Rank-65735 over GF(32)

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The equation

The equation of the surface is :

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

(0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(32) is -2112845787

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:

$0 : P_3 = \mathbf{P}(0,0,0,1) = \mathbf{P}(0,0,0,1)$

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082400} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1082400} = \mathbf{Pl}(0,0,0,1,0,0)_{65}$$

Rank of lines: (1082400)
Rank of points on Klein quadric: (65)

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
$1 : P_3 = (0,0,0,1)$ lies on line ℓ_0
$2 : P_{1090} = (0,1,0,1)$ lies on line ℓ_0
$3 : P_{1122} = (0,2,0,1)$ lies on line ℓ_0
$4 : P_{1154} = (0,3,0,1)$ lies on line ℓ_0
$5 : P_{1186} = (0,4,0,1)$ lies on line ℓ_0
$6 : P_{1218} = (0,5,0,1)$ lies on line ℓ_0
$7 : P_{1250} = (0,6,0,1)$ lies on line ℓ_0
$8 : P_{1282} = (0,7,0,1)$ lies on line ℓ_0
$9 : P_{1314} = (0,8,0,1)$ lies on line ℓ_0
$10 : P_{1346} = (0,9,0,1)$ lies on line ℓ_0
$11 : P_{1378} = (0,10,0,1)$ lies on line ℓ_0
$12 : P_{1410} = (0,11,0,1)$ lies on line ℓ_0
$13 : P_{1442} = (0,12,0,1)$ lies on line ℓ_0
$14 : P_{1474} = (0,13,0,1)$ lies on line ℓ_0
$15 : P_{1506} = (0,14,0,1)$ lies on line ℓ_0
$16 : P_{1538} = (0,15,0,1)$ lies on line ℓ_0

$17 : P_{1570} = (0,16,0,1)$ lies on line ℓ_0
$18 : P_{1602} = (0,17,0,1)$ lies on line ℓ_0
$19 : P_{1634} = (0,18,0,1)$ lies on line ℓ_0
$20 : P_{1666} = (0,19,0,1)$ lies on line ℓ_0
$21 : P_{1698} = (0,20,0,1)$ lies on line ℓ_0
$22 : P_{1730} = (0,21,0,1)$ lies on line ℓ_0
$23 : P_{1762} = (0,22,0,1)$ lies on line ℓ_0
$24 : P_{1794} = (0,23,0,1)$ lies on line ℓ_0
$25 : P_{1826} = (0,24,0,1)$ lies on line ℓ_0
$26 : P_{1858} = (0,25,0,1)$ lies on line ℓ_0
$27 : P_{1890} = (0,26,0,1)$ lies on line ℓ_0
$28 : P_{1922} = (0,27,0,1)$ lies on line ℓ_0
$29 : P_{1954} = (0,28,0,1)$ lies on line ℓ_0
$30 : P_{1986} = (0,29,0,1)$ lies on line ℓ_0
$31 : P_{2018} = (0,30,0,1)$ lies on line ℓ_0
$32 : P_{2050} = (0,31,0,1)$ 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

$$\begin{array}{c|c} & 0 \\ \hline 0 & 0 \end{array}$$

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 1057 points:
Too many to print.