Rank-65887 over GF(8)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 0, 1, 1, 1, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0)
The point rank of the equation over GF(8) is 1244177549

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:

$0: P_0 = (1,0,0,0)$
$1: P_1 = (0,1,0,0)$
$2: P_4 = (1,1,1,1)$
$3: P_{19} = (0,1,1,0)$
$4: P_{20} = (1,1,1,0)$
$5: P_{75} = (1,0,0,1)$
$6: P_{92} = (2,2,0,1)$
$7: P_{103} = (5,3,0,1)$
$8: P_{110} = (4,4,0,1)$
$9: P_{120} = (6,5,0,1)$
$10: P_{125} = (3,6,0,1)$
$11: P_{137} = (7,7,0,1)$
$12: P_{138} = (0,0,1,1)$
$13: P_{156} = (3,2,1,1)$
$14: P_{159} = (6,2,1,1)$
$15: P_{172} = (3,4,1,1)$
$16: P_{174} = (5,4,1,1)$
$17: P_{198} = (5,7,1,1)$
$18: P_{199} = (6,7,1,1)$
$19: P_{203} = (2,0,2,1)$
$20: P_{212} = (3,1,2,1)$
$21: P_{252} = (3,6,2,1)$
$22: P_{255} = (6,6,2,1)$
$23: P_{257} = (0,7,2,1)$
$24: P_{263} = (6,7,2,1)$
$25: P_{271} = (6,0,3,1)$
$26: P_{273} = (0,1,3,1)$
$27: P_{324} = (3,7,3,1)$
$28: P_{327} = (6,7,3,1)$
$29: P_{333} = (4,0,4,1)$
$30: P_{342} = (5,1,4,1)$
$31: P_{345} = (0,2,4,1)$
$32: P_{348} = (3,2,4,1)$
$33: P_{356} = (3,3,4,1)$
$34: P_{358} = (5,3,4,1)$
$35: P_{396} = (3,0,5,1)$
$36: P_{401} = (0,1,5,1)$
$37: P_{412} = (3,2,5,1)$
$38: P_{414} = (5,2,5,1)$
$39: P_{462} = (5,0,6,1)$
$40: P_{465} = (0,1,6,1)$
$41: P_{494} = (5,4,6,1)$
$42: P_{495} = (6,4,6,1)$
$43: P_{528} = (7,0,7,1)$
$44: P_{535} = (6,1,7,1)$
$45: P_{553} = (0,4,7,1)$
$46: P_{558} = (5,4,7,1)$
$47: P_{566} = (5,5,7,1)$
$48: P_{567} = (6,5,7,1)$

Line Intersection Graph

Neighbor sets in the line intersection graph:
The surface has 49 points:
The points on the surface are:

0 : $P_0 = (1, 0, 0, 0)$
1 : $P_1 = (0, 1, 0, 0)$
2 : $P_4 = (1, 1, 1, 1)$
3 : $P_{19} = (0, 1, 1, 0)$
4 : $P_{20} = (1, 1, 1, 0)$
5 : $P_{75} = (1, 0, 0, 1)$
6 : $P_{92} = (2, 2, 0, 1)$
7 : $P_{103} = (5, 3, 0, 1)$
8 : $P_{110} = (4, 4, 0, 1)$
9 : $P_{120} = (6, 5, 0, 1)$
10 : $P_{125} = (3, 6, 0, 1)$
11 : $P_{137} = (7, 7, 0, 1)$
12 : $P_{138} = (0, 0, 1, 1)$
13 : $P_{156} = (3, 2, 1, 1)$
14 : $P_{159} = (6, 2, 1, 1)$
15 : $P_{172} = (3, 4, 1, 1)$
16 : $P_{174} = (5, 4, 1, 1)$
17 : $P_{198} = (5, 7, 1, 1)$
18 : $P_{199} = (6, 7, 1, 1)$
19 : $P_{203} = (2, 0, 2, 1)$
20 : $P_{212} = (3, 1, 2, 1)$
21 : $P_{252} = (3, 6, 2, 1)$
22 : $P_{255} = (6, 6, 2, 1)$
23 : $P_{257} = (0, 7, 2, 1)$
24 : $P_{263} = (6, 7, 2, 1)$
25 : $P_{271} = (6, 0, 3, 1)$
26 : $P_{273} = (0, 1, 3, 1)$
27 : $P_{324} = (3, 7, 3, 1)$
28 : $P_{327} = (6, 7, 3, 1)$
29 : $P_{333} = (4, 0, 4, 1)$
30 : $P_{342} = (5, 1, 4, 1)$
31 : $P_{345} = (0, 2, 4, 1)$
32 : $P_{348} = (3, 2, 4, 1)$
33 : $P_{356} = (3, 3, 4, 1)$
34 : $P_{358} = (5, 3, 4, 1)$
35 : $P_{396} = (3, 0, 5, 1)$
36 : $P_{401} = (0, 1, 5, 1)$
37 : $P_{412} = (3, 2, 5, 1)$
38 : $P_{414} = (5, 2, 5, 1)$
39 : $P_{462} = (5, 0, 6, 1)$
40 : $P_{465} = (0, 1, 6, 1)$
41 : $P_{494} = (5, 4, 6, 1)$
42 : $P_{495} = (6, 4, 6, 1)$
43 : $P_{528} = (7, 0, 7, 1)$
44 : $P_{535} = (6, 1, 7, 1)$
45 : $P_{553} = (0, 4, 7, 1)$
46 : $P_{558} = (5, 4, 7, 1)$
47 : $P_{566} = (5, 5, 7, 1)$
48 : $P_{567} = (6, 5, 7, 1)$