Rank-65542 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^3 + X_1^3 + X_0X_1X_2 = 0$$

(1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1108378694

General information

Number of lines	32
Number of points	1025
Number of singular points	33
Number of Eckardt points	0
Number of double points	0
Number of single points	1024
Number of points off lines	0
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^{32}
Type of lines on points	32, 1^{1024}

Singular Points

The surface has 33 singular points:

0 : $P_2 = \mathbf{P}(0,0,1,0) = \mathbf{P}(0,0,1,0)$
1 : $P_3 = \mathbf{P}(0,0,0,1) = \mathbf{P}(0,0,0,1)$
2 : $P_{2082} = \mathbf{P}(0,0,1,1) = \mathbf{P}(0,0,1,1)$
3 : $P_{3105} = \mathbf{P}(0,0,\eta,1) = \mathbf{P}(0,0,2,1)$
4 : $P_{4129} = \mathbf{P}(0,0,\eta^{18},1) = \mathbf{P}(0,0,3,1)$
5 : $P_{5153} = \mathbf{P}(0,0,\eta^{2},1) = \mathbf{P}(0,0,4,1)$
6 : $P_{6177} = \mathbf{P}(0,0,\eta^{5},1) = \mathbf{P}(0,0,5,1)$
7 : $P_{7201} = \mathbf{P}(0,0,\eta^{19},1) = \mathbf{P}(0,0,6,1)$
8 : $P_{8225} = \mathbf{P}(0,0,\eta^{11},1) = \mathbf{P}(0,0,7,1)$
9 : $P_{9249} = \mathbf{P}(0,0,\eta^{3},1) = \mathbf{P}(0,0,8,1)$
10 : $P_{10273} = \mathbf{P}(0,0,\eta^{29},1) = \mathbf{P}(0,0,9,1)$
11 : $P_{11297} = \mathbf{P}(0,0,\eta^{6},1) = \mathbf{P}(0,0,10,1)$
12 : $P_{12321} = \mathbf{P}(0,0,\eta^{27},1) = \mathbf{P}(0,0,11,1)$
13 : $P_{13345} = \mathbf{P}(0,0,\eta^{20},1) = \mathbf{P}(0,0,12,1)$
14 : $P_{14369} = \mathbf{P}(0,0,\eta^{8},1) = \mathbf{P}(0,0,13,1)$
15 : $P_{15393} = \mathbf{P}(0,0,\eta^{12},1) = \mathbf{P}(0,0,14,1)$
16 : $P_{16417} = \mathbf{P}(0,0,\eta^{23},1) = \mathbf{P}(0,0,15,1)$
17 : $P_{17441} = \mathbf{P}(0,0,\eta^{4},1) = \mathbf{P}(0,0,16,1)$

$18:\ P_{18465} = \mathbf{P}(0,0,\eta^{10},1) = \mathbf{P}(0,0,17,1)$
$19:\ P_{19489} = \mathbf{P}(0,0,\eta^{30},1) = \mathbf{P}(0,0,18,1)$
$20:\ P_{20513} = \mathbf{P}(0,0,\eta^{17},1) = \mathbf{P}(0,0,19,1)$
$21:\ P_{21537} = \mathbf{P}(0,0,\eta^{7},1) = \mathbf{P}(0,0,20,1)$
$22:\ P_{22561} = \mathbf{P}(0,0,\eta^{22},1) = \mathbf{P}(0,0,21,1)$
$23:\ P_{23585} = \mathbf{P}(0,0,\eta^{28},1) = \mathbf{P}(0,0,22,1)$
$24:\ P_{24609} = \mathbf{P}(0,0,\eta^{26},1) = \mathbf{P}(0,0,23,1)$
$25:\ P_{25633} = \mathbf{P}(0,0,\eta^{21},1) = \mathbf{P}(0,0,24,1)$
$26:\ P_{26657} = \mathbf{P}(0,0,\eta^{25},1) = \mathbf{P}(0,0,25,1)$
$27:\ P_{27681} = \mathbf{P}(0,0,\eta^{9},1) = \mathbf{P}(0,0,26,1)$
$28:\ P_{28705} = \mathbf{P}(0,0,\eta^{16},1) = \mathbf{P}(0,0,27,1)$
$29:\ P_{29729} = \mathbf{P}(0,0,\eta^{13},1) = \mathbf{P}(0,0,28,1)$
$30:\ P_{30753} = \mathbf{P}(0,0,\eta^{14},1) = \mathbf{P}(0,0,29,1)$
$31:\ P_{31777} = \mathbf{P}(0,0,\eta^{24},1) = \mathbf{P}(0,0,30,1)$
$32:\ P_{32801} = \mathbf{P}(0,0,\eta^{15},1) = \mathbf{P}(0,0,31,1)$

