

# Rank-65900 over GF(2)

January 15, 2021

## The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(2) is 65900

## General information

Number of lines	0
Number of points	7
Number of singular points	1
Number of Eckardt points	0
Number of double points	0
Number of single points	0
Number of points off lines	7
Number of Hesse planes	0
Number of axes	0
Type of points on lines	
Type of lines on points	$0^7$

## Singular Points

The surface has 1 singular points:

$$0 : P_2 = \mathbf{P}(0, 0, 1, 0) = \mathbf{P}(0, 0, 1, 0)$$

## 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 7 points not on any line:

The points on the surface but not on lines are:

$$0 : P_1 = (0, 1, 0, 0)$$

$$1 : P_2 = (0, 0, 1, 0)$$

$$2 : P_4 = (1, 1, 1, 1)$$

$$3 : P_6 = (1, 0, 1, 0)$$

$$4 : P_8 = (1, 1, 1, 0)$$

$$5 : P_{13} = (1, 0, 1, 1)$$

$$6 : P_{14} = (0, 1, 1, 1)$$

### Line Intersection Graph

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Neighbor sets in the line intersection graph:

The surface has 7 points:

The points on the surface are:

$$0 : P_1 = (0, 1, 0, 0)$$

$$1 : P_2 = (0, 0, 1, 0)$$

$$2 : P_4 = (1, 1, 1, 1)$$

$$3 : P_6 = (1, 0, 1, 0)$$

$$4 : P_8 = (1, 1, 1, 0)$$

$$5 : P_{13} = (1, 0, 1, 1)$$

$$6 : P_{14} = (0, 1, 1, 1)$$