

# Rank-69 over GF(64)

January 15, 2021

## The equation

The equation of the surface is :

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

( 1, 1, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 )  
The point rank of the equation over GF(64) is 33824913

## General information

|                            |                |
|----------------------------|----------------|
| Number of lines            | 65             |
| Number of points           | 4161           |
| Number of singular points  | 1              |
| Number of Eckardt points   | 0              |
| Number of double points    | 0              |
| Number of single points    | 4160           |
| Number of points off lines | 0              |
| Number of Hesse planes     | 0              |
| Number of axes             | 0              |
| Type of points on lines    | $65^{65}$      |
| Type of lines on points    | $65, 1^{4160}$ |

## Singular Points

The surface has 1 singular points:

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

## The 65 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & \epsilon^9 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{199727} = \begin{bmatrix} 1 & 47 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{199727} = \mathbf{Pl}(0, 0, 0, 47, 1, 0)_{18195}$$

$$\begin{aligned}
\ell_1 &= \begin{bmatrix} 1 & \epsilon^{18} & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{49931} = \begin{bmatrix} 1 & 11 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{49931} = \mathbf{Pl}(0, 0, 0, 11, 1, 0)_{13623} \\
\ell_2 &= \begin{bmatrix} 1 & \epsilon^{36} & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{153956} = \begin{bmatrix} 1 & 36 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{153956} = \mathbf{Pl}(0, 0, 0, 36, 1, 0)_{16798} \\
\ell_3 &= \begin{bmatrix} 1 & 0 & \epsilon^9 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{12520448} = \begin{bmatrix} 1 & 0 & 47 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{12520448} = \mathbf{Pl}(0, 47, 0, 0, 1, 0)_{4335} \\
\ell_4 &= \begin{bmatrix} 1 & 0 & \epsilon^{18} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2933504} = \begin{bmatrix} 1 & 0 & 11 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2933504} = \mathbf{Pl}(0, 11, 0, 0, 1, 0)_{4299} \\
\ell_5 &= \begin{bmatrix} 1 & 0 & \epsilon^{36} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9591104} = \begin{bmatrix} 1 & 0 & 36 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9591104} = \mathbf{Pl}(0, 36, 0, 0, 1, 0)_{4324} \\
\ell_6 &= \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17043585} = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17043585} = \mathbf{Pl}(0, 1, 0, 1, 0, 0)_{193} \\
\ell_7 &= \begin{bmatrix} 1 & \epsilon^6 & \epsilon^{11} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8396897} = \begin{bmatrix} 1 & 33 & 31 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8396897} = \mathbf{Pl}(0, 31, 0, 33, 1, 0)_{16511} \\
\ell_8 &= \begin{bmatrix} 1 & \epsilon^{12} & \epsilon^{22} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5321918} = \begin{bmatrix} 1 & 62 & 19 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5321918} = \mathbf{Pl}(0, 19, 0, 62, 1, 0)_{20182} \\
