Rank-65617 over GF(64)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 1, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(64) is 1091051653

General information

Number of lines	21
Number of points	4481
Number of singular points	1
Number of Eckardt points	3
Number of double points	66
Number of single points	1218
Number of points off lines	3193
Number of Hesse planes	0
Number of axes	0
Type of points on lines	65^{21}
Type of lines on points	$6, 3^3, 2^{66}, 1^{1218}, 0^{3193}$

Singular Points

The surface has 1 singular points:

$0: \ P_{4163} = \mathbf{P}(1,0,0,1) = \mathbf{P}(1,0,0,1)$

The 21 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & \epsilon^9 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{12520450} = \begin{bmatrix} 1 & 0 & 1 & 47 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{12520450} = \mathbf{Pl}(10, 47, 1, 47, 0, 1)_{469113}$$

$$\ell_1 = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{18} \\ 0 & 1 & 1 & 0 \end{array}\right]_{2933506} = \left[\begin{array}{cccc} 1 & 0 & 1 & 11 \\ 0 & 1 & 1 & 0 \end{array}\right]_{2933506} = \mathbf{Pl}(37,11,1,11,0,1)_{326256}$$

$$\ell_2 = \left[\begin{array}{cccc} 1 & 0 & 1 & \epsilon^{36} \\ 0 & 1 & 1 & 0 \end{array}\right]_{9591106} = \left[\begin{array}{cccc} 1 & 0 & 1 & 36 \\ 0 & 1 & 1 & 0 \end{array}\right]_{9591106} = \mathbf{Pl}(46,36,1,36,0,1)_{425490}$$

$$\ell_3 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{28} & \epsilon^{14} \end{array}\right]_{270077} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 61 & 58 \end{array}\right]_{270077} = \mathbf{Pl}(30,58,58,30,1,0)_{139075}$$

$$\ell_4 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{35} & \epsilon^{21} \\ 0 & 1 & \epsilon^{7} & \epsilon^{35} \end{array}\right]_{15255413} = \left[\begin{array}{cccc} 1 & 0 & 18 & 57 \\ 0 & 1 & 35 & 18 \end{array}\right]_{15255413} = \mathbf{Pl}(30,58,58,30,1,1)_{778715}$$

$$\ell_5 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{14} & \epsilon^{7} \end{array}\right]_{268602} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 58 & 35 \end{array}\right]_{268602} = \mathbf{Pl}(40,35,35,40,1,0)_{177326}$$

$$\ell_6 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{49} & \epsilon^{42} \\ 0 & 1 & \epsilon^{35} & \epsilon^{49} \end{array}\right]_{15039792} = \left[\begin{array}{cccc} 1 & 0 & 30 & 56 \\ 0 & 1 & 18 & 30 \end{array}\right]_{15039792} = \mathbf{Pl}(40,35,35,40,1,1)_{688824}$$

$$\ell_7 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{56} & \epsilon^{28} \end{array}\right]_{270248} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 40 & 61 \end{array}\right]_{270248} = \mathbf{Pl}(18,61,61,18,1,0)_{91624}$$

$$\ell_8 = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{7} & \epsilon^{42} \\ 0 & 1 & \epsilon^{14} & \epsilon^{7} \end{array}\right]_{15060957} = \left[\begin{array}{cccc} 1 & 0 & 35 & 56 \\ 0 & 1 & 58 & 35 \end{array}\right]_{15060957} = \mathbf{Pl}(18,61,61,18,1,1)_{790358}$$

$$\ell_9 = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{7} & \epsilon^{35} \end{array}\right]_{267491} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 35 & 18 \end{array}\right]_{267491} = \mathbf{Pl}(61,18,18,61,1,0)_{259625}$$

$$\ell_{10} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{56} & \epsilon^{21} \\ 0 & 1 & \epsilon^{49} & \epsilon^{56} \end{array}\right]_{15348358} = \left[\begin{array}{cccc} 1 & 0 & 40 & 57 \\ 0 & 1 & 30 & 40 \end{array}\right]_{15348358} = \mathbf{Pl}(61,18,18,61,1,1)_{622506}$$

$$\ell_{11} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & \epsilon^{18} \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{3162417} = \left[\begin{array}{cccc} 1 & 0 & 56 & 11 \\ 0 & 1 & 57 & 0 \end{array}\right]_{3162417} = \mathbf{Pl}(8,12,56,7,0,1)_{313816}$$

$$\ell_{12} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & \epsilon^{36} \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{9820017} = \left[\begin{array}{cccc} 1 & 0 & 56 & 36 \\ 0 & 1 & 57 & 0 \end{array}\right]_{9820017} = \mathbf{Pl}(15,21,56,49,0,1)_{480521}$$

