Rank-65843 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^2X_1 + X_0^2X_2 + X_1^2X_2 + X_0X_1X_2 = 0$$

(0, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1142981669

General information

Number of lines	34
Number of points	1089
Number of singular points	33
Number of Eckardt points	0
Number of double points	0
Number of single points	1088
Number of points off lines	0
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^{34}
Type of lines on points	34, 1^{1088}

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 34 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1056} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1056} = \mathbf{Pl}(0,0,0,0,1,0)_{1089}$$

$$\ell_1 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082400} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082400} = \mathbf{Pl}(0,0,0,1,0,0)_{65}$$

$$\ell_2 = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1083424} = \mathbf{Pl}(0,1,0,0,0,0)_{1}$$

$$\ell_3 = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{35937} = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{35937} = \mathbf{Pl}(0,1,0,1,1,0)_{3137}$$

$$\ell_4 = \begin{bmatrix} 1 & \eta^{29} & \eta^{11} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{247337} = \begin{bmatrix} 1 & 9 & 7 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{247337} = \mathbf{Pl}(0,7,0,9,1,0)_{3647}$$

$$\ell_5 = \begin{bmatrix} 1 & \eta^{3} & \eta^{16} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{922760} = \begin{bmatrix} 1 & 8 & 27 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{922760} = \mathbf{Pl}(0,27,0,8,1,0)_{3604}$$

$$\ell_6 = \begin{bmatrix} 1 & \eta^{6} & \eta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{79274} = \begin{bmatrix} 1 & 10 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{79274} = \mathbf{Pl}(0,2,0,10,1,0)_{3705}$$

$$\ell_7 = \begin{bmatrix} 1 & \eta^{27} & \eta^{22} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{722987} = \begin{bmatrix} 1 & 11 & 21 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{722987} = \mathbf{Pl}(0,21,0,11,1,0)_{3787}$$

$$\ell_8 = \begin{bmatrix} 1 & \eta & \eta^{21} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{814946} = \begin{bmatrix} 1 & 2 & 24 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{814946} = \mathbf{Pl}(0,24,0,2,1,0)_{3223}$$

$$\ell_9 = \begin{bmatrix} 1 & \eta^{18} & \eta^{7} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{680707} = \begin{bmatrix} 1 & 3 & 20 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{680707} = \mathbf{Pl}(0,20,0,3,1,0)_{3282}$$

$$\ell_{10} = \begin{bmatrix} 1 & \eta^{7} & \eta^{4} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{563380} = \begin{bmatrix} 1 & 20 & 16 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{563380} = \mathbf{Pl}(0,16,0,20,1,0)_{4349}$$

$$\ell_{11} = \begin{bmatrix} 1 & \eta^{22} & \eta^{19} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{226197} = \begin{bmatrix} 1 & 21 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{226197} = \mathbf{Pl}(0,6,0,21,1,0)_{4402}$$

$$\ell_{12} = \begin{bmatrix} 1 & \eta^{14} & \eta^{8} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{471421} = \begin{bmatrix} 1 & 29 & 13 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{471421} = \mathbf{Pl}(0,13,0,29,1,0)_{4913}$$

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

$$\ell_{14} = \begin{bmatrix} 1 & \eta^{15} & \eta^{26} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{811775} = \begin{bmatrix} 1 & 31 & 23 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{811775} = \mathbf{Pl}(0,23,0,31,1,0)_{5049}$$

$$\ell_{15} = \begin{bmatrix} 1 & \eta^{24} & \eta^{4} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{573950} = \begin{bmatrix} 1 & 30 & 16 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{573950} = \mathbf{Pl}(0,16,0,30,1,0)_{4979}$$

$$\ell_{16} = \left[\begin{array}{cccc} 1 & \eta^{26} & \eta^{14} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{1006263} = \left[\begin{array}{cccc} 1 & 23 & 29 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{1006263} = \mathbf{Pl}(0,29,0,23,1,0)_{4551}$$

$$\ell_{17} = \left[\begin{array}{cccc} 1 & \eta^{28} & \eta^{16} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{937558} = \left[\begin{array}{cccc} 1 & 22 & 27 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{937558} = \mathbf{Pl}(0,27,0,22,1,0)_{4486}$$

$$\ell_{18} = \left[\begin{array}{cccc} 1 & \eta^{23} & \eta^{13} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{963983} = \left[\begin{array}{cccc} 1 & 15 & 28 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{963983} = \mathbf{Pl}(0,28,0,15,1,0)_{4046}$$

$$\ell_{19} = \left[\begin{array}{cccc} 1 & \eta^{12} & \eta^{2} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{151150} = \left[\begin{array}{cccc} 1 & 14 & 4 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{151150} = \mathbf{Pl}(0,4,0,14,1,0)_{3959}$$

