

Rank-66763 over GF(32)

January 15, 2021

The equation

The equation of the surface is :

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

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

The point rank of the equation over GF(32) is -2112814043

General information

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|----------------------------|-------------------|
| Number of lines | 1 |
| Number of points | 1025 |
| Number of singular points | 1 |
| Number of Eckardt points | 0 |
| Number of double points | 0 |
| Number of single points | 33 |
| Number of points off lines | 992 |
| Number of Hesse planes | 0 |
| Number of axes | 0 |
| Type of points on lines | 33 |
| Type of lines on points | $1^{33}, 0^{992}$ |

Singular Points

The surface has 1 singular points:

$$0 : P_{1059} = \mathbf{P}(1, 0, 0, 1) = \mathbf{P}(1, 0, 0, 1)$$

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1082368} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{1082368} = \mathbf{Pl}(0, 0, 0, 0, 0, 1)_{34849}$$

Rank of lines: (1082368)
Rank of points on Klein quadric: (34849)

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 33 single points:
The single points on the surface are:

- | | |
|------------------------------------------------------|-------------------------------------------------------|
| 0 : $P_1 = (0, 1, 0, 0)$ lies on line ℓ_0 | 17 : $P_{547} = (0, 16, 1, 0)$ lies on line ℓ_0 |
| 1 : $P_2 = (0, 0, 1, 0)$ lies on line ℓ_0 | 18 : $P_{579} = (0, 17, 1, 0)$ lies on line ℓ_0 |
| 2 : $P_{67} = (0, 1, 1, 0)$ lies on line ℓ_0 | 19 : $P_{611} = (0, 18, 1, 0)$ lies on line ℓ_0 |
| 3 : $P_{99} = (0, 2, 1, 0)$ lies on line ℓ_0 | 20 : $P_{643} = (0, 19, 1, 0)$ lies on line ℓ_0 |
| 4 : $P_{131} = (0, 3, 1, 0)$ lies on line ℓ_0 | 21 : $P_{675} = (0, 20, 1, 0)$ lies on line ℓ_0 |
| 5 : $P_{163} = (0, 4, 1, 0)$ lies on line ℓ_0 | 22 : $P_{707} = (0, 21, 1, 0)$ lies on line ℓ_0 |
| 6 : $P_{195} = (0, 5, 1, 0)$ lies on line ℓ_0 | 23 : $P_{739} = (0, 22, 1, 0)$ lies on line ℓ_0 |
| 7 : $P_{227} = (0, 6, 1, 0)$ lies on line ℓ_0 | 24 : $P_{771} = (0, 23, 1, 0)$ lies on line ℓ_0 |
| 8 : $P_{259} = (0, 7, 1, 0)$ lies on line ℓ_0 | 25 : $P_{803} = (0, 24, 1, 0)$ lies on line ℓ_0 |
| 9 : $P_{291} = (0, 8, 1, 0)$ lies on line ℓ_0 | 26 : $P_{835} = (0, 25, 1, 0)$ lies on line ℓ_0 |
| 10 : $P_{323} = (0, 9, 1, 0)$ lies on line ℓ_0 | 27 : $P_{867} = (0, 26, 1, 0)$ lies on line ℓ_0 |
| 11 : $P_{355} = (0, 10, 1, 0)$ lies on line ℓ_0 | 28 : $P_{899} = (0, 27, 1, 0)$ lies on line ℓ_0 |
| 12 : $P_{387} = (0, 11, 1, 0)$ lies on line ℓ_0 | 29 : $P_{931} = (0, 28, 1, 0)$ lies on line ℓ_0 |
| 13 : $P_{419} = (0, 12, 1, 0)$ lies on line ℓ_0 | 30 : $P_{963} = (0, 29, 1, 0)$ lies on line ℓ_0 |
| 14 : $P_{451} = (0, 13, 1, 0)$ lies on line ℓ_0 | 31 : $P_{995} = (0, 30, 1, 0)$ lies on line ℓ_0 |
| 15 : $P_{483} = (0, 14, 1, 0)$ lies on line ℓ_0 | 32 : $P_{1027} = (0, 31, 1, 0)$ lies on line ℓ_0 |
| 16 : $P_{515} = (0, 15, 1, 0)$ lies on line ℓ_0 | |

The single points on the surface are:

Points on surface but on no line

The surface has 992 points not on any line:
The points on the surface but not on lines are:

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| 0 : $P_0 = (1, 0, 0, 0)$ | 6 : $P_{1334} = (20, 8, 0, 1)$ |
| 1 : $P_{1059} = (1, 0, 0, 1)$ | 7 : $P_{1344} = (30, 8, 0, 1)$ |
| 2 : $P_{1149} = (27, 2, 0, 1)$ | 8 : $P_{1353} = (7, 9, 0, 1)$ |
| 3 : $P_{1153} = (31, 2, 0, 1)$ | 9 : $P_{1358} = (12, 9, 0, 1)$ |
| 4 : $P_{1188} = (2, 4, 0, 1)$ | 10 : $P_{1397} = (19, 10, 0, 1)$ |
| 5 : $P_{1204} = (18, 4, 0, 1)$ | 11 : $P_{1407} = (29, 10, 0, 1)$ |