$$\ell_{13} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{42} & \epsilon^{9} \\ 0 & 1 & \epsilon^{21} & 0 \end{array}\right]_{12749361} = \left[\begin{array}{cccc} 1 & 0 & 56 & 47 \\ 0 & 1 & 57 & 0 \end{array}\right]_{12749361} = \mathbf{Pl}(62,25,56,54,0,1)_{500413}$$

$$\ell_{14} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & \epsilon^{36} \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{9824177} = \left[\begin{array}{cccc} 1 & 0 & 57 & 36 \\ 0 & 1 & 56 & 0 \end{array}\right]_{9824177} = \mathbf{Pl}(33,49,57,21,0,1)_{369470}$$

$$\ell_{15} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & \epsilon^{18} \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{3166577} = \left[\begin{array}{cccc} 1 & 0 & 57 & 11 \\ 0 & 1 & 56 & 0 \end{array}\right]_{3166577} = \mathbf{Pl}(45,7,57,12,0,1)_{333761}$$

$$\ell_{16} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{21} & \epsilon^{9} \\ 0 & 1 & \epsilon^{42} & 0 \end{array}\right]_{12753521} = \left[\begin{array}{cccc} 1 & 0 & 57 & 47 \\ 0 & 1 & 56 & 0 \end{array}\right]_{12753521} = \mathbf{Pl}(52,54,57,25,0,1)_{385365}$$

$$\ell_{17} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{49} & \epsilon^{56} \end{array}\right]_{268894} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 30 & 40 \end{array}\right]_{268894} = \mathbf{Pl}(35,40,40,35,1,0)_{157791}$$

$$\ell_{18} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{14} & \epsilon^{21} \\ 0 & 1 & \epsilon^{28} & \epsilon^{14} \end{array}\right]_{15424439} = \left[\begin{array}{cccc} 1 & 0 & 58 & 57 \\ 0 & 1 & 61 & 58 \end{array}\right]_{15424439} = \mathbf{Pl}(35,40,40,35,1,1)_{708412}$$

$$\ell_{19} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & \epsilon^{35} & \epsilon^{49} \end{array}\right]_{268242} = \left[\begin{array}{cccc} 1 & 0 & 0 & 1 \\ 0 & 1 & 18 & 30 \end{array}\right]_{268242} = \mathbf{Pl}(58,30,30,58,1,0)_{248471}$$

$$\ell_{20} = \left[\begin{array}{cccc} 1 & 0 & \epsilon^{28} & \epsilon^{42} \\ 0 & 1 & \epsilon^{56} & \epsilon^{28} \end{array}\right]_{15170789} = \left[\begin{array}{cccc} 1 & 0 & 61 & 56 \\ 0 & 1 & 40 & 61 \end{array}\right]_{15170789} = \mathbf{Pl}(58,30,30,58,1,1)_{669312}$$

Rank of lines: (12520450, 2933506, 9591106, 270077, 15255413, 268602, 15039792, 270248, 15060957, 267491, 15348358, 3162417, 9820017, 12749361, 9824177, 3166577, 12753521, 268894, 15424439, 268242, 15170789)
Rank of points on Klein quadric: (469113, 326256, 425490, 139075, 778715, 177326, 688824, 91624, 790358, 259625, 622506, 313816, 480521, 500413, 369470, 333761, 385365, 157791, 708412, 248471, 669312)

Eckardt Points

The surface has 3 Eckardt points:
$0 : P_{131} = \mathbf{P}(0,1,1,0) = \mathbf{P}(0,1,1,0)$,
$1 : P_{3651} = \mathbf{P}(0,\epsilon^{42},1,0) = \mathbf{P}(0,56,1,0)$,
$2 : P_{3715} = \mathbf{P}(0,\epsilon^{21},1,0) = \mathbf{P}(0,57,1,0)$.

Double Points

The surface has 66 Double points:
The double points on the surface are:

