

Rank-74280 over GF(8)

January 15, 2021

The equation

The equation of the surface is :

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

(1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0)

The point rank of the equation over GF(8) is 1361384078

General information

Number of lines	0
Number of points	49
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	49
Number of Hesse planes	0
Number of axes	0
Type of points on lines	
Type of lines on points	0^{49}

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 49 points not on any line:

The points on the surface but not on lines are:

0 : $P_1 = (0, 1, 0, 0)$	25 : $P_{213} = (4, 1, 2, 1)$
1 : $P_3 = (0, 0, 0, 1)$	26 : $P_{225} = (0, 3, 2, 1)$
2 : $P_4 = (1, 1, 1, 1)$	27 : $P_{237} = (4, 4, 2, 1)$
3 : $P_{13} = (2, 0, 1, 0)$	28 : $P_{272} = (7, 0, 3, 1)$
4 : $P_{15} = (4, 0, 1, 0)$	29 : $P_{279} = (6, 1, 3, 1)$
5 : $P_{18} = (7, 0, 1, 0)$	30 : $P_{304} = (7, 4, 3, 1)$
6 : $P_{20} = (1, 1, 1, 0)$	31 : $P_{319} = (6, 6, 3, 1)$
7 : $P_{30} = (3, 2, 1, 0)$	32 : $P_{321} = (0, 7, 3, 1)$
8 : $P_{48} = (5, 4, 1, 0)$	33 : $P_{344} = (7, 1, 4, 1)$
9 : $P_{73} = (6, 7, 1, 0)$	34 : $P_{369} = (0, 5, 4, 1)$
10 : $P_{75} = (1, 0, 0, 1)$	35 : $P_{392} = (7, 7, 4, 1)$
11 : $P_{85} = (3, 1, 0, 1)$	36 : $P_{395} = (2, 0, 5, 1)$
12 : $P_{87} = (5, 1, 0, 1)$	37 : $P_{404} = (3, 1, 5, 1)$
13 : $P_{88} = (6, 1, 0, 1)$	38 : $P_{409} = (0, 2, 5, 1)$
14 : $P_{97} = (7, 2, 0, 1)$	39 : $P_{420} = (3, 3, 5, 1)$
15 : $P_{108} = (2, 4, 0, 1)$	40 : $P_{451} = (2, 7, 5, 1)$
16 : $P_{134} = (4, 7, 0, 1)$	41 : $P_{461} = (4, 0, 6, 1)$
17 : $P_{139} = (1, 0, 1, 1)$	42 : $P_{470} = (5, 1, 6, 1)$
18 : $P_{146} = (0, 1, 1, 1)$	43 : $P_{477} = (4, 2, 6, 1)$
19 : $P_{160} = (7, 2, 1, 1)$	44 : $P_{489} = (0, 4, 6, 1)$
20 : $P_{165} = (4, 3, 1, 1)$	45 : $P_{502} = (5, 5, 6, 1)$
21 : $P_{171} = (2, 4, 1, 1)$	46 : $P_{531} = (2, 1, 7, 1)$
22 : $P_{184} = (7, 5, 1, 1)$	47 : $P_{539} = (2, 2, 7, 1)$
23 : $P_{187} = (2, 6, 1, 1)$	48 : $P_{569} = (0, 6, 7, 1)$
24 : $P_{197} = (4, 7, 1, 1)$	

Line Intersection Graph

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Neighbor sets in the line intersection graph:

The surface has 49 points:

The points on the surface are:

0 : $P_1 = (0, 1, 0, 0)$	17 : $P_{139} = (1, 0, 1, 1)$	34 : $P_{369} = (0, 5, 4, 1)$
1 : $P_3 = (0, 0, 0, 1)$	18 : $P_{146} = (0, 1, 1, 1)$	35 : $P_{392} = (7, 7, 4, 1)$
2 : $P_4 = (1, 1, 1, 1)$	19 : $P_{160} = (7, 2, 1, 1)$	36 : $P_{395} = (2, 0, 5, 1)$
3 : $P_{13} = (2, 0, 1, 0)$	20 : $P_{165} = (4, 3, 1, 1)$	37 : $P_{404} = (3, 1, 5, 1)$
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7 : $P_{30} = (3, 2, 1, 0)$	24 : $P_{197} = (4, 7, 1, 1)$	41 : $P_{461} = (4, 0, 6, 1)$
8 : $P_{48} = (5, 4, 1, 0)$	25 : $P_{213} = (4, 1, 2, 1)$	42 : $P_{470} = (5, 1, 6, 1)$
9 : $P_{73} = (6, 7, 1, 0)$	26 : $P_{225} = (0, 3, 2, 1)$	43 : $P_{477} = (4, 2, 6, 1)$
10 : $P_{75} = (1, 0, 0, 1)$	27 : $P_{237} = (4, 4, 2, 1)$	44 : $P_{489} = (0, 4, 6, 1)$
11 : $P_{85} = (3, 1, 0, 1)$	28 : $P_{272} = (7, 0, 3, 1)$	45 : $P_{502} = (5, 5, 6, 1)$
12 : $P_{87} = (5, 1, 0, 1)$	29 : $P_{279} = (6, 1, 3, 1)$	46 : $P_{531} = (2, 1, 7, 1)$
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16 : $P_{134} = (4, 7, 0, 1)$	33 : $P_{344} = (7, 1, 4, 1)$	