1 & 57 & 1 \end{bmatrix}_{15416626} = \mathbf{Pl}(57,56,1,1,56,1)_{14970500}$$

$$\ell_{20} = \begin{bmatrix} 1 & 0 & \epsilon^{7} & \epsilon^{16} \\ 0 & 1 & \epsilon^{19} & \epsilon^{57} \end{bmatrix}_{11333561} = \begin{bmatrix} 1 & 0 & 35 & 42 \\ 0 & 1 & 22 & 49 \end{bmatrix}_{11333561} = \mathbf{Pl}(8,12,10,47,60,1)_{16050901}$$

Rank of lines: (4161, 65, 4281, 4282, 7206, 4911, 6475, 4389200, 2856760, 416751, 786906, 10461550, 9897903, 464275, 7166893, 12404691, 315066, 1233023, 15146160, 15416626, 11333561)
Rank of points on Klein quadric: (270402, 4353, 540105, 540168, 12594534, 3160374, 9710115, 9342605, 12747183, 3310602, 8594653, 15932253, 3355863, 9907296, 11178317, 9764988, 12650136, 5307863, 15232516, 14970500, 16050901)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 75 Double points:
The double points on the surface are:

$P_{772} = (1, 11, 1, 0) = \ell_0 \cap \ell_8$
$P_{2372} = (1, 36, 1, 0) = \ell_0 \cap \ell_{12}$
$P_{3076} = (1, 47, 1, 0) = \ell_0 \cap \ell_{15}$
$P_{3652} = (1, 56, 1, 0) = \ell_0 \cap \ell_{18}$
$P_{3716} = (1, 57, 1, 0) = \ell_0 \cap \ell_{19}$
$P_{8378} = (57, 1, 1, 1) = \ell_1 \cap \ell_2$
$P_{8377} = (56, 1, 1, 1) = \ell_1 \cap \ell_3$
$P_{8331} = (10, 1, 1, 1) = \ell_1 \cap \ell_8$
$P_{8332} = (11, 1, 1, 1) = \ell_1 \cap \ell_9$
$P_{8358} = (37, 1, 1, 1) = \ell_1 \cap \ell_{12}$
$P_{8357} = (36, 1, 1, 1) = \ell_1 \cap \ell_{13}$
$P_{8367} = (46, 1, 1, 1) = \ell_1 \cap \ell_{15}$
$P_{8368} = (47, 1, 1, 1) = \ell_1 \cap \ell_{16}$
$P_{172178} = (17, 1, 41, 1) = \ell_2 \cap \ell_7$
$P_{245892} = (3, 1, 59, 1) = \ell_2 \cap \ell_{10}$
$P_{233601} = (0, 1, 56, 1) = \ell_2 \cap \ell_{18}$
$P_{82092} = (43, 1, 19, 1) = \ell_2 \cap \ell_{20}$
$P_{131239} = (38, 1, 31, 1) = \ell_3 \cap \ell_{11}$
$P_{143516} = (27, 1, 34, 1) = \ell_3 \cap \ell_{14}$
$P_{249990} = (5, 1, 60, 1) = \ell_3 \cap \ell_{17}$
$P_{237697} = (0, 1, 57, 1) = \ell_3 \cap \ell_{19}$
$P_{4838} = (36, 10, 0, 1) = \ell_4 \cap \ell_9$
$P_{66284} = (43, 10, 15, 1) = \ell_4 \cap \ell_{10}$
$P_{139974} = (5, 10, 33, 1) = \ell_4 \cap \ell_{11}$
$P_{152257} = (0, 10, 36, 1) = \ell_4 \cap \ell_{12}$
$P_{193227} = (10, 10, 46, 1) = \ell_4 \cap \ell_{16}$
$P_{47526} = (37, 37, 10, 1) = \ell_5 \cap \ell_9$
$P_{6577} = (47, 37, 0, 1) = \ell_5 \cap \ell_{13}$
$P_{199041} = (0, 37, 47, 1) = \ell_5 \cap \ell_{15}$
$P_{219548} = (27, 37, 52, 1) = \ell_5 \cap \ell_{17}$
$P_{260498} = (17, 37, 62, 1) = \ell_5 \cap \ell_{20}$
$P_{39876} = (3, 46, 8, 1) = \ell_6 \cap \ell_7$