$P_{111691} = (10,16,26,1) = \ell_0 \cap \ell_3$
$P_{225291} = (10,63,53,1) = \ell_0 \cap \ell_8$
$P_{265611} = (10,53,63,1) = \ell_0 \cap \ell_{10}$
$P_{261451} = (10,52,62,1) = \ell_0 \cap \ell_{13}$
$P_{221131} = (10,62,52,1) = \ell_0 \cap \ell_{16}$
$P_{71371} = (10,26,16,1) = \ell_0 \cap \ell_{19}$
$P_{184998} = (37,9,44,1) = \ell_1 \cap \ell_6$
$P_{14886} = (37,39,2,1) = \ell_1 \cap \ell_7$
$P_{164070} = (37,2,39,1) = \ell_1 \cap \ell_9$
$P_{39846} = (37,45,8,1) = \ell_1 \cap \ell_{11}$
$P_{189030} = (37,8,45,1) = \ell_1 \cap \ell_{15}$
$P_{43878} = (37,44,9,1) = \ell_1 \cap \ell_{18}$
$P_{63599} = (46,32,14,1) = \ell_2 \cap \ell_4$
$P_{176495} = (46,4,42,1) = \ell_2 \cap \ell_5$
$P_{67759} = (46,33,15,1) = \ell_2 \cap \ell_{12}$
$P_{140335} = (46,15,33,1) = \ell_2 \cap \ell_{14}$
$P_{23279} = (46,42,4,1) = \ell_2 \cap \ell_{17}$
$P_{136175} = (46,14,32,1) = \ell_2 \cap \ell_{20}$
$P_{1249} = (30,18,1,0) = \ell_3 \cap \ell_4$
$P_{251174} = (37,19,60,1) = \ell_3 \cap \ell_{11}$
$P_{160047} = (46,3,38,1) = \ell_3 \cap \ell_{14}$
$P_{243649} = (0,30,58,1) = \ell_3 \cap \ell_{18}$
$P_{221168} = (47,62,52,1) = \ell_4 \cap \ell_6$
$P_{39820} = (11,45,8,1) = \ell_4 \cap \ell_8$
$P_{81793} = (0,61,18,1) = \ell_4 \cap \ell_9$
$P_{212235} = (10,51,50,1) = \ell_4 \cap \ell_{13}$
$P_{89190} = (37,48,20,1) = \ell_4 \cap \ell_{15}$
$P_{195557} = (36,46,46,1) = \ell_4 \cap \ell_{20}$
$P_{2027} = (40,30,1,0) = \ell_5 \cap \ell_6$
$P_{150081} = (0,40,35,1) = \ell_5 \cap \ell_8$
$P_{75558} = (37,27,17,1) = \ell_5 \cap \ell_{11}$
$P_{247819} = (10,31,59,1) = \ell_5 \cap \ell_{16}$
$P_{67749} = (36,33,15,1) = \ell_6 \cap \ell_{10}$
$P_{29579} = (10,13,6,1) = \ell_6 \cap \ell_{13}$
$P_{99823} = (46,22,23,1) = \ell_6 \cap \ell_{14}$
$P_{158092} = (11,37,37,1) = \ell_6 \cap \ell_{18}$
$P_{130753} = (0,58,30,1) = \ell_6 \cap \ell_{19}$
$P_{2325} = (18,35,1,0) = \ell_7 \cap \ell_8$
$P_{180619} = (10,5,43,1) = \ell_7 \cap \ell_{13}$
$P_{174319} = (46,34,41,1) = \ell_7 \cap \ell_{14}$
$P_{255169} = (0,18,61,1) = \ell_7 \cap \ell_{20}$
$P_{45808} = (47,10,10,1) = \ell_8 \cap \ell_{10}$
$P_{231023} = (46,24,55,1) = \ell_8 \cap \ell_{12}$
$P_{120742} = (37,29,28,1) = \ell_8 \cap \ell_{15}$
$P_{140325} = (36,15,33,1) = \ell_8 \cap \ell_{18}$
$P_{2688} = (61,40,1,0) = \ell_9 \cap \ell_{10}$
$P_{146095} = (46,41,34,1) = \ell_9 \cap \ell_{12}$
$P_{27403} = (10,43,5,1) = \ell_9 \cap \ell_{16}$
$P_{124774} = (37,28,29,1) = \ell_{10} \cap \ell_{11}$
$P_{106031} = (46,55,24,1) = \ell_{10} \cap \ell_{14}$
$P_{170241} = (0,35,40,1) = \ell_{10} \cap \ell_{17}$
$P_{189004} = (11,8,45,1) = \ell_{10} \cap \ell_{20}$
$P_{158118} = (37,37,37,1) = \ell_{11} \cap \ell_{15}$
$P_{202086} = (37,20,48,1) = \ell_{11} \cap \ell_{20}$
$P_{195567} = (46,46,46,1) = \ell_{12} \cap \ell_{14}$
$P_{95791} = (46,23,22,1) = \ell_{12} \cap \ell_{18}$
$P_{18927} = (46,38,3,1) = \ell_{12} \cap \ell_{19}$
$P_{45771} = (10,10,10,1) = \ell_{13} \cap \ell_{16}$
$P_{134923} = (10,59,31,1) = \ell_{13} \cap \ell_{17}$
$P_{115878} = (37,17,27,1) = \ell_{15} \cap \ell_{17}$
$P_{85862} = (37,60,19,1) = \ell_{15} \cap \ell_{19}$
$P_{57803} = (10,6,13,1) = \ell_{16} \cap \ell_{18}$
$P_{216267} = (10,50,51,1) = \ell_{16} \cap \ell_{20}$
$P_{3814} = (35,58,1,0) = \ell_{17} \cap \ell_{18}$
$P_{261488} = (47,52,62,1) = \ell_{18} \cap \ell_{20}$
$P_{4029} = (58,61,1,0) = \ell_{19} \cap \ell_{20}$

