Rank-73753 over GF(32)

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The equation

The equation of the surface is :

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

(0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is 1109428293

General information

Number of lines	1
Number of points	1057
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	1024
Number of Hesse planes	0
Number of axes	0
Type of points on lines	33
Type of lines on points	1^{33}, 0^{1024}

Singular Points

The surface has 0 singular points:

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082433} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082433} = \mathbf{Pl}(0,1,0,1,0,0)_{97}$$

Rank of lines: (1082433)
Rank of points on Klein quadric: (97)

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 : $P_3 = (0,0,0,1)$ lies on line ℓ_0
1 : $P_{67} = (0,1,1,0)$ lies on line ℓ_0
2 : $P_{2114} = (0,1,1,1)$ lies on line ℓ_0
3 : $P_{3169} = (0,2,2,1)$ lies on line ℓ_0
4 : $P_{4225} = (0,3,3,1)$ lies on line ℓ_0
5 : $P_{5281} = (0,4,4,1)$ lies on line ℓ_0
6 : $P_{6337} = (0,5,5,1)$ lies on line ℓ_0
7 : $P_{7393} = (0,6,6,1)$ lies on line ℓ_0
8 : $P_{8449} = (0,7,7,1)$ lies on line ℓ_0
9 : $P_{9505} = (0,8,8,1)$ lies on line ℓ_0
10 : $P_{10561} = (0,9,9,1)$ lies on line ℓ_0
11 : $P_{11617} = (0,10,10,1)$ lies on line ℓ_0
12 : $P_{12673} = (0,11,11,1)$ lies on line ℓ_0
13 : $P_{13729} = (0,12,12,1)$ lies on line ℓ_0
14 : $P_{14785} = (0,13,13,1)$ lies on line ℓ_0
15 : $P_{15841} = (0,14,14,1)$ lies on line ℓ_0
16 : $P_{16897} = (0,15,15,1)$ lies on line ℓ_0
17 : $P_{17953} = (0,16,16,1)$ lies on line ℓ_0
18 : $P_{19009} = (0,17,17,1)$ lies on line ℓ_0
19 : $P_{20065} = (0,18,18,1)$ lies on line ℓ_0
20 : $P_{21121} = (0,19,19,1)$ lies on line ℓ_0
21 : $P_{22177} = (0,20,20,1)$ lies on line ℓ_0
22 : $P_{23233} = (0,21,21,1)$ lies on line ℓ_0
23 : $P_{24289} = (0,22,22,1)$ lies on line ℓ_0
24 : $P_{25345} = (0,23,23,1)$ lies on line ℓ_0
25 : $P_{26401} = (0,24,24,1)$ lies on line ℓ_0
26 : $P_{27457} = (0,25,25,1)$ lies on line ℓ_0
27 : $P_{28513} = (0,26,26,1)$ lies on line ℓ_0
28 : $P_{29569} = (0,27,27,1)$ lies on line ℓ_0
29 : $P_{30625} = (0,28,28,1)$ lies on line ℓ_0
30 : $P_{31681} = (0,29,29,1)$ lies on line ℓ_0
31 : $P_{32737} = (0,30,30,1)$ lies on line ℓ_0
32 : $P_{33793} = (0,31,31,1)$ lies on line ℓ_0

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
0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 1057 points:
Too many to print.