$P_{52161} = (0, 46, 11, 1) = \ell_6 \cap \ell_8$
$P_{158703} = (46, 46, 37, 1) = \ell_6 \cap \ell_{13}$
$P_{191463} = (38, 46, 45, 1) = \ell_6 \cap \ell_{14}$
$P_{7117} = (11, 46, 0, 1) = \ell_6 \cap \ell_{16}$
$P_{17973} = (52, 23, 3, 1) = \ell_7 \cap \ell_9$
$P_{106925} = (44, 5, 25, 1) = \ell_7 \cap \ell_{11}$
$P_{32803} = (34, 63, 6, 1) = \ell_7 \cap \ell_{12}$
$P_{103352} = (55, 13, 24, 1) = \ell_7 \cap \ell_{15}$
$P_{205120} = (63, 3, 49, 1) = \ell_7 \cap \ell_{17}$
$P_{152158} = (29, 8, 36, 1) = \ell_7 \cap \ell_{19}$
$P_{156463} = (46, 11, 37, 1) = \ell_8 \cap \ell_9$
$P_{58695} = (6, 20, 13, 1) = \ell_8 \cap \ell_{10}$
$P_{31822} = (13, 48, 6, 1) = \ell_8 \cap \ell_{11}$
$P_{104532} = (19, 32, 24, 1) = \ell_8 \cap \ell_{17}$
$P_{230397} = (60, 14, 55, 1) = \ell_8 \cap \ell_{20}$
$P_{161279} = (62, 22, 38, 1) = \ell_9 \cap \ell_{14}$
$P_{242755} = (2, 16, 58, 1) = \ell_9 \cap \ell_{18}$
$P_{128744} = (39, 26, 30, 1) = \ell_9 \cap \ell_{19}$
$P_{183598} = (45, 51, 43, 1) = \ell_{10} \cap \ell_{13}$
$P_{228106} = (9, 43, 54, 1) = \ell_{10} \cap \ell_{14}$
$P_{201376} = (31, 9, 48, 1) = \ell_{10} \cap \ell_{15}$
$P_{55073} = (32, 27, 12, 1) = \ell_{10} \cap \ell_{17}$
$P_{197655} = (22, 15, 47, 1) = \ell_{10} \cap \ell_{19}$
$P_{27849} = (8, 50, 5, 1) = \ell_{11} \cap \ell_{13}$
$P_{88956} = (59, 44, 20, 1) = \ell_{11} \cap \ell_{15}$
$P_{198808} = (23, 33, 47, 1) = \ell_{11} \cap \ell_{18}$
$P_{33935} = (14, 17, 7, 1) = \ell_{11} \cap \ell_{20}$
$P_{194891} = (10, 36, 46, 1) = \ell_{12} \cap \ell_{13}$
$P_{60842} = (41, 53, 13, 1) = \ell_{12} \cap \ell_{14}$
$P_{204309} = (20, 55, 48, 1) = \ell_{12} \cap \ell_{17}$
$P_{87665} = (48, 24, 20, 1) = \ell_{12} \cap \ell_{20}$
$P_{78059} = (42, 2, 18, 1) = \ell_{13} \cap \ell_{18}$
$P_{256517} = (4, 39, 61, 1) = \ell_{13} \cap \ell_{19}$
$P_{229849} = (24, 6, 55, 1) = \ell_{14} \cap \ell_{15}$
$P_{154525} = (28, 45, 36, 1) = \ell_{14} \cap \ell_{18}$
$P_{92662} = (53, 38, 21, 1) = \ell_{14} \cap \ell_{20}$
$P_{48166} = (37, 47, 10, 1) = \ell_{15} \cap \ell_{16}$
$P_{116624} = (15, 29, 27, 1) = \ell_{16} \cap \ell_{17}$
$P_{170705} = (16, 42, 40, 1) = \ell_{16} \cap \ell_{18}$
$P_{147803} = (26, 4, 35, 1) = \ell_{16} \cap \ell_{19}$
$P_{75618} = (33, 28, 17, 1) = \ell_{16} \cap \ell_{20}$
$P_{52596} = (51, 52, 11, 1) = \ell_{17} \cap \ell_{18}$
$P_{53235} = (50, 62, 11, 1) = \ell_{19} \cap \ell_{20}$

Single Points

The surface has 1209 single points:
Too many to print.