\ell_9 &= \begin{bmatrix} 1 & \epsilon^{11} & \epsilon^{35} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4926623} = \begin{bmatrix} 1 & 31 & 18 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4926623} = \mathbf{Pl}(0, 18, 0, 31, 1, 0)_{16244} \\
\ell_{10} &= \begin{bmatrix} 1 & \epsilon^{28} & \epsilon^{25} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15969917} = \begin{bmatrix} 1 & 61 & 59 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15969917} = \mathbf{Pl}(0, 59, 0, 61, 1, 0)_{20095} \\
\ell_{11} &= \begin{bmatrix} 1 & \epsilon^{37} & \epsilon^3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2305193} = \begin{bmatrix} 1 & 41 & 8 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2305193} = \mathbf{Pl}(0, 8, 0, 41, 1, 0)_{17504} \\
\ell_{12} &= \begin{bmatrix} 1 & 1 & \epsilon^9 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{12524609} = \begin{bmatrix} 1 & 1 & 47 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{12524609} = \mathbf{Pl}(0, 47, 0, 1, 1, 0)_{12463} \\
\ell_{13} &= \begin{bmatrix} 1 & \epsilon^{13} & \epsilon^{22} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5184605} = \begin{bmatrix} 1 & 29 & 19 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5184605} = \mathbf{Pl}(0, 19, 0, 29, 1, 0)_{15991} \\
\ell_{14} &= \begin{bmatrix} 1 & \epsilon^{41} & \epsilon^{50} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16098908} = \begin{bmatrix} 1 & 28 & 60 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16098908} = \mathbf{Pl}(0, 60, 0, 28, 1, 0)_{15905} \\
\ell_{15} &= \begin{bmatrix} 1 & \epsilon^{18} & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{316235} = \begin{bmatrix} 1 & 11 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{316235} = \mathbf{Pl}(0, 1, 0, 11, 1, 0)_{13687} \\
\ell_{16} &= \begin{bmatrix} 1 & \epsilon^{37} & \epsilon^{19} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{6033449} = \begin{bmatrix} 1 & 41 & 22 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{6033449} = \mathbf{Pl}(0, 22, 0, 41, 1, 0)_{17518} \\
\ell_{17} &= \begin{bmatrix} 1 & \epsilon^{44} & \epsilon^{26} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{6270626} = \begin{bmatrix} 1 & 34 & 23 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{6270626} = \mathbf{Pl}(0, 23, 0, 34, 1, 0)_{16630} \\
\ell_{18} &= \begin{bmatrix} 1 & \epsilon^{25} & \epsilon^{28} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16494203} = \begin{bmatrix} 1 & 59 & 61 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16494203} = \mathbf{Pl}(0, 61, 0, 59, 1, 0)_{19843} \\
\ell_{19} &= \begin{bmatrix} 1 & \epsilon^{25} & \epsilon^{48} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4244219} = \begin{bmatrix} 1 & 59 & 15 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4244219} = \mathbf{Pl}(0, 15, 0, 59, 1, 0)_{19797} \\
\ell_{20} &= \begin{bmatrix} 1 & \epsilon^7 & \epsilon^{22} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5209571} = \begin{bmatrix} 1 & 35 & 19 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5209571} = \mathbf{Pl}(0, 19, 0, 35, 1, 0)_{16753} \\
\ell_{21} &= \begin{bmatrix} 1 & \epsilon^{24} & \epsilon^{44} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9245741} = \begin{bmatrix} 1 & 45 & 34 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9245741} = \mathbf{Pl}(0, 34, 0, 45, 1, 0)_{18038}
\end{aligned}$$

