Rank-76 over GF(16)

January 15, 2021

The equation

The equation of the surface is :

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

(0, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
The point rank of the equation over GF(16) is 139824

General information

Number of lines	1
Number of points	273
Number of singular points	1
Number of Eckardt points	0
Number of double points	0
Number of single points	17
Number of points off lines	256
Number of Hesse planes	0
Number of axes	0
Type of points on lines	17
Type of lines on points	1^{17}, 0^{256}

Singular Points

The surface has 1 singular points:

$0 : \ P_{36} = \mathbf{P}(1,1,1,0) = \mathbf{P}(1,1,1,0)$

The 1 Lines

The lines and their Pluecker coordinates are:

$$\ell_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}_1 = \mathbf{Pl}(1,0,1,0,0,0)_3$$

Rank of lines: (1)
Rank of points on Klein quadric: (3)

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

0 : $P_0 = (1,0,0,0)$ lies on line ℓ_0
1 : $P_{35} = (0,1,1,0)$ lies on line ℓ_0
2 : $P_{36} = (1,1,1,0)$ lies on line ℓ_0
3 : $P_{37} = (2,1,1,0)$ lies on line ℓ_0
4 : $P_{38} = (3,1,1,0)$ lies on line ℓ_0
5 : $P_{39} = (4,1,1,0)$ lies on line ℓ_0
6 : $P_{40} = (5,1,1,0)$ lies on line ℓ_0
7 : $P_{41} = (6,1,1,0)$ lies on line ℓ_0
8 : $P_{42} = (7,1,1,0)$ lies on line ℓ_0
9 : $P_{43} = (8,1,1,0)$ lies on line ℓ_0
10 : $P_{44} = (9,1,1,0)$ lies on line ℓ_0
11 : $P_{45} = (10,1,1,0)$ lies on line ℓ_0
12 : $P_{46} = (11,1,1,0)$ lies on line ℓ_0
13 : $P_{47} = (12,1,1,0)$ lies on line ℓ_0
14 : $P_{48} = (13,1,1,0)$ lies on line ℓ_0
15 : $P_{49} = (14,1,1,0)$ lies on line ℓ_0
16 : $P_{50} = (15,1,1,0)$ lies on line ℓ_0

The single points on the surface are:

Points on surface but on no line

The surface has 256 points not on any line:
The points on the surface but not on lines are:

0 : $P_5 = (1,1,0,0)$
1 : $P_{20} = (1,0,1,0)$
2 : $P_{64} = (13,2,1,0)$
3 : $P_{80} = (13,3,1,0)$
4 : $P_{90} = (7,4,1,0)$
5 : $P_{106} = (7,5,1,0)$
6 : $P_{126} = (11,6,1,0)$
7 : $P_{142} = (11,7,1,0)$
8 : $P_{159} = (12,8,1,0)$
9 : $P_{175} = (12,9,1,0)$
10 : $P_{179} = (0,10,1,0)$
11 : $P_{195} = (0,11,1,0)$
12 : $P_{221} = (10,12,1,0)$
13 : $P_{237} = (10,13,1,0)$
14 : $P_{249} = (6,14,1,0)$
15 : $P_{265} = (6,15,1,0)$
16 : $P_{290} = (0,1,0,1)$
17 : $P_{311} = (5,2,0,1)$
18 : $P_{328} = (6,3,0,1)$
19 : $P_{346} = (8,4,0,1)$
20 : $P_{367} = (13,5,0,1)$
21 : $P_{374} = (4,6,0,1)$
22 : $P_{400} = (14,7,0,1)$
23 : $P_{409} = (7,8,0,1)$
24 : $P_{433} = (15,9,0,1)$
25 : $P_{434} = (0,10,0,1)$
26 : $P_{450} = (0,11,0,1)$
27 : $P_{468} = (2,12,0,1)$