The 32 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \mathbf{Pl}(0,1,0,0,0,0)_1$$

$$\ell_1 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2113} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2113} = \mathbf{Pl}(0,0,0,1,1,0)_{3105}$$

$$\ell_2 = \begin{bmatrix} 1 & \eta^{8} & \eta^{7} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{691277} = \begin{bmatrix} 1 & 13 & 20 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{691277} = \mathbf{Pl}(0,20,0,13,1,0)_{3912}$$

$$\ell_3 = \begin{bmatrix} 1 & \eta^{28} & \eta^{10} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{599318} = \begin{bmatrix} 1 & 22 & 17 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{599318} = \mathbf{Pl}(0,17,0,22,1,0)_{4476}$$

$$\ell_4 = \begin{bmatrix} 1 & \eta^{16} & \eta^{14} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1010491} = \begin{bmatrix} 1 & 27 & 29 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1010491} = \mathbf{Pl}(0,29,0,27,1,0)_{4803}$$

$$\ell_5 = \begin{bmatrix} 1 & \eta^{25} & \eta^{20} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{433369} = \begin{bmatrix} 1 & 25 & 12 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{433369} = \mathbf{Pl}(0,12,0,25,1,0)_{4660}$$

$$\ell_6 = \begin{bmatrix} 1 & \eta^{6} & \eta^{26} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{789578} = \begin{bmatrix} 1 & 10 & 23 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{789578} = \mathbf{Pl}(0,23,0,10,1,0)_{3726}$$

$$\ell_7 = \begin{bmatrix} 1 & \eta^{22} & \eta^{19} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{226197} = \begin{bmatrix} 1 & 21 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{226197} = \mathbf{Pl}(0,6,0,21,1,0)_{4402}$$

$$\ell_8 = \begin{bmatrix} 1 & \eta^{30} & \eta^{27} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{392146} = \begin{bmatrix} 1 & 18 & 11 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{392146} = \mathbf{Pl}(0,11,0,18,1,0)_{4218}$$

$$\ell_9 = \begin{bmatrix} 1 & \eta^{10} & \eta^{7} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{695505} = \begin{bmatrix} 1 & 17 & 20 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{695505} = \mathbf{Pl}(0,20,0,17,1,0)_{4164}$$

$$\ell_{10} = \begin{bmatrix} 1 & \eta^{29} & \eta^{23} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{517929} = \begin{bmatrix} 1 & 9 & 15 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{517929} = \mathbf{Pl}(0,15,0,9,1,0)_{3655}$$

$$\ell_{11} = \begin{bmatrix} 1 & \eta^{20} & \eta^{14} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{994636} = \begin{bmatrix} 1 & 12 & 29 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{994636} = \mathbf{Pl}(0,29,0,12,1,0)_{3858}$$

$$\ell_{12} = \begin{bmatrix} 1 & \eta^{13} & \eta^{7} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{707132} = \begin{bmatrix} 1 & 28 & 20 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{707132} = \mathbf{Pl}(0,20,0,28,1,0)_{4857}$$

$$\ell_{13} = \begin{bmatrix} 1 & \eta^{7} & \eta^{18} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{123668} = \begin{bmatrix} 1 & 20 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{123668} = \mathbf{Pl}(0,3,0,20,1,0)_{4336}$$

$$\ell_{14} = \begin{bmatrix} 1 & \eta^{2} & \eta^{25} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{850884} = \begin{bmatrix} 1 & 4 & 25 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{850884} = \mathbf{Pl}(0,25,0,4,1,0)_{3350}$$

$$\ell_{15} = \begin{bmatrix} 1 & \eta^{9} & \eta^{28} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{772666} = \begin{bmatrix} 1 & 26 & 22 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{772666} = \mathbf{Pl}(0,22,0,26,1,0)_{4733}$$

$$\ell_{16} = \begin{bmatrix} 1 & \eta^{26} & \eta^{14} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1006263} = \begin{bmatrix} 1 & 23 & 29 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1006263} = \mathbf{Pl}(0,29,0,23,1,0)_{4551}$$

$$\ell_{17} = \begin{bmatrix} 1 & \eta^{27} & \eta^{15} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1061227} = \begin{bmatrix} 1 & 11 & 31 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1061227} = \mathbf{Pl}(0,31,0,11,1,0)_{3797}$$

$$\ell_{18} = \begin{bmatrix} 1 & \eta & \eta^{28} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{747298} = \begin{bmatrix} 1 & 2 & 22 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{747298} = \mathbf{Pl}(0,22,0,2,1,0)_{3221}$$

$$\ell_{19} = \begin{bmatrix} 1 & \eta^{19} & \eta^{9} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{886822} = \begin{bmatrix} 1 & 6 & 26 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{886822} = \mathbf{Pl}(0,26,0,6,1,0)_{3477}$$