$$\ell_{20} = \left[\begin{array}{cccc} 1 & \eta^{19} & \eta^{2} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{142694} = \left[\begin{array}{cccc} 1 & 6 & 4 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{142694} = \mathbf{Pl}(0,4,0,6,1,0)_{3455}$$

$$\ell_{21} = \left[\begin{array}{cccc} 1 & \eta^{11} & \eta^{25} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{854055} = \left[\begin{array}{cccc} 1 & 7 & 25 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{854055} = \mathbf{Pl}(0,25,0,7,1,0)_{3539}$$

$$\ell_{22} = \left[\begin{array}{cccc} 1 & \eta^{2} & \eta^{11} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{242052} = \left[\begin{array}{cccc} 1 & 4 & 7 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{242052} = \mathbf{Pl}(0,7,0,4,1,0)_{3332}$$

$$\ell_{23} = \left[\begin{array}{cccc} 1 & \eta^{5} & \eta^{14} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{987237} = \left[\begin{array}{cccc} 1 & 5 & 29 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{987237} = \mathbf{Pl}(0,29,0,5,1,0)_{3417}$$

$$\ell_{24} = \left[\begin{array}{cccc} 1 & \eta^{8} & \eta^{13} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{961869} = \left[\begin{array}{cccc} 1 & 13 & 28 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{961869} = \mathbf{Pl}(0,28,0,13,1,0)_{3920}$$

$$\ell_{25} = \left[\begin{array}{cccc} 1 & \eta^{20} & \eta^{25} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{859340} = \left[\begin{array}{cccc} 1 & 12 & 25 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{859340} = \mathbf{Pl}(0,25,0,12,1,0)_{3854}$$

$$\ell_{26} = \left[\begin{array}{cccc} 1 & \eta^{16} & \eta^{26} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{807547} = \left[\begin{array}{cccc} 1 & 27 & 23 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{807547} = \mathbf{Pl}(0,23,0,27,1,0)_{4797}$$

$$\ell_{27} = \left[\begin{array}{cccc} 1 & \eta^{9} & \eta^{19} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{231482} = \left[\begin{array}{cccc} 1 & 26 & 6 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{231482} = \mathbf{Pl}(0,6,0,26,1,0)_{4717}$$

$$\ell_{28} = \left[\begin{array}{cccc} 1 & \eta^{17} & \eta^{8} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{460851} = \left[\begin{array}{cccc} 1 & 19 & 13 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{460851} = \mathbf{Pl}(0,13,0,19,1,0)_{4283}$$

$$\ell_{29} = \left[\begin{array}{cccc} 1 & \eta^{30} & \eta^{21} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{831858} = \left[\begin{array}{cccc} 1 & 18 & 24 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{831858} = \mathbf{Pl}(0,24,0,18,1,0)_{4231}$$

$$\ell_{30} = \left[\begin{array}{cccc} 1 & \eta^{10} & \eta^{28} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{763153} = \left[\begin{array}{cccc} 1 & 17 & 22 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{763153} = \mathbf{Pl}(0,22,0,17,1,0)_{4166}$$

$$\ell_{31} = \left[\begin{array}{cccc} 1 & \eta^{4} & \eta^{22} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{728272} = \left[\begin{array}{cccc} 1 & 16 & 21 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{728272} = \mathbf{Pl}(0,21,0,16,1,0)_{4102}$$

$$\ell_{32} = \left[\begin{array}{cccc} 1 & \eta^{21} & \eta^{28} & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{770552} = \left[\begin{array}{cccc} 1 & 24 & 22 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{770552} = \mathbf{Pl}(0,22,0,24,1,0)_{4607}$$

$$\ell_{33} = \left[\begin{array}{cccc} 1 & \eta^{25} & \eta & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{95129} = \left[\begin{array}{cccc} 1 & 25 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]_{95129} = \mathbf{Pl}(0,2,0,25,1,0)_{4650}$$

Rank of lines: (1056, 1082400, 1083424, 35937, 247337, 922760, 79274, 722987, 814946, 680707, 563380, 226197, 471421, 707132, 811775, 573950, 1006263, 937558, 963983, 151150, 142694, 854055, 242052, 987237, 961869, 859340, 807547, 231482, 460851, 831858, 763153, 728272, 770552, 95129)
Rank of points on Klein quadric: (1089, 65, 1, 3137, 3647, 3604, 3705, 3787, 3223, 3282, 4349, 4402, 4913, 4857, 5049, 4979, 4551, 4486, 4046, 3959, 3455, 3539, 3332, 3417, 3920, 3854, 4797, 4717, 4283, 4231, 4166, 4102, 4607, 4650)

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 1088 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	32	33
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
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	1	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	1	1
32	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
33	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

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}	
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 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}	
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 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}	
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 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}	
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 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}	
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 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

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

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

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

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

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

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

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

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	$P_$

Line 32 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 33 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 1089 points:
Too many to print.