28 : $P_{491} = (9, 13, 0, 1)$
29 : $P_{501} = (3, 14, 0, 1)$
30 : $P_{526} = (12, 15, 0, 1)$
31 : $P_{530} = (0, 0, 1, 1)$
32 : $P_{569} = (8, 2, 1, 1)$
33 : $P_{587} = (10, 3, 1, 1)$
34 : $P_{608} = (15, 4, 1, 1)$
35 : $P_{620} = (11, 5, 1, 1)$
36 : $P_{627} = (2, 6, 1, 1)$
37 : $P_{650} = (9, 7, 1, 1)$
38 : $P_{667} = (10, 8, 1, 1)$
39 : $P_{676} = (3, 9, 1, 1)$
40 : $P_{700} = (11, 10, 1, 1)$
41 : $P_{715} = (10, 11, 1, 1)$
42 : $P_{735} = (14, 12, 1, 1)$
43 : $P_{741} = (4, 13, 1, 1)$
44 : $P_{758} = (5, 14, 1, 1)$
45 : $P_{780} = (11, 15, 1, 1)$
46 : $P_{790} = (5, 0, 2, 1)$
47 : $P_{809} = (8, 1, 2, 1)$
48 : $P_{845} = (12, 3, 2, 1)$
49 : $P_{850} = (1, 4, 2, 1)$
50 : $P_{870} = (5, 5, 2, 1)$
51 : $P_{896} = (15, 6, 2, 1)$
52 : $P_{901} = (4, 7, 2, 1)$
53 : $P_{917} = (4, 8, 2, 1)$
54 : $P_{939} = (10, 9, 2, 1)$
55 : $P_{946} = (1, 10, 2, 1)$
56 : $P_{968} = (7, 11, 2, 1)$
57 : $P_{979} = (2, 12, 2, 1)$
58 : $P_{996} = (3, 13, 2, 1)$
59 : $P_{1010} = (1, 14, 2, 1)$
60 : $P_{1029} = (4, 15, 2, 1)$
61 : $P_{1047} = (6, 0, 3, 1)$
62 : $P_{1067} = (10, 1, 3, 1)$
63 : $P_{1085} = (12, 2, 3, 1)$
64 : $P_{1114} = (9, 4, 3, 1)$
65 : $P_{1133} = (12, 5, 3, 1)$
66 : $P_{1143} = (6, 6, 3, 1)$
67 : $P_{1165} = (12, 7, 3, 1)$
68 : $P_{1170} = (1, 8, 3, 1)$
69 : $P_{1199} = (14, 9, 3, 1)$
70 : $P_{1203} = (2, 10, 3, 1)$
71 : $P_{1222} = (5, 11, 3, 1)$
72 : $P_{1243} = (10, 12, 3, 1)$
73 : $P_{1259} = (10, 13, 3, 1)$
74 : $P_{1268} = (3, 14, 3, 1)$
75 : $P_{1288} = (7, 15, 3, 1)$
76 : $P_{1305} = (8, 0, 4, 1)$
77 : $P_{1328} = (15, 1, 4, 1)$
78 : $P_{1330} = (1, 2, 4, 1)$
79 : $P_{1354} = (9, 3, 4, 1)$
80 : $P_{1383} = (6, 5, 4, 1)$
81 : $P_{1397} = (4, 6, 4, 1)$
82 : $P_{1414} = (5, 7, 4, 1)$