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| 12 : $P_{1431} = (21, 11, 0, 1)$ | 66 : $P_{3734} = (21, 19, 2, 1)$ |
| 13 : $P_{1436} = (26, 11, 0, 1)$ | 67 : $P_{3739} = (26, 19, 2, 1)$ |
| 14 : $P_{1485} = (11, 13, 0, 1)$ | 68 : $P_{4020} = (19, 28, 2, 1)$ |
| 15 : $P_{1490} = (16, 13, 0, 1)$ | 69 : $P_{4030} = (29, 28, 2, 1)$ |
| 16 : $P_{1514} = (8, 14, 0, 1)$ | 70 : $P_{4037} = (4, 29, 2, 1)$ |
| 17 : $P_{1528} = (22, 14, 0, 1)$ | 71 : $P_{4042} = (9, 29, 2, 1)$ |
| 18 : $P_{1541} = (3, 15, 0, 1)$ | 72 : $P_{4084} = (19, 30, 2, 1)$ |
| 19 : $P_{1566} = (28, 15, 0, 1)$ | 73 : $P_{4094} = (29, 30, 2, 1)$ |
| 20 : $P_{1574} = (4, 16, 0, 1)$ | 74 : $P_{4101} = (4, 31, 2, 1)$ |
| 21 : $P_{1579} = (9, 16, 0, 1)$ | 75 : $P_{4106} = (9, 31, 2, 1)$ |
| 22 : $P_{1651} = (17, 18, 0, 1)$ | 76 : $P_{4300} = (11, 5, 3, 1)$ |
| 23 : $P_{1658} = (24, 18, 0, 1)$ | 77 : $P_{4305} = (16, 5, 3, 1)$ |
| 24 : $P_{1672} = (6, 19, 0, 1)$ | 78 : $P_{4332} = (11, 6, 3, 1)$ |
| 25 : $P_{1680} = (14, 19, 0, 1)$ | 79 : $P_{4337} = (16, 6, 3, 1)$ |
| 26 : $P_{1935} = (13, 27, 0, 1)$ | 80 : $P_{4520} = (7, 12, 3, 1)$ |
| 27 : $P_{1937} = (15, 27, 0, 1)$ | 81 : $P_{4525} = (12, 12, 3, 1)$ |
| 28 : $P_{2028} = (10, 30, 0, 1)$ | 82 : $P_{4562} = (17, 13, 3, 1)$ |
| 29 : $P_{2043} = (25, 30, 0, 1)$ | 83 : $P_{4569} = (24, 13, 3, 1)$ |
| 30 : $P_{2055} = (5, 31, 0, 1)$ | 84 : $P_{4594} = (17, 14, 3, 1)$ |
| 31 : $P_{2073} = (23, 31, 0, 1)$ | 85 : $P_{4601} = (24, 14, 3, 1)$ |
| 32 : $P_{2283} = (10, 6, 1, 1)$ | 86 : $P_{4616} = (7, 15, 3, 1)$ |
| 33 : $P_{2298} = (25, 6, 1, 1)$ | 87 : $P_{4621} = (12, 15, 3, 1)$ |
| 34 : $P_{2315} = (10, 7, 1, 1)$ | 88 : $P_{4676} = (3, 17, 3, 1)$ |
| 35 : $P_{2330} = (25, 7, 1, 1)$ | 89 : $P_{4701} = (28, 17, 3, 1)$ |
| 36 : $P_{2727} = (6, 20, 1, 1)$ | 90 : $P_{4708} = (3, 18, 3, 1)$ |
| 37 : $P_{2735} = (14, 20, 1, 1)$ | 91 : $P_{4733} = (28, 18, 3, 1)$ |
| 38 : $P_{2759} = (6, 21, 1, 1)$ | 92 : $P_{4918} = (21, 24, 3, 1)$ |
| 39 : $P_{2767} = (14, 21, 1, 1)$ | 93 : $P_{4923} = (26, 24, 3, 1)$ |
| 40 : $P_{2804} = (19, 22, 1, 1)$ | 94 : $P_{4933} = (4, 25, 3, 1)$ |
| 41 : $P_{2814} = (29, 22, 1, 1)$ | 95 : $P_{4938} = (9, 25, 3, 1)$ |
| 42 : $P_{2836} = (19, 23, 1, 1)$ | 96 : $P_{4965} = (4, 26, 3, 1)$ |
| 43 : $P_{2846} = (29, 23, 1, 1)$ | 97 : $P_{4970} = (9, 26, 3, 1)$ |
| 44 : $P_{2857} = (8, 24, 1, 1)$ | 98 : $P_{5014} = (21, 27, 3, 1)$ |
| 45 : $P_{2871} = (22, 24, 1, 1)$ | 99 : $P_{5019} = (26, 27, 3, 1)$ |
| 46 : $P_{2889} = (8, 25, 1, 1)$ | 100 : $P_{5035} = (10, 28, 3, 1)$ |
| 47 : $P_{2903} = (22, 25, 1, 1)$ | 101 : $P_{5050} = (25, 28, 3, 1)$ |
| 48 : $P_{2997} = (20, 28, 1, 1)$ | 102 : $P_{5131} = (10, 31, 3, 1)$ |
| 49 : $P_{3007} = (30, 28, 1, 1)$ | 103 : $P_{5146} = (25, 31, 3, 1)$ |
| 50 : $P_{3029} = (20, 29, 1, 1)$ | 104 : $P_{5155} = (2, 0, 4, 1)$ |
| 51 : $P_{3039} = (30, 29, 1, 1)$ | 105 : $P_{5171} = (18, 0, 4, 1)$ |
| 52 : $P_{3132} = (27, 0, 2, 1)$ | 106 : $P_{5283} = (2, 4, 4, 1)$ |
| 53 : $P_{3136} = (31, 0, 2, 1)$ | 107 : $P_{5299} = (18, 4, 4, 1)$ |
| 54 : $P_{3196} = (27, 2, 2, 1)$ | 108 : $P_{5412} = (3, 8, 4, 1)$ |
| 55 : $P_{3200} = (31, 2, 2, 1)$ | 109 : $P_{5437} = (28, 8, 4, 1)$ |
| 56 : $P_{3268} = (3, 5, 2, 1)$ | 110 : $P_{5483} = (10, 10, 4, 1)$ |
| 57 : $P_{3293} = (28, 5, 2, 1)$ | 111 : $P_{5498} = (25, 10, 4, 1)$ |
| 58 : $P_{3332} = (3, 7, 2, 1)$ | 112 : $P_{5540} = (3, 12, 4, 1)$ |
| 59 : $P_{3357} = (28, 7, 2, 1)$ | 113 : $P_{5565} = (28, 12, 4, 1)$ |
| 60 : $P_{3369} = (8, 8, 2, 1)$ | 114 : $P_{5611} = (10, 14, 4, 1)$ |
| 61 : $P_{3383} = (22, 8, 2, 1)$ | 115 : $P_{5626} = (25, 14, 4, 1)$ |
| 62 : $P_{3433} = (8, 10, 2, 1)$ | 116 : $P_{5702} = (5, 17, 4, 1)$ |
| 63 : $P_{3447} = (22, 10, 2, 1)$ | 117 : $P_{5720} = (23, 17, 4, 1)$ |
| 64 : $P_{3670} = (21, 17, 2, 1)$ | 118 : $P_{5740} = (11, 18, 4, 1)$ |
| 65 : $P_{3675} = (26, 17, 2, 1)$ | 119 : $P_{5745} = (16, 18, 4, 1)$ |

