Rank-487 over GF(32)

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The equation

The equation of the surface is :

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

(0, 0, 1, 1, 1, 0, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
The point rank of the equation over GF(32) is -2111764435

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:

$$\ell_0 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2082} = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}_{2082} = \mathbf{Pl}(0, 0, 1, 1, 1, 1)_{70562}$$

Rank of lines: (2082)
Rank of points on Klein quadric: (70562)

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:

$0:$ $P_4 = (1,1,1,1)$ lies on line ℓ_0

$1:$ $P_5 = (1,1,0,0)$ lies on line ℓ_0

$2:$ $P_{2082} = (0,0,1,1)$ lies on line ℓ_0

$3:$ $P_{2147} = (2,2,1,1)$ lies on line ℓ_0

$4:$ $P_{2180} = (3,3,1,1)$ lies on line ℓ_0

$5:$ $P_{2213} = (4,4,1,1)$ lies on line ℓ_0

$6:$ $P_{2246} = (5,5,1,1)$ lies on line ℓ_0

$7:$ $P_{2279} = (6,6,1,1)$ lies on line ℓ_0

$8:$ $P_{2312} = (7,7,1,1)$ lies on line ℓ_0

$9:$ $P_{2345} = (8,8,1,1)$ lies on line ℓ_0

$10:$ $P_{2378} = (9,9,1,1)$ lies on line ℓ_0

$11:$ $P_{2411} = (10,10,1,1)$ lies on line ℓ_0

$12:$ $P_{2444} = (11,11,1,1)$ lies on line ℓ_0

$13:$ $P_{2477} = (12,12,1,1)$ lies on line ℓ_0

$14:$ $P_{2510} = (13,13,1,1)$ lies on line ℓ_0

$15:$ $P_{2543} = (14,14,1,1)$ lies on line ℓ_0

$16:$ $P_{2576} = (15,15,1,1)$ lies on line ℓ_0

$17:$ $P_{2609} = (16,16,1,1)$ lies on line ℓ_0

$18:$ $P_{2642} = (17,17,1,1)$ lies on line ℓ_0

$19:$ $P_{2675} = (18,18,1,1)$ lies on line ℓ_0

$20:$ $P_{2708} = (19,19,1,1)$ lies on line ℓ_0

$21:$ $P_{2741} = (20,20,1,1)$ lies on line ℓ_0

$22:$ $P_{2774} = (21,21,1,1)$ lies on line ℓ_0

$23:$ $P_{2807} = (22,22,1,1)$ lies on line ℓ_0

$24:$ $P_{2840} = (23,23,1,1)$ lies on line ℓ_0

$25:$ $P_{2873} = (24,24,1,1)$ lies on line ℓ_0

$26:$ $P_{2906} = (25,25,1,1)$ lies on line ℓ_0

$27:$ $P_{2939} = (26,26,1,1)$ lies on line ℓ_0

$28:$ $P_{2972} = (27,27,1,1)$ lies on line ℓ_0

$29:$ $P_{3005} = (28,28,1,1)$ lies on line ℓ_0

$30:$ $P_{3038} = (29,29,1,1)$ lies on line ℓ_0

$31:$ $P_{3071} = (30,30,1,1)$ lies on line ℓ_0

$32:$ $P_{3104} = (31,31,1,1)$ 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.