83 : $P_{1433} = (8, 8, 4, 1)$
84 : $P_{1442} = (1, 9, 4, 1)$
85 : $P_{1469} = (12, 10, 4, 1)$
86 : $P_{1474} = (1, 11, 4, 1)$
87 : $P_{1498} = (9, 12, 4, 1)$
88 : $P_{1508} = (3, 13, 4, 1)$
89 : $P_{1532} = (11, 14, 4, 1)$
90 : $P_{1546} = (9, 15, 4, 1)$
91 : $P_{1566} = (13, 0, 5, 1)$
92 : $P_{1580} = (11, 1, 5, 1)$
93 : $P_{1590} = (5, 2, 5, 1)$
94 : $P_{1613} = (12, 3, 5, 1)$
95 : $P_{1623} = (6, 4, 5, 1)$
96 : $P_{1660} = (11, 6, 5, 1)$
97 : $P_{1676} = (11, 7, 5, 1)$
98 : $P_{1687} = (6, 8, 5, 1)$
99 : $P_{1711} = (14, 9, 5, 1)$
100 : $P_{1721} = (8, 10, 5, 1)$
101 : $P_{1733} = (4, 11, 5, 1)$
102 : $P_{1751} = (6, 12, 5, 1)$
103 : $P_{1774} = (13, 13, 5, 1)$
104 : $P_{1779} = (2, 14, 5, 1)$
105 : $P_{1794} = (1, 15, 5, 1)$
106 : $P_{1813} = (4, 0, 6, 1)$
107 : $P_{1827} = (2, 1, 6, 1)$
108 : $P_{1856} = (15, 2, 6, 1)$
109 : $P_{1863} = (6, 3, 6, 1)$
110 : $P_{1877} = (4, 4, 6, 1)$
111 : $P_{1900} = (11, 5, 6, 1)$
112 : $P_{1931} = (10, 7, 6, 1)$
113 : $P_{1950} = (13, 8, 6, 1)$
114 : $P_{1967} = (14, 9, 6, 1)$
115 : $P_{1980} = (11, 10, 6, 1)$
116 : $P_{1997} = (12, 11, 6, 1)$
117 : $P_{2016} = (15, 12, 6, 1)$
118 : $P_{2020} = (3, 13, 6, 1)$
119 : $P_{2048} = (15, 14, 6, 1)$
120 : $P_{2060} = (11, 15, 6, 1)$
121 : $P_{2079} = (14, 0, 7, 1)$
122 : $P_{2090} = (9, 1, 7, 1)$
123 : $P_{2101} = (4, 2, 7, 1)$
124 : $P_{2125} = (12, 3, 7, 1)$
125 : $P_{2134} = (5, 4, 7, 1)$
126 : $P_{2156} = (11, 5, 7, 1)$
127 : $P_{2171} = (10, 6, 7, 1)$
128 : $P_{2200} = (7, 8, 7, 1)$
129 : $P_{2214} = (5, 9, 7, 1)$
130 : $P_{2236} = (11, 10, 7, 1)$
131 : $P_{2254} = (13, 11, 7, 1)$
132 : $P_{2265} = (8, 12, 7, 1)$
133 : $P_{2278} = (5, 13, 7, 1)$
134 : $P_{2303} = (14, 14, 7, 1)$
135 : $P_{2316} = (11, 15, 7, 1)$