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| 120 : $P_{5769} = (8, 19, 4, 1)$ | 174 : $P_{7849} = (8, 20, 6, 1)$ |
| 121 : $P_{5783} = (22, 19, 4, 1)$ | 175 : $P_{7863} = (22, 20, 6, 1)$ |
| 122 : $P_{5830} = (5, 21, 4, 1)$ | 176 : $P_{7986} = (17, 24, 6, 1)$ |
| 123 : $P_{5848} = (23, 21, 4, 1)$ | 177 : $P_{7993} = (24, 24, 6, 1)$ |
| 124 : $P_{5868} = (11, 22, 4, 1)$ | 178 : $P_{8020} = (19, 25, 6, 1)$ |
| 125 : $P_{5873} = (16, 22, 4, 1)$ | 179 : $P_{8030} = (29, 25, 6, 1)$ |
| 126 : $P_{5897} = (8, 23, 4, 1)$ | 180 : $P_{8178} = (17, 30, 6, 1)$ |
| 127 : $P_{5911} = (22, 23, 4, 1)$ | 181 : $P_{8185} = (24, 30, 6, 1)$ |
| 128 : $P_{6244} = (3, 2, 5, 1)$ | 182 : $P_{8212} = (19, 31, 6, 1)$ |
| 129 : $P_{6269} = (28, 2, 5, 1)$ | 183 : $P_{8222} = (29, 31, 6, 1)$ |
| 130 : $P_{6284} = (11, 3, 5, 1)$ | 184 : $P_{8267} = (10, 1, 7, 1)$ |
| 131 : $P_{6289} = (16, 3, 5, 1)$ | 185 : $P_{8282} = (25, 1, 7, 1)$ |
| 132 : $P_{6380} = (11, 6, 5, 1)$ | 186 : $P_{8292} = (3, 2, 7, 1)$ |
| 133 : $P_{6385} = (16, 6, 5, 1)$ | 187 : $P_{8317} = (28, 2, 7, 1)$ |
| 134 : $P_{6404} = (3, 7, 5, 1)$ | 188 : $P_{8388} = (3, 5, 7, 1)$ |
| 135 : $P_{6429} = (28, 7, 5, 1)$ | 189 : $P_{8413} = (28, 5, 7, 1)$ |
| 136 : $P_{6470} = (5, 9, 5, 1)$ | 190 : $P_{8427} = (10, 6, 7, 1)$ |
| 137 : $P_{6488} = (23, 9, 5, 1)$ | 191 : $P_{8442} = (25, 6, 7, 1)$ |
| 138 : $P_{6566} = (5, 12, 5, 1)$ | 192 : $P_{8494} = (13, 8, 7, 1)$ |
| 139 : $P_{6584} = (23, 12, 5, 1)$ | 193 : $P_{8496} = (15, 8, 7, 1)$ |
| 140 : $P_{6734} = (13, 17, 5, 1)$ | 194 : $P_{8540} = (27, 9, 7, 1)$ |
| 141 : $P_{6736} = (15, 17, 5, 1)$ | 195 : $P_{8544} = (31, 9, 7, 1)$ |
| 142 : $P_{6759} = (6, 18, 5, 1)$ | 196 : $P_{8551} = (6, 10, 7, 1)$ |
| 143 : $P_{6767} = (14, 18, 5, 1)$ | 197 : $P_{8559} = (14, 10, 7, 1)$ |
| 144 : $P_{6830} = (13, 20, 5, 1)$ | 198 : $P_{8596} = (19, 11, 7, 1)$ |
| 145 : $P_{6832} = (15, 20, 5, 1)$ | 199 : $P_{8606} = (29, 11, 7, 1)$ |
| 146 : $P_{6919} = (6, 23, 5, 1)$ | 200 : $P_{8628} = (19, 12, 7, 1)$ |
| 147 : $P_{6927} = (14, 23, 5, 1)$ | 201 : $P_{8638} = (29, 12, 7, 1)$ |
| 148 : $P_{7030} = (21, 26, 5, 1)$ | 202 : $P_{8647} = (6, 13, 7, 1)$ |
| 149 : $P_{7035} = (26, 26, 5, 1)$ | 203 : $P_{8655} = (14, 13, 7, 1)$ |
| 150 : $P_{7048} = (7, 27, 5, 1)$ | 204 : $P_{8700} = (27, 14, 7, 1)$ |
| 151 : $P_{7053} = (12, 27, 5, 1)$ | 205 : $P_{8704} = (31, 14, 7, 1)$ |
| 152 : $P_{7144} = (7, 30, 5, 1)$ | 206 : $P_{8718} = (13, 15, 7, 1)$ |
| 153 : $P_{7149} = (12, 30, 5, 1)$ | 207 : $P_{8720} = (15, 15, 7, 1)$ |
| 154 : $P_{7190} = (21, 31, 5, 1)$ | 208 : $P_{8805} = (4, 18, 7, 1)$ |
| 155 : $P_{7195} = (26, 31, 5, 1)$ | 209 : $P_{8810} = (9, 18, 7, 1)$ |
| 156 : $P_{7243} = (10, 1, 6, 1)$ | 210 : $P_{8840} = (7, 19, 7, 1)$ |
| 157 : $P_{7258} = (25, 1, 6, 1)$ | 211 : $P_{8845} = (12, 19, 7, 1)$ |
| 158 : $P_{7308} = (11, 3, 6, 1)$ | 212 : $P_{8872} = (7, 20, 7, 1)$ |
| 159 : $P_{7313} = (16, 3, 6, 1)$ | 213 : $P_{8877} = (12, 20, 7, 1)$ |
| 160 : $P_{7372} = (11, 5, 6, 1)$ | 214 : $P_{8901} = (4, 21, 7, 1)$ |
| 161 : $P_{7377} = (16, 5, 6, 1)$ | 215 : $P_{8906} = (9, 21, 7, 1)$ |
| 162 : $P_{7435} = (10, 7, 6, 1)$ | 216 : $P_{8995} = (2, 24, 7, 1)$ |
| 163 : $P_{7450} = (25, 7, 6, 1)$ | 217 : $P_{9011} = (18, 24, 7, 1)$ |
| 164 : $P_{7464} = (7, 8, 6, 1)$ | 218 : $P_{9219} = (2, 31, 7, 1)$ |
| 165 : $P_{7469} = (12, 8, 6, 1)$ | 219 : $P_{9235} = (18, 31, 7, 1)$ |
| 166 : $P_{7580} = (27, 11, 6, 1)$ | 220 : $P_{9269} = (20, 0, 8, 1)$ |
| 167 : $P_{7584} = (31, 11, 6, 1)$ | 221 : $P_{9279} = (30, 0, 8, 1)$ |
| 168 : $P_{7644} = (27, 13, 6, 1)$ | 222 : $P_{9321} = (8, 2, 8, 1)$ |
| 169 : $P_{7648} = (31, 13, 6, 1)$ | 223 : $P_{9335} = (22, 2, 8, 1)$ |
| 170 : $P_{7656} = (7, 14, 6, 1)$ | 224 : $P_{9380} = (3, 4, 8, 1)$ |
| 171 : $P_{7661} = (12, 14, 6, 1)$ | 225 : $P_{9405} = (28, 4, 8, 1)$ |
| 172 : $P_{7785} = (8, 18, 6, 1)$ | 226 : $P_{9448} = (7, 6, 8, 1)$ |
| 173 : $P_{7799} = (22, 18, 6, 1)$ | 227 : $P_{9453} = (12, 6, 8, 1)$ |

