Rank-74264 over GF(32)

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The equation

The equation of the surface is :

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

(1, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1109428262

General information

Number of lines	1
Number of points	1089
Number of singular points	0
Number of Eckardt points	0
Number of double points	0
Number of single points	33
Number of points off lines	1056
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33
Type of lines on points	1^{33}, 0^{1056}

Singular Points

The surface has 0 singular points:

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{1057} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}_{1057} = \mathbf{Pl}(1,0,0,0,0,1)_{34850}$$

Rank of lines: (1057)
Rank of points on Klein quadric: (34850)

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 33 single points:
The single points on the surface are:

0 : $P_1 = (0,1,0,0)$ lies on line ℓ_0
1 : $P_{36} = (1,0,1,0)$ lies on line ℓ_0
2 : $P_{68} = (1,1,1,0)$ lies on line ℓ_0
3 : $P_{100} = (1,2,1,0)$ lies on line ℓ_0
4 : $P_{132} = (1,3,1,0)$ lies on line ℓ_0
5 : $P_{164} = (1,4,1,0)$ lies on line ℓ_0
6 : $P_{196} = (1,5,1,0)$ lies on line ℓ_0
7 : $P_{228} = (1,6,1,0)$ lies on line ℓ_0
8 : $P_{260} = (1,7,1,0)$ lies on line ℓ_0
9 : $P_{292} = (1,8,1,0)$ lies on line ℓ_0
10 : $P_{324} = (1,9,1,0)$ lies on line ℓ_0
11 : $P_{356} = (1,10,1,0)$ lies on line ℓ_0
12 : $P_{388} = (1,11,1,0)$ lies on line ℓ_0
13 : $P_{420} = (1,12,1,0)$ lies on line ℓ_0
14 : $P_{452} = (1,13,1,0)$ lies on line ℓ_0
15 : $P_{484} = (1,14,1,0)$ lies on line ℓ_0
16 : $P_{516} = (1,15,1,0)$ lies on line ℓ_0
17 : $P_{548} = (1,16,1,0)$ lies on line ℓ_0
18 : $P_{580} = (1,17,1,0)$ lies on line ℓ_0
19 : $P_{612} = (1,18,1,0)$ lies on line ℓ_0
20 : $P_{644} = (1,19,1,0)$ lies on line ℓ_0
21 : $P_{676} = (1,20,1,0)$ lies on line ℓ_0
22 : $P_{708} = (1,21,1,0)$ lies on line ℓ_0
23 : $P_{740} = (1,22,1,0)$ lies on line ℓ_0
24 : $P_{772} = (1,23,1,0)$ lies on line ℓ_0
25 : $P_{804} = (1,24,1,0)$ lies on line ℓ_0
26 : $P_{836} = (1,25,1,0)$ lies on line ℓ_0
27 : $P_{868} = (1,26,1,0)$ lies on line ℓ_0
28 : $P_{900} = (1,27,1,0)$ lies on line ℓ_0
29 : $P_{932} = (1,28,1,0)$ lies on line ℓ_0
30 : $P_{964} = (1,29,1,0)$ lies on line ℓ_0
31 : $P_{996} = (1,30,1,0)$ lies on line ℓ_0
32 : $P_{1028} = (1,31,1,0)$ lies on line ℓ_0

The single points on the surface are:

Points on surface but on no line

The surface has 1056 points not on any line:
Too many to print.

Line Intersection Graph

	0
0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 1089 points:
Too many to print.