$136: P_{2328} = (7, 0, 8, 1)$
$137: P_{2347} = (10, 1, 8, 1)$
$138: P_{2357} = (4, 2, 8, 1)$
$139: P_{2370} = (1, 3, 8, 1)$
$140: P_{2393} = (8, 4, 8, 1)$
$141: P_{2407} = (6, 5, 8, 1)$
$142: P_{2430} = (13, 6, 8, 1)$
$143: P_{2440} = (7, 7, 8, 1)$
$144: P_{2478} = (13, 9, 8, 1)$
$145: P_{2490} = (9, 10, 8, 1)$
$146: P_{2512} = (15, 11, 8, 1)$
$147: P_{2523} = (10, 12, 8, 1)$
$148: P_{2539} = (10, 13, 8, 1)$
$149: P_{2547} = (2, 14, 8, 1)$
$150: P_{2574} = (13, 15, 8, 1)$
$151: P_{2592} = (15, 0, 9, 1)$
$152: P_{2596} = (3, 1, 9, 1)$
$153: P_{2619} = (10, 2, 9, 1)$
$154: P_{2639} = (14, 3, 9, 1)$
$155: P_{2642} = (1, 4, 9, 1)$
$156: P_{2671} = (14, 5, 9, 1)$
$157: P_{2687} = (14, 6, 9, 1)$
$158: P_{2694} = (5, 7, 9, 1)$
$159: P_{2718} = (13, 8, 9, 1)$
$160: P_{2738} = (1, 10, 9, 1)$
$161: P_{2759} = (6, 11, 9, 1)$
$162: P_{2777} = (8, 12, 9, 1)$
$163: P_{2794} = (9, 13, 9, 1)$
$164: P_{2802} = (1, 14, 9, 1)$
$165: P_{2832} = (15, 15, 9, 1)$
$166: P_{2833} = (0, 0, 10, 1)$
$167: P_{2860} = (11, 1, 10, 1)$
$168: P_{2866} = (1, 2, 10, 1)$
$169: P_{2883} = (2, 3, 10, 1)$
$170: P_{2909} = (12, 4, 10, 1)$
$171: P_{2921} = (8, 5, 10, 1)$
$172: P_{2940} = (11, 6, 10, 1)$
$173: P_{2956} = (11, 7, 10, 1)$
$174: P_{2970} = (9, 8, 10, 1)$
$175: P_{2978} = (1, 9, 10, 1)$
$176: P_{3010} = (1, 11, 10, 1)$
$177: P_{3032} = (7, 12, 10, 1)$
$178: P_{3047} = (6, 13, 10, 1)$
$179: P_{3070} = (13, 14, 10, 1)$
$180: P_{3076} = (3, 15, 10, 1)$
$181: P_{3089} = (0, 0, 11, 1)$
$182: P_{3115} = (10, 1, 11, 1)$
$183: P_{3128} = (7, 2, 11, 1)$
$184: P_{3142} = (5, 3, 11, 1)$
$185: P_{3154} = (1, 4, 11, 1)$
$186: P_{3173} = (4, 5, 11, 1)$
$187: P_{3197} = (12, 6, 11, 1)$
$188: P_{3214} = (13, 7, 11, 1)$
$189: P_{3232} = (15, 8, 11, 1)$
$190: P_{3239} = (6, 9, 11, 1)$
$191: P_{3250} = (1, 10, 11, 1)$
$192: P_{3291} = (10, 12, 11, 1)$
$193: P_{3307} = (10, 13, 11, 1)$
$194: P_{3314} = (1, 14, 11, 1)$
$195: P_{3343} = (14, 15, 11, 1)$
$196: P_{3347} = (2, 0, 12, 1)$
$197: P_{3375} = (14, 1, 12, 1)$
$198: P_{3379} = (2, 2, 12, 1)$
$199: P_{3403} = (10, 3, 12, 1)$
$200: P_{3418} = (9, 4, 12, 1)$
$201: P_{3431} = (6, 5, 12, 1)$
$202: P_{3456} = (15, 6, 12, 1)$
$203: P_{3465} = (8, 7, 12, 1)$
$204: P_{3483} = (10, 8, 12, 1)$
$205: P_{3497} = (8, 9, 12, 1)$
$206: P_{3512} = (7, 10, 12, 1)$
$207: P_{3531} = (10, 11, 12, 1)$
$208: P_{3564} = (11, 13, 12, 1)$
$209: P_{3577} = (8, 14, 12, 1)$
$210: P_{3597} = (12, 15, 12, 1)$
$211: P_{3610} = (9, 0, 13, 1)$
$212: P_{3621} = (4, 1, 13, 1)$
$213: P_{3636} = (3, 2, 13, 1)$
$214: P_{3659} = (10, 3, 13, 1)$
$215: P_{3668} = (3, 4, 13, 1)$
$216: P_{3694} = (13, 5, 13, 1)$
$217: P_{3700} = (3, 6, 13, 1)$
$218: P_{3718} = (5, 7, 13, 1)$
$219: P_{3739} = (10, 8, 13, 1)$
$220: P_{3754} = (9, 9, 13, 1)$
$221: P_{3767} = (6, 10, 13, 1)$
$222: P_{3787} = (10, 11, 13, 1)$
$223: P_{3804} = (11, 12, 13, 1)$
$224: P_{3827} = (2, 14, 13, 1)$
$225: P_{3848} = (7, 15, 13, 1)$
$226: P_{3860} = (3, 0, 14, 1)$
$227: P_{3878} = (5, 1, 14, 1)$
$228: P_{3890} = (1, 2, 14, 1)$
$229: P_{3908} = (3, 3, 14, 1)$
$230: P_{3932} = (11, 4, 14, 1)$
$231: P_{3939} = (2, 5, 14, 1)$
$232: P_{3968} = (15, 6, 14, 1)$
$233: P_{3983} = (14, 7, 14, 1)$
$234: P_{3987} = (2, 8, 14, 1)$
$235: P_{4002} = (1, 9, 14, 1)$
$236: P_{4030} = (13, 10, 14, 1)$
$237: P_{4034} = (1, 11, 14, 1)$
$238: P_{4057} = (8, 12, 14, 1)$
$239: P_{4067} = (2, 13, 14, 1)$
$240: P_{4104} = (7, 15, 14, 1)$
$241: P_{4125} = (12, 0, 15, 1)$
$242: P_{4140} = (11, 1, 15, 1)$
$243: P_{4149} = (4, 2, 15, 1)$