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| 228 : $P_{9486} = (13, 7, 8, 1)$ | 282 : $P_{11061} = (20, 24, 9, 1)$ |
| 229 : $P_{9488} = (15, 7, 8, 1)$ | 283 : $P_{11071} = (30, 24, 9, 1)$ |
| 230 : $P_{9525} = (20, 8, 8, 1)$ | 284 : $P_{11086} = (13, 25, 9, 1)$ |
| 231 : $P_{9535} = (30, 8, 8, 1)$ | 285 : $P_{11088} = (15, 25, 9, 1)$ |
| 232 : $P_{9577} = (8, 10, 8, 1)$ | 286 : $P_{11180} = (11, 28, 9, 1)$ |
| 233 : $P_{9591} = (22, 10, 8, 1)$ | 287 : $P_{11185} = (16, 28, 9, 1)$ |
| 234 : $P_{9636} = (3, 12, 8, 1)$ | 288 : $P_{11211} = (10, 29, 9, 1)$ |
| 235 : $P_{9661} = (28, 12, 8, 1)$ | 289 : $P_{11226} = (25, 29, 9, 1)$ |
| 236 : $P_{9704} = (7, 14, 8, 1)$ | 290 : $P_{11237} = (4, 30, 9, 1)$ |
| 237 : $P_{9709} = (12, 14, 8, 1)$ | 291 : $P_{11242} = (9, 30, 9, 1)$ |
| 238 : $P_{9742} = (13, 15, 8, 1)$ | 292 : $P_{11316} = (19, 0, 10, 1)$ |
| 239 : $P_{9744} = (15, 15, 8, 1)$ | 293 : $P_{11326} = (29, 0, 10, 1)$ |
| 240 : $P_{9771} = (10, 16, 8, 1)$ | 294 : $P_{11369} = (8, 2, 10, 1)$ |
| 241 : $P_{9786} = (25, 16, 8, 1)$ | 295 : $P_{11383} = (22, 2, 10, 1)$ |
| 242 : $P_{9876} = (19, 19, 8, 1)$ | 296 : $P_{11435} = (10, 4, 10, 1)$ |
| 243 : $P_{9886} = (29, 19, 8, 1)$ | 297 : $P_{11450} = (25, 4, 10, 1)$ |
| 244 : $P_{9942} = (21, 21, 8, 1)$ | 298 : $P_{11527} = (6, 7, 10, 1)$ |
| 245 : $P_{9947} = (26, 21, 8, 1)$ | 299 : $P_{11535} = (14, 7, 10, 1)$ |
| 246 : $P_{9958} = (5, 22, 8, 1)$ | 300 : $P_{11561} = (8, 8, 10, 1)$ |
| 247 : $P_{9976} = (23, 22, 8, 1)$ | 301 : $P_{11575} = (22, 8, 10, 1)$ |
| 248 : $P_{9996} = (11, 23, 8, 1)$ | 302 : $P_{11636} = (19, 10, 10, 1)$ |
| 249 : $P_{10001} = (16, 23, 8, 1)$ | 303 : $P_{11646} = (29, 10, 10, 1)$ |
| 250 : $P_{10027} = (10, 24, 8, 1)$ | 304 : $P_{11719} = (6, 13, 10, 1)$ |
| 251 : $P_{10042} = (25, 24, 8, 1)$ | 305 : $P_{11727} = (14, 13, 10, 1)$ |
| 252 : $P_{10132} = (19, 27, 8, 1)$ | 306 : $P_{11755} = (10, 14, 10, 1)$ |
| 253 : $P_{10142} = (29, 27, 8, 1)$ | 307 : $P_{11770} = (25, 14, 10, 1)$ |
| 254 : $P_{10198} = (21, 29, 8, 1)$ | 308 : $P_{11814} = (5, 16, 10, 1)$ |
| 255 : $P_{10203} = (26, 29, 8, 1)$ | 309 : $P_{11832} = (23, 16, 10, 1)$ |
| 256 : $P_{10214} = (5, 30, 8, 1)$ | 310 : $P_{11886} = (13, 18, 10, 1)$ |
| 257 : $P_{10232} = (23, 30, 8, 1)$ | 311 : $P_{11888} = (15, 18, 10, 1)$ |
| 258 : $P_{10252} = (11, 31, 8, 1)$ | 312 : $P_{11922} = (17, 19, 10, 1)$ |
| 259 : $P_{10257} = (16, 31, 8, 1)$ | 313 : $P_{11929} = (24, 19, 10, 1)$ |
| 260 : $P_{10280} = (7, 0, 9, 1)$ | 314 : $P_{11958} = (21, 20, 10, 1)$ |
| 261 : $P_{10285} = (12, 0, 9, 1)$ | 315 : $P_{11963} = (26, 20, 10, 1)$ |
| 262 : $P_{10438} = (5, 5, 9, 1)$ | 316 : $P_{11996} = (27, 21, 10, 1)$ |
| 263 : $P_{10456} = (23, 5, 9, 1)$ | 317 : $P_{12000} = (31, 21, 10, 1)$ |
| 264 : $P_{10524} = (27, 7, 9, 1)$ | 318 : $P_{12004} = (3, 22, 10, 1)$ |
| 265 : $P_{10528} = (31, 7, 9, 1)$ | 319 : $P_{12029} = (28, 22, 10, 1)$ |
| 266 : $P_{10568} = (7, 9, 9, 1)$ | 320 : $P_{12078} = (13, 24, 10, 1)$ |
| 267 : $P_{10573} = (12, 9, 9, 1)$ | 321 : $P_{12080} = (15, 24, 10, 1)$ |
| 268 : $P_{10662} = (5, 12, 9, 1)$ | 322 : $P_{12114} = (17, 25, 10, 1)$ |
| 269 : $P_{10680} = (23, 12, 9, 1)$ | 323 : $P_{12121} = (24, 25, 10, 1)$ |
| 270 : $P_{10748} = (27, 14, 9, 1)$ | 324 : $P_{12134} = (5, 26, 10, 1)$ |
| 271 : $P_{10752} = (31, 14, 9, 1)$ | 325 : $P_{12152} = (23, 26, 10, 1)$ |
| 272 : $P_{10798} = (13, 16, 9, 1)$ | 326 : $P_{12196} = (3, 28, 10, 1)$ |
| 273 : $P_{10800} = (15, 16, 9, 1)$ | 327 : $P_{12221} = (28, 28, 10, 1)$ |
| 274 : $P_{10837} = (20, 17, 9, 1)$ | 328 : $P_{12278} = (21, 30, 10, 1)$ |
| 275 : $P_{10847} = (30, 17, 9, 1)$ | 329 : $P_{12283} = (26, 30, 10, 1)$ |
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 724 : $P_{25225} = (8, 19, 23, 1)$
 725 : $P_{25239} = (22, 19, 23, 1)$
 726 : $P_{25332} = (19, 22, 23, 1)$
 727 : $P_{25342} = (29, 22, 23, 1)$
 728 : $P_{25404} = (27, 24, 23, 1)$
 729 : $P_{25408} = (31, 24, 23, 1)$
 730 : $P_{25414} = (5, 25, 23, 1)$
 731 : $P_{25432} = (23, 25, 23, 1)$
 732 : $P_{25448} = (7, 26, 23, 1)$
 733 : $P_{25453} = (12, 26, 23, 1)$
 734 : $P_{25518} = (13, 28, 23, 1)$
 735 : $P_{25520} = (15, 28, 23, 1)$
 736 : $P_{25573} = (4, 30, 23, 1)$
 737 : $P_{25578} = (9, 30, 23, 1)$
 738 : $P_{25612} = (11, 31, 23, 1)$
 739 : $P_{25617} = (16, 31, 23, 1)$
 740 : $P_{25673} = (8, 1, 24, 1)$
 741 : $P_{25687} = (22, 1, 24, 1)$
 742 : $P_{25750} = (21, 3, 24, 1)$
 743 : $P_{25755} = (26, 3, 24, 1)$
 744 : $P_{25842} = (17, 6, 24, 1)$
 745 : $P_{25849} = (24, 6, 24, 1)$
 746 : $P_{25859} = (2, 7, 24, 1)$
 747 : $P_{25875} = (18, 7, 24, 1)$
 748 : $P_{25899} = (10, 8, 24, 1)$
 749 : $P_{25914} = (25, 8, 24, 1)$
 750 : $P_{25941} = (20, 9, 24, 1)$
 751 : $P_{25951} = (30, 9, 24, 1)$
 752 : $P_{25966} = (13, 10, 24, 1)$
 753 : $P_{25968} = (15, 10, 24, 1)$
 754 : $P_{25996} = (11, 11, 24, 1)$
 755 : $P_{26001} = (16, 11, 24, 1)$
 756 : $P_{26140} = (27, 15, 24, 1)$
 757 : $P_{26144} = (31, 15, 24, 1)$
 758 : $P_{26155} = (10, 16, 24, 1)$
 759 : $P_{26170} = (25, 16, 24, 1)$
 760 : $P_{26197} = (20, 17, 24, 1)$
 761 : $P_{26207} = (30, 17, 24, 1)$
 762 : $P_{26222} = (13, 18, 24, 1)$
 763 : $P_{26224} = (15, 18, 24, 1)$
 764 : $P_{26252} = (11, 19, 24, 1)$
 765 : $P_{26257} = (16, 19, 24, 1)$
 766 : $P_{26396} = (27, 23, 24, 1)$
 767 : $P_{26400} = (31, 23, 24, 1)$