$$\ell_{20} = \begin{bmatrix} 1 & \eta^{15} & \eta^{29} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{338239} = \begin{bmatrix} 1 & 31 & 9 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{338239} = \mathbf{Pl}(0,9,0,31,1,0)_{5035}$$

$$\ell_{21} = \begin{bmatrix} 1 & \eta^{11} & \eta^{25} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{854055} = \begin{bmatrix} 1 & 7 & 25 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{854055} = \mathbf{Pl}(0,25,0,7,1,0)_{3539}$$

$$\ell_{22} = \begin{bmatrix} 1 & \eta^{5} & \eta^{19} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{209285} = \begin{bmatrix} 1 & 5 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{209285} = \mathbf{Pl}(0,6,0,5,1,0)_{3394}$$

$$\ell_{23} = \begin{bmatrix} 1 & \eta^{12} & \eta^{21} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{827630} = \begin{bmatrix} 1 & 14 & 24 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{827630} = \mathbf{Pl}(0,24,0,14,1,0)_{3979}$$

$$\ell_{24} = \begin{bmatrix} 1 & \eta^{17} & \eta^{22} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{731443} = \begin{bmatrix} 1 & 19 & 21 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{731443} = \mathbf{Pl}(0,21,0,19,1,0)_{4291}$$

$$\ell_{25} = \begin{bmatrix} 1 & \eta^{3} & \eta^{13} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{956584} = \begin{bmatrix} 1 & 8 & 28 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{956584} = \mathbf{Pl}(0,28,0,8,1,0)_{3605}$$

$$\ell_{26} = \begin{bmatrix} 1 & \eta^{14} & \eta^{5} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{200829} = \begin{bmatrix} 1 & 29 & 5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{200829} = \mathbf{Pl}(0,5,0,29,1,0)_{4905}$$

$$\ell_{27} = \begin{bmatrix} 1 & \eta^{4} & \eta^{19} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{220912} = \begin{bmatrix} 1 & 16 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{220912} = \mathbf{Pl}(0,6,0,16,1,0)_{4087}$$

$$\ell_{28} = \begin{bmatrix} 1 & \eta^{24} & \eta^{11} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{269534} = \begin{bmatrix} 1 & 30 & 7 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{269534} = \mathbf{Pl}(0,7,0,30,1,0)_{4970}$$

$$\ell_{29} = \begin{bmatrix} 1 & \eta^{23} & \eta^{30} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{625743} = \begin{bmatrix} 1 & 15 & 18 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{625743} = \mathbf{Pl}(0,18,0,15,1,0)_{4036}$$

$$\ell_{30} = \begin{bmatrix} 1 & \eta^{21} & \eta^{28} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{770552} = \begin{bmatrix} 1 & 24 & 22 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{770552} = \mathbf{Pl}(0,22,0,24,1,0)_{4607}$$

$$\ell_{31} = \begin{bmatrix} 1 & \eta^{18} & \eta^{25} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{849827} = \begin{bmatrix} 1 & 3 & 25 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{849827} = \mathbf{Pl}(0,25,0,3,1,0)_{3287}$$

Rank of lines: (1083424, 2113, 691277, 599318, 1010491, 433369, 789578, 226197, 392146, 695505, 517929, 994636, 707132, 123668, 850884, 772666, 1006263, 1061227, 747298, 886822, 338239, 854055, 209285, 827630, 731443, 956584, 200829, 220912, 269534, 625743, 770552, 849827)
Rank of points on Klein quadric: (1, 3105, 3912, 4476, 4803, 4660, 3726, 4402, 4218, 4164, 3655, 3858, 4857, 4336, 3350, 4733, 4551, 3797, 3221, 3477, 5035, 3539, 3394, 3979, 4291, 3605, 4905, 4087, 4970, 4036, 4607, 3287)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

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

Single Points

The surface has 1024 single points:
Too many to print.

Points on surface but on no line

The surface has 0 points not on any line:
The points on the surface but not on lines are:

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	27	28	29	30	31
0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 1 intersects

Line	ℓ_0	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 2 intersects

Line	ℓ_0	ℓ_1	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 3 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 4 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 5 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 6 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 7 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 8 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 9 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 10 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 11 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 12 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 13 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 14 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 15 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 16 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 17 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 18 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 19 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{20}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 20 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{21}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 21 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{22}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 22 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 23 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 24 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3

Line 25 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

Line 26 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

Line 27 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

Line 28 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

Line 29 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

Line 30 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

Line 31 intersects

Line	ℓ_0	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5	ℓ_6	ℓ_7	ℓ_8	ℓ_9	ℓ_{10}	ℓ_{11}	ℓ_{12}	ℓ_{13}	ℓ_{14}	ℓ_{15}	ℓ_{16}	ℓ_{17}	ℓ_{18}	ℓ_{19}	ℓ_{20}	ℓ_{21}	ℓ
in point	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	P_3	$P_$

The surface has 1025 points:
Too many to print.