244 : $P_{4168} = (7, 3, 15, 1)$
245 : $P_{4186} = (9, 4, 15, 1)$
246 : $P_{4194} = (1, 5, 15, 1)$
247 : $P_{4220} = (11, 6, 15, 1)$
248 : $P_{4236} = (11, 7, 15, 1)$
249 : $P_{4254} = (13, 8, 15, 1)$
250 : $P_{4272} = (15, 9, 15, 1)$
251 : $P_{4276} = (3, 10, 15, 1)$
252 : $P_{4303} = (14, 11, 15, 1)$
253 : $P_{4317} = (12, 12, 15, 1)$
254 : $P_{4328} = (7, 13, 15, 1)$
255 : $P_{4344} = (7, 14, 15, 1)$

Line Intersection Graph

	0
0	0

Neighbor sets in the line intersection graph:
Line 0 intersects

Line
in point

The surface has 273 points:
The points on the surface are:

0 : $P_{0} = (1, 0, 0, 0)$
1 : $P_{5} = (1, 1, 0, 0)$
2 : $P_{20} = (1, 0, 1, 0)$
3 : $P_{35} = (0, 1, 1, 0)$
4 : $P_{36} = (1, 1, 1, 0)$
5 : $P_{37} = (2, 1, 1, 0)$
6 : $P_{38} = (3, 1, 1, 0)$
7 : $P_{39} = (4, 1, 1, 0)$
8 : $P_{40} = (5, 1, 1, 0)$
9 : $P_{41} = (6, 1, 1, 0)$
10 : $P_{42} = (7, 1, 1, 0)$
11 : $P_{43} = (8, 1, 1, 0)$
12 : $P_{44} = (9, 1, 1, 0)$
13 : $P_{45} = (10, 1, 1, 0)$
14 : $P_{46} = (11, 1, 1, 0)$
15 : $P_{47} = (12, 1, 1, 0)$
16 : $P_{48} = (13, 1, 1, 0)$
17 : $P_{49} = (14, 1, 1, 0)$
18 : $P_{50} = (15, 1, 1, 0)$
19 : $P_{64} = (13, 2, 1, 0)$
20 : $P_{80} = (13, 3, 1, 0)$
21 : $P_{90} = (7, 4, 1, 0)$
22 : $P_{106} = (7, 5, 1, 0)$
23 : $P_{126} = (11, 6, 1, 0)$
24 : $P_{142} = (11, 7, 1, 0)$
25 : $P_{159} = (12, 8, 1, 0)$
26 : $P_{175} = (12, 9, 1, 0)$
27 : $P_{179} = (0, 10, 1, 0)$
28 : $P_{195} = (0, 11, 1, 0)$
29 : $P_{221} = (10, 12, 1, 0)$
30 : $P_{237} = (10, 13, 1, 0)$
31 : $P_{249} = (6, 14, 1, 0)$
32 : $P_{265} = (6, 15, 1, 0)$
33 : $P_{290} = (0, 1, 0, 1)$
34 : $P_{311} = (5, 2, 0, 1)$
35 : $P_{328} = (6, 3, 0, 1)$
36 : $P_{346} = (8, 4, 0, 1)$
37 : $P_{367} = (13, 5, 0, 1)$
38 : $P_{374} = (4, 6, 0, 1)$
39 : $P_{400} = (14, 7, 0, 1)$
40 : $P_{409} = (7, 8, 0, 1)$