768 : $P_{26441} = (8, 25, 24, 1)$
 769 : $P_{26455} = (22, 25, 24, 1)$
 770 : $P_{26518} = (21, 27, 24, 1)$
 771 : $P_{26523} = (26, 27, 24, 1)$
 772 : $P_{26610} = (17, 30, 24, 1)$
 773 : $P_{26617} = (24, 30, 24, 1)$
 774 : $P_{26627} = (2, 31, 24, 1)$
 775 : $P_{26643} = (18, 31, 24, 1)$
 776 : $P_{26697} = (8, 1, 25, 1)$
 777 : $P_{26711} = (22, 1, 25, 1)$
 778 : $P_{26757} = (4, 3, 25, 1)$
 779 : $P_{26762} = (9, 3, 25, 1)$
 780 : $P_{26868} = (19, 6, 25, 1)$
 781 : $P_{26878} = (29, 6, 25, 1)$
 782 : $P_{26958} = (13, 9, 25, 1)$
 783 : $P_{26960} = (15, 9, 25, 1)$
 784 : $P_{26994} = (17, 10, 25, 1)$
 785 : $P_{27001} = (24, 10, 25, 1)$
 786 : $P_{27110} = (5, 14, 25, 1)$
 787 : $P_{27128} = (23, 14, 25, 1)$
 788 : $P_{27157} = (20, 15, 25, 1)$
 789 : $P_{27167} = (30, 15, 25, 1)$
 790 : $P_{27182} = (13, 16, 25, 1)$
 791 : $P_{27184} = (15, 16, 25, 1)$
 792 : $P_{27282} = (17, 19, 25, 1)$
 793 : $P_{27289} = (24, 19, 25, 1)$
 794 : $P_{27381} = (20, 22, 25, 1)$
 795 : $P_{27391} = (30, 22, 25, 1)$
 796 : $P_{27398} = (5, 23, 25, 1)$
 797 : $P_{27416} = (23, 23, 25, 1)$
 798 : $P_{27433} = (8, 24, 25, 1)$
 799 : $P_{27447} = (22, 24, 25, 1)$
 800 : $P_{27493} = (4, 26, 25, 1)$
 801 : $P_{27498} = (9, 26, 25, 1)$
 802 : $P_{27668} = (19, 31, 25, 1)$
 803 : $P_{27678} = (29, 31, 25, 1)$
 804 : $P_{27781} = (4, 3, 26, 1)$
 805 : $P_{27786} = (9, 3, 26, 1)$
 806 : $P_{27862} = (21, 5, 26, 1)$
 807 : $P_{27867} = (26, 5, 26, 1)$
 808 : $P_{28006} = (5, 10, 26, 1)$
 809 : $P_{28024} = (23, 10, 26, 1)$
 810 : $P_{28050} = (17, 11, 26, 1)$
 811 : $P_{28057} = (24, 11, 26, 1)$
 812 : $P_{28067} = (2, 12, 26, 1)$
 813 : $P_{28083} = (18, 12, 26, 1)$
 814 : $P_{28104} = (7, 13, 26, 1)$
 815 : $P_{28109} = (12, 13, 26, 1)$
 816 : $P_{28169} = (8, 15, 26, 1)$
 817 : $P_{28183} = (22, 15, 26, 1)$
 818 : $P_{28198} = (5, 16, 26, 1)$
 819 : $P_{28216} = (23, 16, 26, 1)$
 820 : $P_{28242} = (17, 17, 26, 1)$
 821 : $P_{28249} = (24, 17, 26, 1)$

