

Rank-337 over GF(2)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(2) is 337

General information

| | |
|----------------------------|-------|
| Number of lines | 0 |
| Number of points | 5 |
| 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 | 5 |
| Number of Hesse planes | 0 |
| Number of axes | 0 |
| Type of points on lines | |
| Type of lines on points | 0^5 |

Singular Points

The surface has 1 singular points:

$$0 : P_3 = \mathbf{P}(0, 0, 0, 1) = \mathbf{P}(0, 0, 0, 1)$$

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 5 points not on any line:

The points on the surface but not on lines are:

$$0 : P_0 = (1, 0, 0, 0)$$

$$1 : P_3 = (0, 0, 0, 1)$$

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

$$3 : P_{11} = (1, 1, 0, 1)$$

$$4 : P_{13} = (1, 0, 1, 1)$$

Line Intersection Graph

┐

Neighbor sets in the line intersection graph:

The surface has 5 points:

The points on the surface are:

$$0 : P_0 = (1, 0, 0, 0)$$

$$1 : P_3 = (0, 0, 0, 1)$$

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

$$3 : P_{11} = (1, 1, 0, 1)$$

$$4 : P_{13} = (1, 0, 1, 1)$$