Rank-65874 over GF(2)

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The equation

The equation of the surface is :

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

(1, 1, 1, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(2) is 65874

General information

Number of lines	1
Number of points	7
Number of singular points	0
Number of Eckardt points	0
Number of double points	0
Number of single points	3
Number of points off lines	4
Number of Hesse planes	0
Number of axes	0
Type of points on lines	3
Type of lines on points	1^3, 0^4

Singular Points

The surface has 0 singular points:

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{24} = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}_{24} = \mathbf{Pl}(1,0,1,1,1,1)_{33}$$

Rank of lines: (24)
Rank of points on Klein quadric: (33)

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

$0:\ P_5 = (1,1,0,0)$ lies on line ℓ_0
$1:\ P_{13} = (1,0,1,1)$ lies on line ℓ_0
$2:\ P_{14} = (0,1,1,1)$ lies on line ℓ_0

The single points on the surface are:

Points on surface but on no line

The surface has 4 points not on any line:
The points on the surface but not on lines are:

$0:\ P_6 = (1,0,1,0)$
$1:\ P_{10} = (0,1,0,1)$
$2:\ P_{11} = (1,1,0,1)$
$3:\ P_{12} = (0,0,1,1)$

Line Intersection Graph

	0
0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 7 points:
The points on the surface are:

$0:\ P_5 = (1,1,0,0)$
$1:\ P_6 = (1,0,1,0)$
$2:\ P_{10} = (0,1,0,1)$
$3:\ P_{11} = (1,1,0,1)$
$4:\ P_{12} = (0,0,1,1)$
$5:\ P_{13} = (1,0,1,1)$
$6:\ P_{14} = (0,1,1,1)$