$$\begin{aligned}
\ell_{22} &= \begin{bmatrix} 1 & \epsilon^{51} & \epsilon^{29} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{7298393} = \begin{bmatrix} 1 & 25 & 27 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{7298393} = \mathbf{Pl}(0, 27, 0, 25, 1, 0)_{15491} \\
\ell_{23} &= \begin{bmatrix} 1 & \epsilon^{22} & \epsilon^7 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9403859} = \begin{bmatrix} 1 & 19 & 35 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9403859} = \mathbf{Pl}(0, 35, 0, 19, 1, 0)_{14737} \\
\ell_{24} &= \begin{bmatrix} 1 & \epsilon^{58} & \epsilon^{39} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1880771} = \begin{bmatrix} 1 & 3 & 7 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1880771} = \mathbf{Pl}(0, 7, 0, 3, 1, 0)_{12677} \\
\ell_{25} &= \begin{bmatrix} 1 & \epsilon^{23} & \epsilon^{60} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3357926} = \begin{bmatrix} 1 & 38 & 12 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{3357926} = \mathbf{Pl}(0, 12, 0, 38, 1, 0)_{17127} \\
\ell_{26} &= \begin{bmatrix} 1 & \epsilon^{37} & \epsilon^{49} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8163881} = \begin{bmatrix} 1 & 41 & 30 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8163881} = \mathbf{Pl}(0, 30, 0, 41, 1, 0)_{17526} \\
\ell_{27} &= \begin{bmatrix} 1 & \epsilon^3 & \epsilon^{37} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{10955912} = \begin{bmatrix} 1 & 8 & 41 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{10955912} = \mathbf{Pl}(0, 41, 0, 8, 1, 0)_{13346} \\
\ell_{28} &= \begin{bmatrix} 1 & \epsilon^{29} & \epsilon^{51} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{6774107} = \begin{bmatrix} 1 & 27 & 25 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{6774107} = \mathbf{Pl}(0, 25, 0, 27, 1, 0)_{15743} \\
\ell_{29} &= \begin{bmatrix} 1 & \epsilon^{43} & \epsilon^{30} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{14455313} = \begin{bmatrix} 1 & 17 & 54 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{14455313} = \mathbf{Pl}(0, 54, 0, 17, 1, 0)_{14502} \\
\ell_{30} &= \begin{bmatrix} 1 & \epsilon^{57} & \epsilon^{46} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{11659121} = \begin{bmatrix} 1 & 49 & 43 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{11659121} = \mathbf{Pl}(0, 43, 0, 49, 1, 0)_{18555} \\
\ell_{31} &= \begin{bmatrix} 1 & \epsilon^{11} & \epsilon^6 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8921183} = \begin{bmatrix} 1 & 31 & 33 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8921183} = \mathbf{Pl}(0, 33, 0, 31, 1, 0)_{16259} \\
\ell_{32} &= \begin{bmatrix} 1 & \epsilon^{56} & \epsilon^{50} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16148840} = \begin{bmatrix} 1 & 40 & 60 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16148840} = \mathbf{Pl}(0, 60, 0, 40, 1, 0)_{17429} \\
\ell_{33} &= \begin{bmatrix} 1 & \epsilon^{39} & \epsilon^{58} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{832199} = \begin{bmatrix} 1 & 7 & 3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{832199} = \mathbf{Pl}(0, 3, 0, 7, 1, 0)_{13181} \\
\ell_{34} &= \begin{bmatrix} 1 & \epsilon^{36} & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{420260} = \begin{bmatrix} 1 & 36 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{420260} = \mathbf{Pl}(0, 1, 0, 36, 1, 0)_{16862} \\
\ell_{35} &= \begin{bmatrix} 1 & \epsilon^{25} & \epsilon^{52} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{13564859} = \begin{bmatrix} 1 & 59 & 50 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{13564859} = \mathbf{Pl}(0, 50, 0, 59, 1, 0)_{19832} \\
\ell_{36} &= \begin{bmatrix} 1 & \epsilon^{11} & \epsilon^{38} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{13714655} = \begin{bmatrix} 1 & 31 & 51 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{13714655} = \mathbf{Pl}(0, 51, 0, 31, 1, 0)_{16277} \\
\ell_{37} &= \begin{bmatrix} 1 & \epsilon^{26} & \epsilon^{44} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9154199} = \begin{bmatrix} 1 & 23 & 34 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9154199} = \mathbf{Pl}(0, 34, 0, 23, 1, 0)_{15244} \\
\ell_{38} &= \begin{bmatrix} 1 & \epsilon^{19} & \epsilon^{37} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{11014166} = \begin{bmatrix} 1 & 22 & 41 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{11014166} = \mathbf{Pl}(0, 41, 0, 22, 1, 0)_{15124} \\
\ell_{39} &= \begin{bmatrix} 1 & 1 & \epsilon^{18} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2937665} = \begin{bmatrix} 1 & 1 & 11 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{2937665} = \mathbf{Pl}(0, 11, 0, 1, 1, 0)_{12427} \\
\ell_{40} &= \begin{bmatrix} 1 & \epsilon^{48} & \epsilon^{25} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15778511} = \begin{bmatrix} 1 & 15 & 59 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15778511} = \mathbf{Pl}(0, 59, 0, 15, 1, 0)_{14253} \\
\ell_{41} &= \begin{bmatrix} 1 & \epsilon^{60} & \epsilon^{23} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{10173644} = \begin{bmatrix} 1 & 12 & 38 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{10173644} = \mathbf{Pl}(0, 38, 0, 12, 1, 0)_{13851} \\
\ell_{42} &= \begin{bmatrix} 1 & \epsilon^{33} & \epsilon^{50} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16198772} = \begin{bmatrix} 1 & 52 & 60 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16198772} = \mathbf{Pl}(0, 60, 0, 52, 1, 0)_{18953}
\end{aligned}$$