41 : $P_{433} = (15, 9, 0, 1)$
42 : $P_{434} = (0, 10, 0, 1)$
43 : $P_{450} = (0, 11, 0, 1)$
44 : $P_{468} = (2, 12, 0, 1)$
45 : $P_{491} = (9, 13, 0, 1)$
46 : $P_{501} = (3, 14, 0, 1)$
47 : $P_{526} = (12, 15, 0, 1)$
48 : $P_{530} = (0, 0, 1, 1)$
49 : $P_{569} = (8, 2, 1, 1)$
50 : $P_{587} = (10, 3, 1, 1)$
51 : $P_{608} = (15, 4, 1, 1)$
52 : $P_{620} = (11, 5, 1, 1)$
53 : $P_{627} = (2, 6, 1, 1)$
54 : $P_{650} = (9, 7, 1, 1)$
55 : $P_{667} = (10, 8, 1, 1)$
56 : $P_{676} = (3, 9, 1, 1)$
57 : $P_{700} = (11, 10, 1, 1)$
58 : $P_{715} = (10, 11, 1, 1)$
59 : $P_{735} = (14, 12, 1, 1)$
60 : $P_{741} = (4, 13, 1, 1)$
61 : $P_{758} = (5, 14, 1, 1)$
62 : $P_{780} = (11, 15, 1, 1)$
63 : $P_{790} = (5, 0, 2, 1)$
64 : $P_{809} = (8, 1, 2, 1)$
65 : $P_{845} = (12, 3, 2, 1)$
66 : $P_{850} = (1, 4, 2, 1)$
67 : $P_{870} = (5, 5, 2, 1)$
68 : $P_{896} = (15, 6, 2, 1)$
69 : $P_{901} = (4, 7, 2, 1)$
70 : $P_{917} = (4, 8, 2, 1)$
71 : $P_{939} = (10, 9, 2, 1)$
72 : $P_{946} = (1, 10, 2, 1)$
73 : $P_{968} = (7, 11, 2, 1)$
74 : $P_{979} = (2, 12, 2, 1)$
75 : $P_{996} = (3, 13, 2, 1)$
76 : $P_{1010} = (1, 14, 2, 1)$
77 : $P_{1029} = (4, 15, 2, 1)$
78 : $P_{1047} = (6, 0, 3, 1)$
79 : $P_{1067} = (10, 1, 3, 1)$
80 : $P_{1085} = (12, 2, 3, 1)$
81 : $P_{1114} = (9, 4, 3, 1)$
82 : $P_{1133} = (12, 5, 3, 1)$
83 : $P_{1143} = (6, 6, 3, 1)$
84 : $P_{1165} = (12, 7, 3, 1)$
85 : $P_{1170} = (1, 8, 3, 1)$
86 : $P_{1199} = (14, 9, 3, 1)$
87 : $P_{1203} = (2, 10, 3, 1)$
88 : $P_{1222} = (5, 11, 3, 1)$
89 : $P_{1243} = (10, 12, 3, 1)$
90 : $P_{1259} = (10, 13, 3, 1)$
91 : $P_{1268} = (3, 14, 3, 1)$
92 : $P_{1288} = (7, 15, 3, 1)$
93 : $P_{1305} = (8, 0, 4, 1)$
94 : $P_{1328} = (15, 1, 4, 1)$
95 : $P_{1330} = (1, 2, 4, 1)$
96 : $P_{1354} = (9, 3, 4, 1)$
97 : $P_{1383} = (6, 5, 4, 1)$
98 : $P_{1397} = (4, 6, 4, 1)$