Single Points

The surface has 1218 single points:
Too many to print.

Points on surface but on no line

The surface has 3193 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	1	1	1	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	1	0
1	1	0	1	0	0	0	1	1	0	1	0	1	0	0	0	1	0	0	1	0	0
2	1	1	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1
3	1	0	0	0	1	1	0	1	0	1	0	1	0	0	1	0	0	1	1	1	0
4	0	0	1	1	0	0	1	0	1	1	0	0	0	1	0	1	0	0	0	0	1
5	0	0	1	1	0	0	1	1	1	1	0	1	0	0	0	0	1	1	0	1	0
6	0	1	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0
7	0	1	0	1	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	1	1
8	1	0	0	0	1	1	0	1	0	0	1	0	1	0	0	1	0	0	1	0	0
9	0	1	0	1	1	1	0	1	0	0	1	0	1	0	0	0	1	1	0	1	0
10	1	0	0	0	0	0	1	0	1	1	0	1	0	0	1	0	0	1	0	0	1
11	0	1	0	1	0	1	0	0	0	0	1	0	1	1	0	1	0	0	0	0	1
12	0	0	1	0	0	0	0	0	1	1	0	1	0	1	1	0	0	0	1	1	0
13	1	0	0	0	1	0	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0
14	0	0	1	1	0	0	1	1	0	0	1	0	1	0	0	1	1	0	0	0	0
15	0	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	1	1	0	1	0
16	1	0	0	0	0	1	0	0	0	1	0	0	0	1	1	1	0	0	1	0	1
17	0	0	1	1	0	1	0	1	0	1	1	0	0	1	0	1	0	0	1	1	0
18	0	1	0	1	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1
19	1	0	0	1	0	1	1	1	0	1	0	0	1	0	0	1	0	1	0	0	1
20	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	1	0	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_8	ℓ_{10}	ℓ_{13}	ℓ_{16}	ℓ_{19}
in point	P_{131}	P_{131}	P_{111691}	P_{225291}	P_{265611}	P_{261451}	P_{221131}	P_{71371}

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_6	ℓ_7	ℓ_9	ℓ_{11}	ℓ_{15}	ℓ_{18}
in point	P_{131}	P_{131}	P_{184998}	P_{14886}	P_{164070}	P_{39846}	P_{189030}	P_{43878}

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_4	ℓ_5	ℓ_{12}	ℓ_{14}	ℓ_{17}	ℓ_{20}
in point	P_{131}	P_{131}	P_{63599}	P_{176495}	P_{67759}	P_{140335}	P_{23279}	P_{136175}

Line 3 intersects

Line	ℓ_0	ℓ_4	ℓ_5	ℓ_7	ℓ_9	ℓ_{11}	ℓ_{14}	ℓ_{17}	ℓ_{18}	ℓ_{19}
in point	P_{111691}	P_{1249}	P_{4163}	P_{4163}	P_{4163}	P_{251174}	P_{160047}	P_{4163}	P_{243649}	P_{4163}

Line 4 intersects

Line	ℓ_2	ℓ_3	ℓ_6	ℓ_8	ℓ_9	ℓ_{13}	ℓ_{15}	ℓ_{20}
in point	P_{63599}	P_{1249}	P_{221168}	P_{39820}	P_{81793}	P_{212235}	P_{89190}	P_{195557}

Line 5 intersects

Line	ℓ_2	ℓ_3	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{16}	ℓ_{17}	ℓ_{19}
in point	P_{176495}	P_{4163}	P_{2027}	P_{4163}	P_{150081}	P_{4163}	P_{75558}	P_{247819}	P_{4163}	P_{4163}

Line 6 intersects

Line	ℓ_1	ℓ_4	ℓ_5	ℓ_{10}	ℓ_{13}	ℓ_{14}	ℓ_{18}	ℓ_{19}
in point	P_{184998}	P_{221168}	P_{2027}	P_{67749}	P_{29579}	P_{99823}	P_{158092}	P_{130753}