Points on surface but on no line

The surface has 3196 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
0	0	0	1	1	1	1	1	0	1	0	0	0	1	0	0	1	0	0	1	1	0
1	0	0	1	1	0	0	0	0	1	1	0	0	1	1	0	1	1	0	0	0	0
2	1	1	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	1
3	1	1	1	0	1	1	1	0	0	0	0	1	0	0	1	0	0	1	0	1	0
4	1	0	1	1	0	1	1	0	0	1	1	1	1	0	0	0	1	0	0	0	0
5	1	0	1	1	1	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0	1
6	1	0	1	1	1	1	0	1	1	0	0	0	0	1	1	0	1	0	0	0	0
7	0	0	1	0	0	0	1	0	0	1	0	1	1	0	0	1	0	1	0	1	0
8	1	1	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	1	0	0	1
9	0	1	0	0	1	1	0	1	1	0	0	0	0	0	1	0	0	0	1	1	0
10	0	0	1	0	1	0	0	0	1	0	0	0	0	1	1	1	0	1	0	1	0
11	0	0	0	1	1	0	0	1	1	0	0	0	0	1	0	1	0	0	1	0	1
12	1	1	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	1
13	0	1	0	0	0	1	1	0	0	0	1	1	1	0	0	0	0	0	1	1	0
14	0	0	0	1	0	0	1	0	0	1	1	0	1	0	0	1	0	0	1	0	1
15	1	1	0	0	0	1	0	1	0	0	1	1	0	0	1	0	1	0	0	0	0
16	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	1	1	1
17	0	0	0	1	0	1	0	1	1	0	1	0	1	0	0	0	1	0	1	0	0
18	1	0	1	0	0	0	0	0	0	1	0	1	0	1	1	0	1	1	0	0	0
19	1	0	0	1	0	0	0	1	0	1	1	0	0	1	0	0	1	0	0	0	1
20	0	0	1	0	0	1	0	0	1	0	0	1	1	0	1	0	1	0	0	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_8	ℓ_{12}	ℓ_{15}	ℓ_{18}	ℓ_{19}
in point	P_{68}	P_{68}	P_{68}	P_{68}	P_{68}	P_{772}	P_{2372}	P_{3076}	P_{3652}	P_{3716}

Line 1 intersects

Line	ℓ_2	ℓ_3	ℓ_8	ℓ_9	ℓ_{12}	ℓ_{13}	ℓ_{15}	ℓ_{16}
in point	P_{8378}	P_{8377}	P_{8331}	P_{8332}	P_{8358}	P_{8357}	P_{8367}	P_{8368}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_{10}	ℓ_{18}	ℓ_{20}
in point	P_{68}	P_{8378}	P_{68}	P_{68}	P_{68}	P_{68}	P_{172178}	P_{245892}	P_{233601}	P_{82092}

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_4	ℓ_5	ℓ_6	ℓ_{11}	ℓ_{14}	ℓ_{17}	ℓ_{19}
in point	P_{68}	P_{8377}	P_{68}	P_{68}	P_{68}	P_{68}	P_{131239}	P_{143516}	P_{249990}	P_{237697}

Line 4 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_5	ℓ_6	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{16}
in point	P_{68}	P_{68}	P_{68}	P_{68}	P_{68}	P_{4838}	P_{66284}	P_{139974}	P_{152257}	P_{193227}

Line 5 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_6	ℓ_9	ℓ_{13}	ℓ_{15}	ℓ_{17}	ℓ_{20}
in point	P_{68}	P_{68}	P_{68}	P_{68}	P_{68}	P_{47526}	P_{6577}	P_{199041}	P_{219548}	P_{260498}

Line 6 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_8	ℓ_{13}	ℓ_{14}	ℓ_{16}
in point	P_{68}	P_{68}	P_{68}	P_{68}	P_{68}	P_{39876}	P_{52161}	P_{158703}	P_{191463}	P_{7117}