$99: P_{1414} = (5, 7, 4, 1)$
$100: P_{1433} = (8, 8, 4, 1)$
$101: P_{1442} = (1, 9, 4, 1)$
$102: P_{1469} = (12, 10, 4, 1)$
$103: P_{1474} = (1, 11, 4, 1)$
$104: P_{1498} = (9, 12, 4, 1)$
$105: P_{1508} = (3, 13, 4, 1)$
$106: P_{1532} = (11, 14, 4, 1)$
$107: P_{1546} = (9, 15, 4, 1)$
$108: P_{1566} = (13, 0, 5, 1)$
$109: P_{1580} = (11, 1, 5, 1)$
$110: P_{1590} = (5, 2, 5, 1)$
$111: P_{1613} = (12, 3, 5, 1)$
$112: P_{1623} = (6, 4, 5, 1)$
$113: P_{1660} = (11, 6, 5, 1)$
$114: P_{1676} = (11, 7, 5, 1)$
$115: P_{1687} = (6, 8, 5, 1)$
$116: P_{1711} = (14, 9, 5, 1)$
$117: P_{1721} = (8, 10, 5, 1)$
$118: P_{1733} = (4, 11, 5, 1)$
$119: P_{1751} = (6, 12, 5, 1)$
$120: P_{1774} = (13, 13, 5, 1)$
$121: P_{1779} = (2, 14, 5, 1)$
$122: P_{1794} = (1, 15, 5, 1)$
$123: P_{1813} = (4, 0, 6, 1)$
$124: P_{1827} = (2, 1, 6, 1)$
$125: P_{1856} = (15, 2, 6, 1)$
$126: P_{1863} = (6, 3, 6, 1)$
$127: P_{1877} = (4, 4, 6, 1)$
$128: P_{1900} = (11, 5, 6, 1)$
$129: P_{1931} = (10, 7, 6, 1)$
$130: P_{1950} = (13, 8, 6, 1)$
$131: P_{1967} = (14, 9, 6, 1)$
$132: P_{1980} = (11, 10, 6, 1)$
$133: P_{1997} = (12, 11, 6, 1)$
$134: P_{2016} = (15, 12, 6, 1)$
$135: P_{2020} = (3, 13, 6, 1)$
$136: P_{2048} = (15, 14, 6, 1)$
$137: P_{2060} = (11, 15, 6, 1)$
$138: P_{2079} = (14, 0, 7, 1)$
$139: P_{2090} = (9, 1, 7, 1)$
$140: P_{2101} = (4, 2, 7, 1)$
$141: P_{2125} = (12, 3, 7, 1)$
$142: P_{2134} = (5, 4, 7, 1)$
$143: P_{2156} = (11, 5, 7, 1)$
$144: P_{2171} = (10, 6, 7, 1)$
$145: P_{2200} = (7, 8, 7, 1)$
$146: P_{2214} = (5, 9, 7, 1)$
$147: P_{2236} = (11, 10, 7, 1)$
$148: P_{2254} = (13, 11, 7, 1)$
$149: P_{2265} = (8, 12, 7, 1)$
$150: P_{2278} = (5, 13, 7, 1)$
$151: P_{2303} = (14, 14, 7, 1)$
$152: P_{2316} = (11, 15, 7, 1)$
$153: P_{2328} = (7, 0, 8, 1)$
$154: P_{2347} = (10, 1, 8, 1)$
$155: P_{2357} = (4, 2, 8, 1)$
$156: P_{2370} = (1, 3, 8, 1)$
$157: P_{2393} = (8, 4, 8, 1)$
$158: P_{2407} = (6, 5, 8, 1)$
$159: P_{2430} = (13, 6, 8, 1)$
$160: P_{2440} = (7, 7, 8, 1)$
$161: P_{2478} = (13, 9, 8, 1)$
$162: P_{2490} = (9, 10, 8, 1)$
$163: P_{2512} = (15, 11, 8, 1)$
$164: P_{2523} = (10, 12, 8, 1)$
$165: P_{2539} = (10, 13, 8, 1)$
$166: P_{2547} = (2, 14, 8, 1)$
$167: P_{2574} = (13, 15, 8, 1)$
$168: P_{2592} = (15, 0, 9, 1)$
$169: P_{2596} = (3, 1, 9, 1)$
$170: P_{2619} = (10, 2, 9, 1)$
$171: P_{2639} = (14, 3, 9, 1)$
$172: P_{2642} = (1, 4, 9, 1)$
$173: P_{2671} = (14, 5, 9, 1)$
$174: P_{2687} = (14, 6, 9, 1)$
$175: P_{2694} = (5, 7, 9, 1)$
$176: P_{2718} = (13, 8, 9, 1)$
$177: P_{2738} = (1, 10, 9, 1)$
$178: P_{2759} = (6, 11, 9, 1)$
$179: P_{2777} = (8, 12, 9, 1)$
$180: P_{2794} = (9, 13, 9, 1)$
$181: P_{2802} = (1, 14, 9, 1)$
$182: P_{2832} = (15, 15, 9, 1)$
$183: P_{2833} = (0, 0, 10, 1)$
$184: P_{2860} = (11, 1, 10, 1)$
$185: P_{2866} = (1, 2, 10, 1)$
$186: P_{2883} = (2, 3, 10, 1)$