Line 7 intersects

Line	ℓ_1	ℓ_3	ℓ_5	ℓ_8	ℓ_9	ℓ_{13}	ℓ_{14}	ℓ_{17}	ℓ_{19}	ℓ_{20}
in point	P_{14886}	P_{4163}	P_{4163}	P_{2325}	P_{4163}	P_{180619}	P_{174319}	P_{4163}	P_{4163}	P_{255169}

Line 8 intersects

Line	ℓ_0	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{12}	ℓ_{15}	ℓ_{18}
in point	P_{225291}	P_{39820}	P_{150081}	P_{2325}	P_{45808}	P_{231023}	P_{120742}	P_{140325}

Line 9 intersects

Line	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_{10}	ℓ_{12}	ℓ_{16}	ℓ_{17}	ℓ_{19}
in point	P_{164070}	P_{4163}	P_{81793}	P_{4163}	P_{4163}	P_{2688}	P_{146095}	P_{27403}	P_{4163}	P_{4163}

Line 10 intersects

Line	ℓ_0	ℓ_6	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{14}	ℓ_{17}	ℓ_{20}
in point	P_{265611}	P_{67749}	P_{45808}	P_{2688}	P_{124774}	P_{106031}	P_{170241}	P_{189004}

Line 11 intersects

Line	ℓ_1	ℓ_3	ℓ_5	ℓ_{10}	ℓ_{12}	ℓ_{13}	ℓ_{15}	ℓ_{20}
in point	P_{39846}	P_{251174}	P_{75558}	P_{124774}	P_{3651}	P_{3651}	P_{158118}	P_{202086}

Line 12 intersects

Line	ℓ_2	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{13}	ℓ_{14}	ℓ_{18}	ℓ_{19}
in point	P_{67759}	P_{231023}	P_{146095}	P_{3651}	P_{3651}	P_{195567}	P_{95791}	P_{18927}

Line 13 intersects

Line	ℓ_0	ℓ_4	ℓ_6	ℓ_7	ℓ_{11}	ℓ_{12}	ℓ_{16}	ℓ_{17}
in point	P_{261451}	P_{212235}	P_{29579}	P_{180619}	P_{3651}	P_{3651}	P_{45771}	P_{134923}

Line 14 intersects

Line	ℓ_2	ℓ_3	ℓ_6	ℓ_7	ℓ_{10}	ℓ_{12}	ℓ_{15}	ℓ_{16}
in point	P_{140335}	P_{160047}	P_{99823}	P_{174319}	P_{106031}	P_{195567}	P_{3715}	P_{3715}

Line 15 intersects

Line	ℓ_1	ℓ_4	ℓ_8	ℓ_{11}	ℓ_{14}	ℓ_{16}	ℓ_{17}	ℓ_{19}
in point	P_{189030}	P_{89190}	P_{120742}	P_{158118}	P_{3715}	P_{3715}	P_{115878}	P_{85862}

Line 16 intersects

Line	ℓ_0	ℓ_5	ℓ_9	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{18}	ℓ_{20}
in point	P_{221131}	P_{247819}	P_{27403}	P_{45771}	P_{3715}	P_{3715}	P_{57803}	P_{216267}

Line 17 intersects

Line	ℓ_2	ℓ_3	ℓ_5	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{13}	ℓ_{15}	ℓ_{18}	ℓ_{19}
in point	P_{23279}	P_{4163}	P_{4163}	P_{4163}	P_{4163}	P_{170241}	P_{134923}	P_{115878}	P_{3814}	P_{4163}

Line 18 intersects

Line	ℓ_1	ℓ_3	ℓ_6	ℓ_8	ℓ_{12}	ℓ_{16}	ℓ_{17}	ℓ_{20}
in point	P_{43878}	P_{243649}	P_{158092}	P_{140325}	P_{95791}	P_{57803}	P_{3814}	P_{261488}

Line 19 intersects

Line	ℓ_0	ℓ_3	ℓ_5	ℓ_6	ℓ_7	ℓ_9	ℓ_{12}	ℓ_{15}	ℓ_{17}	ℓ_{20}
in point	P_{71371}	P_{4163}	P_{4163}	P_{130753}	P_{4163}	P_{4163}	P_{18927}	P_{85862}	P_{4163}	P_{4029}

Line 20 intersects

Line	ℓ_2	ℓ_4	ℓ_7	ℓ_{10}	ℓ_{11}	ℓ_{16}	ℓ_{18}	ℓ_{19}
in point	P_{136175}	P_{195557}	P_{255169}	P_{189004}	P_{202086}	P_{216267}	P_{261488}	P_{4029}

The surface has 4481 points:
Too many to print.