

Rank-362 over GF(8)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(8) is 2663582

General information

Number of lines	0
Number of points	65
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	65
Number of Hesse planes	0
Number of axes	0
Type of points on lines	
Type of lines on points	0^{65}

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 65 points not on any line:

The points on the surface but not on lines are:

0 : $P_6 = (2, 1, 0, 0)$	27 : $P_{179} = (2, 5, 1, 1)$
1 : $P_8 = (4, 1, 0, 0)$	28 : $P_{189} = (4, 6, 1, 1)$
2 : $P_{11} = (7, 1, 0, 0)$	29 : $P_{207} = (6, 0, 2, 1)$
3 : $P_{12} = (1, 0, 1, 0)$	30 : $P_{215} = (6, 1, 2, 1)$
4 : $P_{21} = (2, 1, 1, 0)$	31 : $P_{219} = (2, 2, 2, 1)$
5 : $P_{23} = (4, 1, 1, 0)$	32 : $P_{231} = (6, 3, 2, 1)$
6 : $P_{26} = (7, 1, 1, 0)$	33 : $P_{244} = (3, 5, 2, 1)$
7 : $P_{27} = (0, 2, 1, 0)$	34 : $P_{261} = (4, 7, 2, 1)$
8 : $P_{29} = (2, 2, 1, 0)$	35 : $P_{274} = (1, 1, 3, 1)$
9 : $P_{43} = (0, 4, 1, 0)$	36 : $P_{290} = (1, 3, 3, 1)$
10 : $P_{47} = (4, 4, 1, 0)$	37 : $P_{305} = (0, 5, 3, 1)$
11 : $P_{67} = (0, 7, 1, 0)$	38 : $P_{309} = (4, 5, 3, 1)$
12 : $P_{74} = (7, 7, 1, 0)$	39 : $P_{318} = (5, 6, 3, 1)$
13 : $P_{76} = (2, 0, 0, 1)$	40 : $P_{324} = (3, 7, 3, 1)$
14 : $P_{78} = (4, 0, 0, 1)$	41 : $P_{332} = (3, 0, 4, 1)$
15 : $P_{81} = (7, 0, 0, 1)$	42 : $P_{340} = (3, 1, 4, 1)$
16 : $P_{82} = (0, 1, 0, 1)$	43 : $P_{352} = (7, 2, 4, 1)$
17 : $P_{92} = (2, 2, 0, 1)$	44 : $P_{365} = (4, 4, 4, 1)$
18 : $P_{99} = (1, 3, 0, 1)$	45 : $P_{372} = (3, 5, 4, 1)$
19 : $P_{110} = (4, 4, 0, 1)$	46 : $P_{382} = (5, 6, 4, 1)$
20 : $P_{115} = (1, 5, 0, 1)$	47 : $P_{402} = (1, 1, 5, 1)$
21 : $P_{123} = (1, 6, 0, 1)$	48 : $P_{414} = (5, 2, 5, 1)$
22 : $P_{137} = (7, 7, 0, 1)$	49 : $P_{423} = (6, 3, 5, 1)$
23 : $P_{138} = (0, 0, 1, 1)$	50 : $P_{434} = (1, 5, 5, 1)$
24 : $P_{139} = (1, 0, 1, 1)$	51 : $P_{441} = (0, 6, 5, 1)$
25 : $P_{146} = (0, 1, 1, 1)$	52 : $P_{448} = (7, 6, 5, 1)$
26 : $P_{168} = (7, 3, 1, 1)$	53 : $P_{466} = (1, 1, 6, 1)$

54 : $P_{481} = (0, 3, 6, 1)$
 55 : $P_{483} = (2, 3, 6, 1)$
 56 : $P_{495} = (6, 4, 6, 1)$
 57 : $P_{500} = (3, 5, 6, 1)$
 58 : $P_{506} = (1, 6, 6, 1)$
 59 : $P_{526} = (5, 0, 7, 1)$

60 : $P_{534} = (5, 1, 7, 1)$
 61 : $P_{551} = (6, 3, 7, 1)$
 62 : $P_{555} = (2, 4, 7, 1)$
 63 : $P_{574} = (5, 6, 7, 1)$
 64 : $P_{584} = (7, 7, 7, 1)$

Line Intersection Graph

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Neighbor sets in the line intersection graph:

The surface has 65 points:

The points on the surface are:

0 : $P_6 = (2, 1, 0, 0)$
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