$187: P_{2909} = (12, 4, 10, 1)$
$188: P_{2921} = (8, 5, 10, 1)$
$189: P_{2940} = (11, 6, 10, 1)$
$190: P_{2956} = (11, 7, 10, 1)$
$191: P_{2970} = (9, 8, 10, 1)$
$192: P_{2978} = (1, 9, 10, 1)$
$193: P_{3010} = (1, 11, 10, 1)$
$194: P_{3032} = (7, 12, 10, 1)$
$195: P_{3047} = (6, 13, 10, 1)$
$196: P_{3070} = (13, 14, 10, 1)$
$197: P_{3076} = (3, 15, 10, 1)$
$198: P_{3089} = (0, 0, 11, 1)$
$199: P_{3115} = (10, 1, 11, 1)$
$200: P_{3128} = (7, 2, 11, 1)$
$201: P_{3142} = (5, 3, 11, 1)$
$202: P_{3154} = (1, 4, 11, 1)$
$203: P_{3173} = (4, 5, 11, 1)$
$204: P_{3197} = (12, 6, 11, 1)$
$205: P_{3214} = (13, 7, 11, 1)$
$206: P_{3232} = (15, 8, 11, 1)$
$207: P_{3239} = (6, 9, 11, 1)$
$208: P_{3250} = (1, 10, 11, 1)$
$209: P_{3291} = (10, 12, 11, 1)$
$210: P_{3307} = (10, 13, 11, 1)$
$211: P_{3314} = (1, 14, 11, 1)$
$212: P_{3343} = (14, 15, 11, 1)$
$213: P_{3347} = (2, 0, 12, 1)$
$214: P_{3375} = (14, 1, 12, 1)$
$215: P_{3379} = (2, 2, 12, 1)$
$216: P_{3403} = (10, 3, 12, 1)$
$217: P_{3418} = (9, 4, 12, 1)$
$218: P_{3431} = (6, 5, 12, 1)$
$219: P_{3456} = (15, 6, 12, 1)$
$220: P_{3465} = (8, 7, 12, 1)$
$221: P_{3483} = (10, 8, 12, 1)$
$222: P_{3497} = (8, 9, 12, 1)$
$223: P_{3512} = (7, 10, 12, 1)$
$224: P_{3531} = (10, 11, 12, 1)$
$225: P_{3564} = (11, 13, 12, 1)$
$226: P_{3577} = (8, 14, 12, 1)$
$227: P_{3597} = (12, 15, 12, 1)$
$228: P_{3610} = (9, 0, 13, 1)$
$229: P_{3621} = (4, 1, 13, 1)$
$230: P_{3636} = (3, 2, 13, 1)$
$231: P_{3659} = (10, 3, 13, 1)$
$232: P_{3668} = (3, 4, 13, 1)$
$233: P_{3694} = (13, 5, 13, 1)$
$234: P_{3700} = (3, 6, 13, 1)$
$235: P_{3718} = (5, 7, 13, 1)$
$236: P_{3739} = (10, 8, 13, 1)$
$237: P_{3754} = (9, 9, 13, 1)$
$238: P_{3767} = (6, 10, 13, 1)$
$239: P_{3787} = (10, 11, 13, 1)$
$240: P_{3804} = (11, 12, 13, 1)$
$241: P_{3827} = (2, 14, 13, 1)$
$242: P_{3848} = (7, 15, 13, 1)$
$243: P_{3860} = (3, 0, 14, 1)$
$244: P_{3878} = (5, 1, 14, 1)$
$245: P_{3890} = (1, 2, 14, 1)$
$246: P_{3908} = (3, 3, 14, 1)$
$247: P_{3932} = (11, 4, 14, 1)$
$248: P_{3939} = (2, 5, 14, 1)$
$249: P_{3968} = (15, 6, 14, 1)$
$250: P_{3983} = (14, 7, 14, 1)$
$251: P_{3987} = (2, 8, 14, 1)$
$252: P_{4002} = (1, 9, 14, 1)$
$253: P_{4030} = (13, 10, 14, 1)$
$254: P_{4034} = (1, 11, 14, 1)$
$255: P_{4057} = (8, 12, 14, 1)$
$256: P_{4067} = (2, 13, 14, 1)$
$257: P_{4104} = (7, 15, 14, 1)$
$258: P_{4125} = (12, 0, 15, 1)$
$259: P_{4140} = (11, 1, 15, 1)$
$260: P_{4149} = (4, 2, 15, 1)$

261 : $P_{4168} = (7, 3, 15, 1)$
262 : $P_{4186} = (9, 4, 15, 1)$
263 : $P_{4194} = (1, 5, 15, 1)$
264 : $P_{4220} = (11, 6, 15, 1)$
265 : $P_{4236} = (11, 7, 15, 1)$
266 : $P_{4254} = (13, 8, 15, 1)$
267 : $P_{4272} = (15, 9, 15, 1)$
268 : $P_{4276} = (3, 10, 15, 1)$
269 : $P_{4303} = (14, 11, 15, 1)$
270 : $P_{4317} = (12, 12, 15, 1)$
271 : $P_{4328} = (7, 13, 15, 1)$
272 : $P_{4344} = (7, 14, 15, 1)$