822 : $P_{28361} = (8, 21, 26, 1)$
 823 : $P_{28375} = (22, 21, 26, 1)$
 824 : $P_{28387} = (2, 22, 26, 1)$
 825 : $P_{28403} = (18, 22, 26, 1)$
 826 : $P_{28424} = (7, 23, 26, 1)$
 827 : $P_{28429} = (12, 23, 26, 1)$
 828 : $P_{28485} = (4, 25, 26, 1)$
 829 : $P_{28490} = (9, 25, 26, 1)$
 830 : $P_{28694} = (21, 31, 26, 1)$
 831 : $P_{28699} = (26, 31, 26, 1)$
 832 : $P_{28718} = (13, 0, 27, 1)$
 833 : $P_{28720} = (15, 0, 27, 1)$
 834 : $P_{28822} = (21, 3, 27, 1)$
 835 : $P_{28827} = (26, 3, 27, 1)$
 836 : $P_{28872} = (7, 5, 27, 1)$
 837 : $P_{28877} = (12, 5, 27, 1)$
 838 : $P_{28980} = (19, 8, 27, 1)$
 839 : $P_{28990} = (29, 8, 27, 1)$
 840 : $P_{29173} = (20, 14, 27, 1)$
 841 : $P_{29183} = (30, 14, 27, 1)$
 842 : $P_{29187} = (2, 15, 27, 1)$
 843 : $P_{29203} = (18, 15, 27, 1)$
 844 : $P_{29332} = (19, 19, 27, 1)$
 845 : $P_{29342} = (29, 19, 27, 1)$
 846 : $P_{29347} = (2, 20, 27, 1)$
 847 : $P_{29363} = (18, 20, 27, 1)$
 848 : $P_{29397} = (20, 21, 27, 1)$
 849 : $P_{29407} = (30, 21, 27, 1)$
 850 : $P_{29494} = (21, 24, 27, 1)$
 851 : $P_{29499} = (26, 24, 27, 1)$
 852 : $P_{29582} = (13, 27, 27, 1)$
 853 : $P_{29584} = (15, 27, 27, 1)$
 854 : $P_{29672} = (7, 30, 27, 1)$
 855 : $P_{29677} = (12, 30, 27, 1)$
 856 : $P_{29781} = (20, 1, 28, 1)$
 857 : $P_{29791} = (30, 1, 28, 1)$
 858 : $P_{29812} = (19, 2, 28, 1)$
 859 : $P_{29822} = (29, 2, 28, 1)$
 860 : $P_{29835} = (10, 3, 28, 1)$
 861 : $P_{29850} = (25, 3, 28, 1)$
 862 : $P_{30028} = (11, 9, 28, 1)$
 863 : $P_{30033} = (16, 9, 28, 1)$
 864 : $P_{30052} = (3, 10, 28, 1)$
 865 : $P_{30077} = (28, 10, 28, 1)$
 866 : $P_{30094} = (13, 11, 28, 1)$
 867 : $P_{30096} = (15, 11, 28, 1)$
 868 : $P_{30130} = (17, 12, 28, 1)$
 869 : $P_{30137} = (24, 12, 28, 1)$
 870 : $P_{30179} = (2, 14, 28, 1)$
 871 : $P_{30195} = (18, 14, 28, 1)$
 872 : $P_{30213} = (4, 15, 28, 1)$
 873 : $P_{30218} = (9, 15, 28, 1)$
 874 : $P_{30258} = (17, 16, 28, 1)$
 875 : $P_{30265} = (24, 16, 28, 1)$