$$\begin{aligned}
\ell_{43} &= \begin{bmatrix} 1 & \epsilon^{44} & \epsilon^{24} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{12129314} = \begin{bmatrix} 1 & 34 & 45 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{12129314} = \mathbf{Pl}(0, 45, 0, 34, 1, 0)_{16652} \\
\ell_{44} &= \begin{bmatrix} 1 & \epsilon^{35} & \epsilon^{11} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8334482} = \begin{bmatrix} 1 & 18 & 31 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8334482} = \mathbf{Pl}(0, 31, 0, 18, 1, 0)_{14606} \\
\ell_{45} &= \begin{bmatrix} 1 & 1 & \epsilon^{36} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9595265} = \begin{bmatrix} 1 & 1 & 36 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9595265} = \mathbf{Pl}(0, 36, 0, 1, 1, 0)_{12452} \\
\ell_{46} &= \begin{bmatrix} 1 & \epsilon^{38} & \epsilon^{11} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8471795} = \begin{bmatrix} 1 & 51 & 31 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{8471795} = \mathbf{Pl}(0, 31, 0, 51, 1, 0)_{18797} \\
\ell_{47} &= \begin{bmatrix} 1 & \epsilon^{52} & \epsilon^{25} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15924146} = \begin{bmatrix} 1 & 50 & 59 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15924146} = \mathbf{Pl}(0, 59, 0, 50, 1, 0)_{18698} \\
\ell_{48} &= \begin{bmatrix} 1 & \epsilon^9 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{466031} = \begin{bmatrix} 1 & 47 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{466031} = \mathbf{Pl}(0, 1, 0, 47, 1, 0)_{18259} \\
\ell_{49} &= \begin{bmatrix} 1 & \epsilon^{50} & \epsilon^{41} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{7710332} = \begin{bmatrix} 1 & 60 & 28 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{7710332} = \mathbf{Pl}(0, 28, 0, 60, 1, 0)_{19937} \\
\ell_{50} &= \begin{bmatrix} 1 & \epsilon^{22} & \epsilon^{13} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{7806035} = \begin{bmatrix} 1 & 19 & 29 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{7806035} = \mathbf{Pl}(0, 29, 0, 19, 1, 0)_{14731} \\
\ell_{51} &= \begin{bmatrix} 1 & \epsilon^{50} & \epsilon^{56} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{10905980} = \begin{bmatrix} 1 & 60 & 40 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{10905980} = \mathbf{Pl}(0, 40, 0, 60, 1, 0)_{19949} \\
\ell_{52} &= \begin{bmatrix} 1 & \epsilon^{46} & \epsilon^{57} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{13231979} = \begin{bmatrix} 1 & 43 & 49 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{13231979} = \mathbf{Pl}(0, 49, 0, 43, 1, 0)_{17799} \\
\ell_{53} &= \begin{bmatrix} 1 & \epsilon^{53} & \epsilon^{15} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5617349} = \begin{bmatrix} 1 & 5 & 21 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{5617349} = \mathbf{Pl}(0, 21, 0, 5, 1, 0)_{12945} \\
\ell_{54} &= \begin{bmatrix} 1 & \epsilon^{14} & \epsilon^{44} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9299834} = \begin{bmatrix} 1 & 58 & 34 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{9299834} = \mathbf{Pl}(0, 34, 0, 58, 1, 0)_{19689} \\
\ell_{55} &= \begin{bmatrix} 1 & \epsilon^{50} & \epsilon^{33} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{14101628} = \begin{bmatrix} 1 & 60 & 52 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{14101628} = \mathbf{Pl}(0, 52, 0, 60, 1, 0)_{19961} \\
\ell_{56} &= \begin{bmatrix} 1 & \epsilon^{44} & \epsilon^{14} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15591266} = \begin{bmatrix} 1 & 34 & 58 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15591266} = \mathbf{Pl}(0, 58, 0, 34, 1, 0)_{16665} \\
\ell_{57} &= \begin{bmatrix} 0 & 1 & \epsilon^{21} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047225} = \begin{bmatrix} 0 & 1 & 57 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047225} = \mathbf{Pl}(0, 57, 0, 1, 0, 0)_{249} \\
\ell_{58} &= \begin{bmatrix} 1 & \epsilon^{21} & \epsilon^{42} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15154361} = \begin{bmatrix} 1 & 57 & 56 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15154361} = \mathbf{Pl}(0, 56, 0, 57, 1, 0)_{19584} \\
\ell_{59} &= \begin{bmatrix} 0 & 1 & \epsilon^{42} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047160} = \begin{bmatrix} 0 & 1 & 56 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{17047160} = \mathbf{Pl}(0, 56, 0, 1, 0, 0)_{248} \\
\ell_{60} &= \begin{bmatrix} 1 & \epsilon^{42} & \epsilon^{21} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15416504} = \begin{bmatrix} 1 & 56 & 57 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{15416504} = \mathbf{Pl}(0, 57, 0, 56, 1, 0)_{19458} \\
\ell_{61} &= \begin{bmatrix} 1 & \epsilon^{15} & \epsilon^{53} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1423061} = \begin{bmatrix} 1 & 21 & 5 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{1423061} = \mathbf{Pl}(0, 5, 0, 21, 1, 0)_{14961} \\
\ell_{62} &= \begin{bmatrix} 1 & \epsilon^{30} & \epsilon^{43} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4756022} = \begin{bmatrix} 1 & 54 & 17 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{4756022} = \mathbf{Pl}(0, 17, 0, 54, 1, 0)_{19164} \\
\ell_{63} &= \begin{bmatrix} 1 & \epsilon^{49} & \epsilon^{37} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{11047454} = \begin{bmatrix} 1 & 30 & 41 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{11047454} = \mathbf{Pl}(0, 41, 0, 30, 1, 0)_{16140}
\end{aligned}$$

