Rank-65554 over GF(32)

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The equation

The equation of the surface is :

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

(1, 1, 1, 1, 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 1108412486

General information

Number of lines	1
Number of points	1057
Number of singular points	1
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 1 singular points:

$0 : \ P_{68} = \mathbf{P}(1,1,1,0) = \mathbf{P}(1,1,1,0)$

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{1058} = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_{1058} = \mathbf{Pl}(1,0,1,0,0,1)_{34913}$$

Rank of lines: (1058)
Rank of points on Klein quadric: (34913)

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 : $P_5 = (1,1,0,0)$ lies on line ℓ_0
1 : $P_{36} = (1,0,1,0)$ lies on line ℓ_0
2 : $P_{67} = (0,1,1,0)$ lies on line ℓ_0
3 : $P_{102} = (3,2,1,0)$ lies on line ℓ_0
4 : $P_{133} = (2,3,1,0)$ lies on line ℓ_0
5 : $P_{168} = (5,4,1,0)$ lies on line ℓ_0
6 : $P_{199} = (4,5,1,0)$ lies on line ℓ_0
7 : $P_{234} = (7,6,1,0)$ lies on line ℓ_0
8 : $P_{265} = (6,7,1,0)$ lies on line ℓ_0
9 : $P_{300} = (9,8,1,0)$ lies on line ℓ_0
10 : $P_{331} = (8,9,1,0)$ lies on line ℓ_0
11 : $P_{366} = (11,10,1,0)$ lies on line ℓ_0
12 : $P_{397} = (10,11,1,0)$ lies on line ℓ_0
13 : $P_{432} = (13,12,1,0)$ lies on line ℓ_0
14 : $P_{463} = (12,13,1,0)$ lies on line ℓ_0
15 : $P_{498} = (15,14,1,0)$ lies on line ℓ_0
16 : $P_{529} = (14,15,1,0)$ lies on line ℓ_0
17 : $P_{564} = (17,16,1,0)$ lies on line ℓ_0
18 : $P_{595} = (16,17,1,0)$ lies on line ℓ_0
19 : $P_{630} = (19,18,1,0)$ lies on line ℓ_0
20 : $P_{661} = (18,19,1,0)$ lies on line ℓ_0
21 : $P_{696} = (21,20,1,0)$ lies on line ℓ_0
22 : $P_{727} = (20,21,1,0)$ lies on line ℓ_0
23 : $P_{762} = (23,22,1,0)$ lies on line ℓ_0
24 : $P_{793} = (22,23,1,0)$ lies on line ℓ_0
25 : $P_{828} = (25,24,1,0)$ lies on line ℓ_0
26 : $P_{859} = (24,25,1,0)$ lies on line ℓ_0
27 : $P_{894} = (27,26,1,0)$ lies on line ℓ_0
28 : $P_{925} = (26,27,1,0)$ lies on line ℓ_0
29 : $P_{960} = (29,28,1,0)$ lies on line ℓ_0
30 : $P_{991} = (28,29,1,0)$ lies on line ℓ_0
31 : $P_{1026} = (31,30,1,0)$ lies on line ℓ_0
32 : $P_{1057} = (30,31,1,0)$ lies on line ℓ_0

The single points on the surface are:

Points on surface but on no line

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

Line Intersection Graph

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 1057 points:
Too many to print.