876 : $P_{30307} = (2, 18, 28, 1)$
 877 : $P_{30323} = (18, 18, 28, 1)$
 878 : $P_{30341} = (4, 19, 28, 1)$
 879 : $P_{30346} = (9, 19, 28, 1)$
 880 : $P_{30412} = (11, 21, 28, 1)$
 881 : $P_{30417} = (16, 21, 28, 1)$
 882 : $P_{30436} = (3, 22, 28, 1)$
 883 : $P_{30461} = (28, 22, 28, 1)$
 884 : $P_{30478} = (13, 23, 28, 1)$
 885 : $P_{30480} = (15, 23, 28, 1)$
 886 : $P_{30677} = (20, 29, 28, 1)$
 887 : $P_{30687} = (30, 29, 28, 1)$
 888 : $P_{30708} = (19, 30, 28, 1)$
 889 : $P_{30718} = (29, 30, 28, 1)$
 890 : $P_{30731} = (10, 31, 28, 1)$
 891 : $P_{30746} = (25, 31, 28, 1)$
 892 : $P_{30805} = (20, 1, 29, 1)$
 893 : $P_{30815} = (30, 1, 29, 1)$
 894 : $P_{30821} = (4, 2, 29, 1)$
 895 : $P_{30826} = (9, 2, 29, 1)$
 896 : $P_{31030} = (21, 8, 29, 1)$
 897 : $P_{31035} = (26, 8, 29, 1)$
 898 : $P_{31051} = (10, 9, 29, 1)$
 899 : $P_{31066} = (25, 9, 29, 1)$
 900 : $P_{31111} = (6, 11, 29, 1)$
 901 : $P_{31119} = (14, 11, 29, 1)$
 902 : $P_{31164} = (27, 12, 29, 1)$
 903 : $P_{31168} = (31, 12, 29, 1)$
 904 : $P_{31204} = (3, 14, 29, 1)$
 905 : $P_{31229} = (28, 14, 29, 1)$
 906 : $P_{31324} = (27, 17, 29, 1)$
 907 : $P_{31328} = (31, 17, 29, 1)$
 908 : $P_{31364} = (3, 19, 29, 1)$
 909 : $P_{31389} = (28, 19, 29, 1)$
 910 : $P_{31403} = (10, 20, 29, 1)$
 911 : $P_{31418} = (25, 20, 29, 1)$
 912 : $P_{31446} = (21, 21, 29, 1)$
 913 : $P_{31451} = (26, 21, 29, 1)$
 914 : $P_{31463} = (6, 22, 29, 1)$
 915 : $P_{31471} = (14, 22, 29, 1)$
 916 : $P_{31669} = (20, 28, 29, 1)$
 917 : $P_{31679} = (30, 28, 29, 1)$
 918 : $P_{31749} = (4, 31, 29, 1)$
 919 : $P_{31754} = (9, 31, 29, 1)$
 920 : $P_{31787} = (10, 0, 30, 1)$
 921 : $P_{31802} = (25, 0, 30, 1)$
 922 : $P_{31860} = (19, 2, 30, 1)$
 923 : $P_{31870} = (29, 2, 30, 1)$
 924 : $P_{31944} = (7, 5, 30, 1)$
 925 : $P_{31949} = (12, 5, 30, 1)$
 926 : $P_{31986} = (17, 6, 30, 1)$
 927 : $P_{31993} = (24, 6, 30, 1)$
 928 : $P_{32038} = (5, 8, 30, 1)$
 929 : $P_{32056} = (23, 8, 30, 1)$

