

Rank-46 over GF(2)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(2) is 46

General information

Number of lines	0
Number of points	7
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	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 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 7 points not on any line:

The points on the surface but not on lines are:

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

$$1 : P_7 = (0, 1, 1, 0)$$

$$2 : P_8 = (1, 1, 1, 0)$$

$$3 : P_9 = (1, 0, 0, 1)$$

$$4 : P_{10} = (0, 1, 0, 1)$$

$$5 : P_{11} = (1, 1, 0, 1)$$

$$6 : P_{12} = (0, 0, 1, 1)$$

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:

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

$$1 : P_7 = (0, 1, 1, 0)$$

$$2 : P_8 = (1, 1, 1, 0)$$

$$3 : P_9 = (1, 0, 0, 1)$$

$$4 : P_{10} = (0, 1, 0, 1)$$

$$5 : P_{11} = (1, 1, 0, 1)$$

$$6 : P_{12} = (0, 0, 1, 1)$$