Rank-67243 over GF(32)

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The equation

The equation of the surface is :

$$X_3^3 + X_0^2X_2 + X_0X_1^2 + X_1^2X_3 + X_0X_2^2 + X_0X_1X_2 = 0$$

(0, 0, 0, 1, 0, 1, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1141965861

General information

Number of lines	2
Number of points	1089
Number of singular points	0
Number of Eckardt points	0
Number of double points	1
Number of single points	64
Number of points off lines	1024
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33^2
Type of lines on points	$2, 1^{64}, 0^{1024}$

Singular Points

The surface has 0 singular points:

The 2 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1082368} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1082368} = \mathbf{Pl}(0,0,0,0,0,1)_{34849}$$

$$\ell_1 = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1082401} = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1082401} = \mathbf{Pl}(0,1,0,0,0,1)_{34881}$$

Rank of lines: (1082368, 1082401)
Rank of points on Klein quadric: (34849, 34881)

Eckardt Points

The surface has 0 Eckardt points:

Double Points

The surface has 1 Double points:
The double points on the surface are:

$P_2 = (0,0,1,0) = \ell_0 \cap \ell_1$

Single Points

The surface has 64 single points:
The single points on the surface are:

0 : $P_1 = (0,1,0,0)$ lies on line ℓ_0
1 : $P_{67} = (0,1,1,0)$ lies on line ℓ_0
2 : $P_{99} = (0,2,1,0)$ lies on line ℓ_0
3 : $P_{131} = (0,3,1,0)$ lies on line ℓ_0
4 : $P_{163} = (0,4,1,0)$ lies on line ℓ_0
5 : $P_{195} = (0,5,1,0)$ lies on line ℓ_0
6 : $P_{227} = (0,6,1,0)$ lies on line ℓ_0
7 : $P_{259} = (0,7,1,0)$ lies on line ℓ_0
8 : $P_{291} = (0,8,1,0)$ lies on line ℓ_0
9 : $P_{323} = (0,9,1,0)$ lies on line ℓ_0
10 : $P_{355} = (0,10,1,0)$ lies on line ℓ_0
11 : $P_{387} = (0,11,1,0)$ lies on line ℓ_0
12 : $P_{419} = (0,12,1,0)$ lies on line ℓ_0
13 : $P_{451} = (0,13,1,0)$ lies on line ℓ_0
14 : $P_{483} = (0,14,1,0)$ lies on line ℓ_0
15 : $P_{515} = (0,15,1,0)$ lies on line ℓ_0
16 : $P_{547} = (0,16,1,0)$ lies on line ℓ_0
17 : $P_{579} = (0,17,1,0)$ lies on line ℓ_0
18 : $P_{611} = (0,18,1,0)$ lies on line ℓ_0
19 : $P_{643} = (0,19,1,0)$ lies on line ℓ_0
20 : $P_{675} = (0,20,1,0)$ lies on line ℓ_0
21 : $P_{707} = (0,21,1,0)$ lies on line ℓ_0
22 : $P_{739} = (0,22,1,0)$ lies on line ℓ_0
23 : $P_{771} = (0,23,1,0)$ lies on line ℓ_0
24 : $P_{803} = (0,24,1,0)$ lies on line ℓ_0
25 : $P_{835} = (0,25,1,0)$ lies on line ℓ_0
26 : $P_{867} = (0,26,1,0)$ lies on line ℓ_0
27 : $P_{899} = (0,27,1,0)$ lies on line ℓ_0
28 : $P_{931} = (0,28,1,0)$ lies on line ℓ_0
29 : $P_{963} = (0,29,1,0)$ lies on line ℓ_0
30 : $P_{995} = (0,30,1,0)$ lies on line ℓ_0
31 : $P_{1027} = (0,31,1,0)$ lies on line ℓ_0
32 : $P_{1090} = (0,1,0,1)$ lies on line ℓ_1
33 : $P_{2114} = (0,1,1,1)$ lies on line ℓ_1
34 : $P_{3137} = (0,1,2,1)$ lies on line ℓ_1
35 : $P_{4161} = (0,1,3,1)$ lies on line ℓ_1
36 : $P_{5185} = (0,1,4,1)$ lies on line ℓ_1
37 : $P_{6209} = (0,1,5,1)$ lies on line ℓ_1
38 : $P_{7233} = (0,1,6,1)$ lies on line ℓ_1
39 : $P_{8257} = (0,1,7,1)$ lies on line ℓ_1
40 : $P_{9281} = (0,1,8,1)$ lies on line ℓ_1
41 : $P_{10305} = (0,1,9,1)$ lies on line ℓ_1
42 : $P_{11329} = (0,1,10,1)$ lies on line ℓ_1
43 : $P_{12353} = (0,1,11,1)$ lies on line ℓ_1
44 : $P_{13377} = (0,1,12,1)$ lies on line ℓ_1
45 : $P_{14401} = (0,1,13,1)$ lies on line ℓ_1
46 : $P_{15425} = (0,1,14,1)$ lies on line ℓ_1
47 : $P_{16449} = (0,1,15,1)$ lies on line ℓ_1
48 : $P_{17473} = (0,1,16,1)$ lies on line ℓ_1
49 : $P_{18497} = (0,1,17,1)$ lies on line ℓ_1
50 : $P_{19521} = (0,1,18,1)$ lies on line ℓ_1
51 : $P_{20545} = (0,1,19,1)$ lies on line ℓ_1
52 : $P_{21569} = (0,1,20,1)$ lies on line ℓ_1
53 : $P_{22593} = (0,1,21,1)$ lies on line ℓ_1
54 : $P_{23617} = (0,1,22,1)$ lies on line ℓ_1
55 : $P_{24641} = (0,1,23,1)$ lies on line ℓ_1
56 : $P_{25665} = (0,1,24,1)$ lies on line ℓ_1
57 : $P_{26689} = (0,1,25,1)$ lies on line ℓ_1
58 : $P_{27713} = (0,1,26,1)$ lies on line ℓ_1
59 : $P_{28737} = (0,1,27,1)$ lies on line ℓ_1
60 : $P_{29761} = (0,1,28,1)$ lies on line ℓ_1
61 : $P_{30785} = (0,1,29,1)$ lies on line ℓ_1
62 : $P_{31809} = (0,1,30,1)$ lies on line ℓ_1
63 : $P_{32833} = (0,1,31,1)$ lies on line ℓ_1

The single points on the surface are:

Points on surface but on no line

The surface has 1024 points not on any line:
Too many to print.

Line Intersection Graph

	0	1
0	0	1
1	1	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line	ℓ_1
in point	P_2

Line 1 intersects

Line	ℓ_0
in point	P_2

The surface has 1089 points:
Too many to print.