Line 7 intersects

Line	ℓ_2	ℓ_6	ℓ_9	ℓ_{11}	ℓ_{12}	ℓ_{15}	ℓ_{17}	ℓ_{19}
in point	P_{172178}	P_{39876}	P_{17973}	P_{106925}	P_{32803}	P_{103352}	P_{205120}	P_{152158}

Line 8 intersects

Line	ℓ_0	ℓ_1	ℓ_6	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{17}	ℓ_{20}
in point	P_{772}	P_{8331}	P_{52161}	P_{156463}	P_{58695}	P_{31822}	P_{104532}	P_{230397}

Line 9 intersects

Line	ℓ_1	ℓ_4	ℓ_5	ℓ_7	ℓ_8	ℓ_{14}	ℓ_{18}	ℓ_{19}
in point	P_{8332}	P_{4838}	P_{47526}	P_{17973}	P_{156463}	P_{161279}	P_{242755}	P_{128744}

Line 10 intersects

Line	ℓ_2	ℓ_4	ℓ_8	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{17}	ℓ_{19}
in point	P_{245892}	P_{66284}	P_{58695}	P_{183598}	P_{228106}	P_{201376}	P_{55073}	P_{197655}

Line 11 intersects

Line	ℓ_3	ℓ_4	ℓ_7	ℓ_8	ℓ_{13}	ℓ_{15}	ℓ_{18}	ℓ_{20}
in point	P_{131239}	P_{139974}	P_{106925}	P_{31822}	P_{27849}	P_{88956}	P_{198808}	P_{33935}

Line 12 intersects

Line	ℓ_0	ℓ_1	ℓ_4	ℓ_7	ℓ_{13}	ℓ_{14}	ℓ_{17}	ℓ_{20}
in point	P_{2372}	P_{8358}	P_{152257}	P_{32803}	P_{194891}	P_{60842}	P_{204309}	P_{87665}

Line 13 intersects

Line	ℓ_1	ℓ_5	ℓ_6	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{18}	ℓ_{19}
in point	P_{8357}	P_{6577}	P_{158703}	P_{183598}	P_{27849}	P_{194891}	P_{78059}	P_{256517}

Line 14 intersects

Line	ℓ_3	ℓ_6	ℓ_9	ℓ_{10}	ℓ_{12}	ℓ_{15}	ℓ_{18}	ℓ_{20}
in point	P_{143516}	P_{191463}	P_{161279}	P_{228106}	P_{60842}	P_{229849}	P_{154525}	P_{92662}

Line 15 intersects

Line	ℓ_0	ℓ_1	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{14}	ℓ_{16}
in point	P_{3076}	P_{8367}	P_{199041}	P_{103352}	P_{201376}	P_{88956}	P_{229849}	P_{48166}

Line 16 intersects

Line	ℓ_1	ℓ_4	ℓ_6	ℓ_{15}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}
in point	P_{8368}	P_{193227}	P_{7117}	P_{48166}	P_{116624}	P_{170705}	P_{147803}	P_{75618}

Line 17 intersects

Line	ℓ_3	ℓ_5	ℓ_7	ℓ_8	ℓ_{10}	ℓ_{12}	ℓ_{16}	ℓ_{18}
in point	P_{249990}	P_{219548}	P_{205120}	P_{104532}	P_{55073}	P_{204309}	P_{116624}	P_{52596}

Line 18 intersects

Line	ℓ_0	ℓ_2	ℓ_9	ℓ_{11}	ℓ_{13}	ℓ_{14}	ℓ_{16}	ℓ_{17}
in point	P_{3652}	P_{233601}	P_{242755}	P_{198808}	P_{78059}	P_{154525}	P_{170705}	P_{52596}

Line 19 intersects

Line	ℓ_0	ℓ_3	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{13}	ℓ_{16}	ℓ_{20}
in point	P_{3716}	P_{237697}	P_{152158}	P_{128744}	P_{197655}	P_{256517}	P_{147803}	P_{53235}

Line 20 intersects

Line	ℓ_2	ℓ_5	ℓ_8	ℓ_{11}	ℓ_{12}	ℓ_{14}	ℓ_{16}	ℓ_{19}
in point	P_{82092}	P_{260498}	P_{230397}	P_{33935}	P_{87665}	P_{92662}	P_{75618}	P_{53235}

The surface has 4481 points:
Too many to print.