$$\ell_{64} = \begin{bmatrix} 1 & \epsilon^{22} & \epsilon^{12} & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16594067} = \begin{bmatrix} 1 & 19 & 62 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}_{16594067} = \mathbf{PI}(0, 62, 0, 19, 1, 0)_{14764}$$

Rank of lines: ( 199727, 49931, 153956, 12520448, 2933504, 9591104, 17043585, 8396897, 5321918, 4926623, 15969917, 2305193, 12524609, 5184605, 16098908, 316235, 6033449, 6270626, 16494203, 4244219, 5209571, 9245741, 7298393, 9403859, 1880771, 3357926, 8163881, 10955912, 6774107, 14455313, 11659121, 8921183, 16148840, 832199, 420260, 13564859, 13714655, 9154199, 11014166, 2937665, 15778511, 10173644, 16198772, 12129314, 8334482, 9595265, 8471795, 15924146, 466031, 7710332, ...4756022, 11047454, 16594067 )

Rank of points on Klein quadric: ( 18195, 13623, 16798, 4335, 4299, 4324, 193, 16511, 20182, 16244, 20095, 17504, 12463, 15991, 15905, 13687, 17518, 16630, 19843, 19797, 16753, 18038, 15491, 14737, 12677, 17127, 17526, 13346, 15743, 14502, 18555, 16259, 17429, 13181, 16862, 19832, 16277, 15244, 15124, 12427, 14253, 13851, 18953, 16652, 14606, 12452, 18797, 18698, 18259, 19937, ...19164, 16140, 14764 )

### 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 4160 single points:

Too many to print.

### Points on surface but on no line

The surface has 0 points not on any line:

The points on the surface but not on lines are:

## Line Intersection Graph

|    | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25  | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |   |
|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 0  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 1  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 2  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 3  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 4  | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 5  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 6  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 7  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 8  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 9  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 17 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 31 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 32 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 33 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 34 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 35 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 36 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 37 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 38 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 |
| 39 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1</ |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |

Line 0 intersects

Line 1 intersects

Line 2 intersects

Line 3 intersects

Line 4 intersects

Line 5 intersects

Line 6 intersects

Line 7 intersects

Line 8 intersects

Line 9 intersects

Line 10 intersects

Line 11 intersects

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|      |          |          |          |          |          |          |          |          |          |          |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |        |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| Line | $\ell_0$ | $\ell_1$ | $\ell_2$ | $\ell_3$ | $\ell_4$ | $\ell_5$ | $\ell_6$ | $\ell_7$ | $\ell_8$ | $\ell_9$ | $\ell_{10}$ | $\ell_{11}$ | $\ell_{12}$ | $\ell_{13}$ | $\ell_{14}$ | $\ell_{15}$ | $\ell_{16}$ | $\ell_{17}$ | $\ell_{18}$ | $\ell_{19}$ | $\ell_{20}$ | $\ell_{21}$ | $\ell_{22}$ | $\ell_{23}$ | $\ell_{24}$ | $\ell_{25}$ | $\ell_{26}$ | $\ell_{27}$ | $\ell_{28}$ | $\ell_{29}$ | $\ell_{30}$ | $\ell_{31}$ | $\ell_{32}$ | $\ell_{33}$ | $\ell_{34}$ | $\ell_{35}$ | $\ell_{36}$ | $\ell_{37}$ | $\ell_{38}$ | $\ell_{39}$ | $\ell_{40}$ | $\ell_{41}$ | $\ell_{42}$ | $\ell_{43}$ | $\ell_{44}$ | $\ell_{45}$ | $\ell_{46}$ | $\ell_{47}$ | $\ell_{48}$ | $\ell_{49}$ | $\ell_{50}$ | $\ell_{51}$ | $\ell_{52}$ | $\ell_{53}$ | $\ell_{54}$ | $\ell_{55}$ | $\ell_{56}$ | $\ell_{57}$ | $\ell_{58}$ | $\ell_{59}$ | $\ell_{60}$ | $\ell_{61}$ | $\ell_{62}$ | $\ell_{63}$ | $\ell_{64}$ | $\ell_{65}$ | $\ell_{66}$ | $\ell_{67}$ | $\ell_{68}$ | $\ell_{69}$ | $\ell_{70}$ | $\ell_{71}$ | $\ell_{72}$ | $\ell_{73}$ | $\ell_{74}$ | $\ell_{75}$ | $\ell_{76}$ | $\ell_{77}$ | $\ell_{78}$ | $\ell_{79}$ | $\ell_{80}$ | $\ell_{81}$ | $\ell_{82}$ | $\ell_{83}$ | $\ell_{84}$ | $\ell_{85}$ | $\ell_{86}$ | $\ell_{87}$ | $\ell_{88}$ | $\ell_{89}$ | $\ell_{90}$ | $\ell_{91}$ | $\ell_{92}$ | $\ell_{93}$ | $\ell_{94}$ | $\ell_{95}$ | $\ell_{96}$ | $\ell_{97}$ | $\ell_{98}$ | $\ell_{99}$ | $\ell_{100}$ | $\ell_{101}$ | $\ell_{102}$ | $\ell_{103}$ | $\ell_{104}$ | $\ell_{105}$ | $\ell_{106}$ | $\ell_{107}$ | $\ell_{108}$ | $\ell_{109}$ | $\ell_{110}$ | $\ell_{111}$ | $\ell_{112}$ | $\ell_{113}$ | $\ell_{114}$ | $\ell_{115}$ | $\ell_{116}$ | $\ell_{117}$ | $\ell_{118}$ | $\ell_{119}$ | $\ell_{120}$ | $\ell_{121}$ | $\ell_{122}$ | $\ell_{123}$ | $\ell_{124}$ | $\ell_{125}$ | $\ell_{126}$ | $\ell_{127}$ | $\ell_{128}$ | $\ell_{129}$ | $\ell_{130}$ | $\ell_{131}$ | $\ell_{132}$ | $\ell_{133}$ | $\ell_{134}$ | $\ell_{135}$ | $\ell_{136}$ | $\ell_{137}$ | $\ell_{138}$ | $\ell_{139}$ | $\ell_{140}$ | $\ell_{141}$ | $\ell_{142}$ | $\ell_{143}$ | $\ell_{144}$ | $\ell_{145}$ | $\ell_{146}$ | $\ell_{147}$ | $\ell_{148}$ | $\ell_{149}$ | $\ell_{150}$ | $\ell_{151}$ | $\ell_{152}$ | $\ell_{153}$ | $\ell_{154}$ | $\ell_{155}$ | $\ell_{156}$ | $\ell_{157}$ | $\ell_{158}$ | $\ell_{159}$ | $\ell_{160}$ | $\ell_{161}$ | $\ell_{162}$ | $\ell_{163}$ | $\ell_{164}$ | $\ell_{165}$ | $\ell_{166}$ | $\ell_{167}$ | $\ell_{168}$ | $\ell_{169}$ | $\ell_{170}$ | $\ell_{171}$ | $\ell_{172}$ | $\ell_{173}$ | $\ell_{174}$ | $\ell_{175}$ | $\ell_{176}$ | $\ell_{177}$ | $\ell_{178}$ | $\ell_{179}$ | $\ell_{180}$ | $\ell_{181}$ | $\ell_{182}$ | $\ell_{183}$ | $\ell_{184}$ | $\ell_{185}$ | $\ell_{186}$ | $\ell_{187}$ | $\ell_{188}$ | $\ell_{189}$ | $\ell_{190}$ | $\ell_{191}$ | $\ell_{192}$ | $\ell_{193}$ | $\ell_{194}$ | $\ell_{195}$ | $\ell_{196}$ | $\ell_{197}$ | $\ell_{198}$ | $\ell_{199}$ | $\ell_{200}$ | $\ell_{201}$ | $\ell_{202}$ | $\ell_{203}$ | $\ell_{204}$ | $\ell_{205}$ | $\ell_{206}$ | $\ell_{207}$ | $\ell_{208}$ | $\ell_{209}$ | $\ell_{210}$ | $\ell_{211}$ | $\ell_{212}$ | $\ell_{213}$ | $\ell_{214}$ | $\ell_{215}$ | $\ell_{216}$ | $\ell_{217}$ | $\ell_{218}$ | $\ell_{219}$ | $\ell_{220}$ | $\ell_{221}$ | $\ell_{222}$ | $\ell_{223}$ | $\ell_{224}$ | $\ell_{225}$ | $\ell_{226}$ | $\ell_{227}$ | $\ell_{228}$ | $\ell_{229}$ | $\ell_{230}$ | $\ell_{231}$ | $\ell_{232}$ | $\ell_{233}$ | $\ell_{234}$ | $\ell_{235}$ | $\ell_{236}$ | $\ell_{237}$ | $\ell_{238}$ | $\ell_{239}$ | $\ell_{240}$ | $\ell_{241}$ | $\ell_{242}$ | $\ell_{243}$ | $\ell_{244}$ | $\ell_{245}$ | $\ell_{246}$ | $\ell_{247}$ | $\ell_{248}$ | $\ell_{249}$ | $\ell_{250}$ | $\ell_{251}$ | $\ell_{252}$ | $\ell_{253}$ | $\ell_{254}$ | $\ell_{255}$ | $\ell_{256}$ | $\ell_{257}$ | $\ell_{258}$ | $\ell_{259}$ | $\ell_{260}$ | $\ell_{261}$ | $\ell_{262}$ | $\ell_{263}$ | $\ell_{264}$ | $\ell_{265}$ | $\ell_{266}$ | $\ell_{267}$ | $\ell_{268}$ | $\ell_{269}$ | $\ell_{270}$ | $\ell_{271}$ | $\ell_{272}$ | $\ell_{273}$ | $\ell_{274}$ | $\ell_{275}$ | $\ell_{276}$ | $\ell_{277}$ | $\ell_{278}$ | $\ell_{279}$ | $\ell_{280}$ | $\ell_{281}$ | $\ell_{282}$ | $\ell_{283}$ | $\ell_{284}$ | $\ell_{285}$ | $\ell_{286}$ | $\ell_{287}$ | $\ell_{288}$ | $\ell_{289}$ | $\ell_{290}$ | $\ell_{291}$ | $\ell_{292}$ | $\ell_{293}$ | $\ell_{294}$ | $\ell_{295}$ | $\ell_{296}$ | $\ell_{297}$ | $\ell_{298}$ | $\ell$ |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

Line 64 intersects

|          |          |          |          |          |          |          |          |          |          |          |             |             |             |             |             |             |             |             |             |             |             |             |             |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Line     | $\ell_0$ | $\ell_1$ | $\ell_2$ | $\ell_3$ | $\ell_4$ | $\ell_5$ | $\ell_6$ | $\ell_7$ | $\ell_8$ | $\ell_9$ | $\ell_{10}$ | $\ell_{11}$ | $\ell_{12}$ | $\ell_{13}$ | $\ell_{14}$ | $\ell_{15}$ | $\ell_{16}$ | $\ell_{17}$ | $\ell_{18}$ | $\ell_{19}$ | $\ell_{20}$ | $\ell_{21}$ | $\ell_{22}$ |
| in point | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$    | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       | $P_3$       |

The surface has 4161 points:  
Too many to print.