

# Rank-65887 over GF(8)

January 15, 2021

## The equation

The equation of the surface is :

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

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

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