Rank-67150 over GF(4)

January 15, 2021

The equation

The equation of the surface is :

$$X_0^3 + X_1^3 + X_3^3 + X_0^2X_3 + X_1^2X_3 + X_0X_2^2 + X_0X_1X_2 = 0$$

(1, 1, 0, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(4) is 1432970654

General information

Number of lines	0
Number of points	25
Number of singular points	0
Number of Eckardt points	0
Number of double points	0
Number of single points	0
Number of points off lines	25
Number of Hesse planes	0
Number of axes	0
Type of points on lines	
Type of lines on points	0^{25}

Singular Points

The surface has 0 singular points:

The 0 Lines

The lines and their Pluecker coordinates are:
Rank of lines: ( )
Rank of points on Klein quadric: ( )

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

The single points on the surface are:

Points on surface but on no line

The surface has 25 points not on any line:
The points on the surface but not on lines are:

$0: P_2 = (0,0,1,0)$
$1: P_5 = (1,1,0,0)$
$2: P_6 = (2,1,0,0)$
$3: P_7 = (3,1,0,0)$
$4: P_8 = (1,0,1,0)$
$5: P_{12} = (1,1,1,0)$
$6: P_{13} = (2,1,1,0)$
$7: P_{14} = (3,1,1,0)$
$8: P_{33} = (3,2,0,1)$
$9: P_{36} = (2,3,0,1)$
$10: P_{39} = (1,0,1,1)$
$11: P_{46} = (1,2,1,1)$
$12: P_{47} = (2,2,1,1)$
$13: P_{50} = (1,3,1,1)$
$14: P_{52} = (3,3,1,1)$
$15: P_{56} = (3,0,2,1)$
$16: P_{58} = (1,1,2,1)$
$17: P_{64} = (3,2,2,1)$
$18: P_{66} = (1,3,2,1)$
$19: P_{68} = (3,3,2,1)$
$20: P_{71} = (2,0,3,1)$
$21: P_{74} = (1,1,3,1)$
$22: P_{78} = (1,2,3,1)$
$23: P_{79} = (2,2,3,1)$
$24: P_{83} = (2,3,3,1)$

Line Intersection Graph

Neighbor sets in the line intersection graph:
The surface has 25 points:
The points on the surface are:

$0: P_2 = (0,0,1,0)$
$1: P_5 = (1,1,0,0)$
$2: P_6 = (2,1,0,0)$
$3: P_7 = (3,1,0,0)$
$4: P_8 = (1,0,1,0)$
$5: P_{12} = (1,1,1,0)$
$6: P_{13} = (2,1,1,0)$
$7: P_{14} = (3,1,1,0)$
$8: P_{33} = (3,2,0,1)$
$9: P_{36} = (2,3,0,1)$
$10: P_{39} = (1,0,1,1)$
$11: P_{46} = (1,2,1,1)$
$12: P_{47} = (2,2,1,1)$
$13: P_{50} = (1,3,1,1)$
$14: P_{52} = (3,3,1,1)$

15 : $P_{56} = (3, 0, 2, 1)$
16 : $P_{58} = (1, 1, 2, 1)$
17 : $P_{64} = (3, 2, 2, 1)$
18 : $P_{66} = (1, 3, 2, 1)$
19 : $P_{68} = (3, 3, 2, 1)$
20 : $P_{71} = (2, 0, 3, 1)$
21 : $P_{74} = (1, 1, 3, 1)$
22 : $P_{78} = (1, 2, 3, 1)$
23 : $P_{79} = (2, 2, 3, 1)$
24 : $P_{83} = (2, 3, 3, 1)$