930 : $P_{32069} = (4, 9, 30, 1)$
 931 : $P_{32074} = (9, 9, 30, 1)$
 932 : $P_{32118} = (21, 10, 30, 1)$
 933 : $P_{32123} = (26, 10, 30, 1)$
 934 : $P_{32131} = (2, 11, 30, 1)$
 935 : $P_{32147} = (18, 11, 30, 1)$
 936 : $P_{32213} = (20, 13, 30, 1)$
 937 : $P_{32223} = (30, 13, 30, 1)$
 938 : $P_{32231} = (6, 14, 30, 1)$
 939 : $P_{32239} = (14, 14, 30, 1)$
 940 : $P_{32295} = (6, 16, 30, 1)$
 941 : $P_{32303} = (14, 16, 30, 1)$
 942 : $P_{32405} = (20, 19, 30, 1)$
 943 : $P_{32415} = (30, 19, 30, 1)$
 944 : $P_{32438} = (21, 20, 30, 1)$
 945 : $P_{32443} = (26, 20, 30, 1)$
 946 : $P_{32451} = (2, 21, 30, 1)$
 947 : $P_{32467} = (18, 21, 30, 1)$
 948 : $P_{32486} = (5, 22, 30, 1)$
 949 : $P_{32504} = (23, 22, 30, 1)$
 950 : $P_{32517} = (4, 23, 30, 1)$
 951 : $P_{32522} = (9, 23, 30, 1)$
 952 : $P_{32562} = (17, 24, 30, 1)$
 953 : $P_{32569} = (24, 24, 30, 1)$
 954 : $P_{32648} = (7, 27, 30, 1)$
 955 : $P_{32653} = (12, 27, 30, 1)$
 956 : $P_{32692} = (19, 28, 30, 1)$
 957 : $P_{32702} = (29, 28, 30, 1)$
 958 : $P_{32747} = (10, 30, 30, 1)$
 959 : $P_{32762} = (25, 30, 30, 1)$
 960 : $P_{32806} = (5, 0, 31, 1)$
 961 : $P_{32824} = (23, 0, 31, 1)$
 962 : $P_{32869} = (4, 2, 31, 1)$
 963 : $P_{32874} = (9, 2, 31, 1)$
 964 : $P_{32907} = (10, 3, 31, 1)$
 965 : $P_{32922} = (25, 3, 31, 1)$
 966 : $P_{32982} = (21, 5, 31, 1)$
 967 : $P_{32987} = (26, 5, 31, 1)$
 968 : $P_{33012} = (19, 6, 31, 1)$
 969 : $P_{33022} = (29, 6, 31, 1)$
 970 : $P_{33027} = (2, 7, 31, 1)$
 971 : $P_{33043} = (18, 7, 31, 1)$
 972 : $P_{33068} = (11, 8, 31, 1)$
 973 : $P_{33073} = (16, 8, 31, 1)$
 974 : $P_{33148} = (27, 10, 31, 1)$
 975 : $P_{33152} = (31, 10, 31, 1)$
 976 : $P_{33500} = (27, 21, 31, 1)$
 977 : $P_{33504} = (31, 21, 31, 1)$
 978 : $P_{33548} = (11, 23, 31, 1)$
 979 : $P_{33553} = (16, 23, 31, 1)$
 980 : $P_{33571} = (2, 24, 31, 1)$
 981 : $P_{33587} = (18, 24, 31, 1)$
 982 : $P_{33620} = (19, 25, 31, 1)$
 983 : $P_{33630} = (29, 25, 31, 1)$

984 : $P_{33654} = (21, 26, 31, 1)$
985 : $P_{33659} = (26, 26, 31, 1)$
986 : $P_{33707} = (10, 28, 31, 1)$
987 : $P_{33722} = (25, 28, 31, 1)$
988 : $P_{33733} = (4, 29, 31, 1)$

989 : $P_{33738} = (9, 29, 31, 1)$
990 : $P_{33798} = (5, 31, 31, 1)$
991 : $P_{33816} = (23, 31, 31, 1)$

Line Intersection Graph

$$\begin{array}{c|c} & 0 \\ \hline 0 & 0 \end{array}$$

Neighbor sets in the line intersection graph:
Line 0 intersects

| |
|----------|
| Line |
| in point |

The surface has 1025 points:
Too many to print.