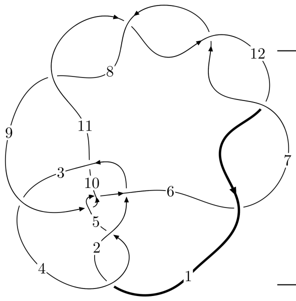
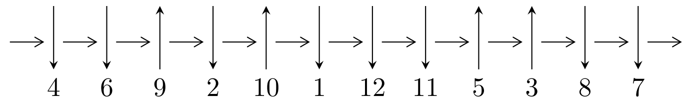
$12a_{0912}$ $(K12a_{0912})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$8{,}12 \underset{c_7}{\rightarrow} 7 \underset{c_{12}}{\longrightarrow} 1 \underset{c_6}{\rightarrow} 3{,}6 \underset{c_2}{\rightarrow} 2 \underset{c_{11}}{\rightarrow} 11 \underset{c_8}{\rightarrow} 9 \underset{c_3}{\longrightarrow} 4 \underset{c_{10}}{\rightarrow} 10 \underset{c_5}{\rightarrow} 5 \twoheadrightarrow c_1, c_4, c_9$$

Ideals for irreducible components[2] of $X_{\textbf{par}}$

$$I_1^u = \langle -3.53538 \times 10^{34} u^{61} - 7.35524 \times 10^{34} u^{60} + \cdots + 5.78589 \times 10^{34} b - 5.61888 \times 10^{34},$$
$$- 4.09242 \times 10^{34} u^{61} - 8.12080 \times 10^{34} u^{60} + \cdots + 5.78589 \times 10^{34} a - 5.99085 \times 10^{34},\ u^{62} + 2u^{61} + \cdots + 3u -$$
$$I_2^u = \langle -5u^3 + 2u^2 + 8b - 9u + 3,\ -5u^3 + 2u^2 + 8a - 9u + 3,\ u^4 - u^3 + 3u^2 - 2u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 66 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.
$\boldsymbol{I_1^u = \langle -3.54\times10^{34}u^{61}-7.36\times10^{34}u^{60}+\cdots+5.79\times10^{34}b-5.62\times10^{34},\ -4.09\times10^{34}u^{61}-8.12\times10^{34}u^{60}+\cdots+5.79\times10^{34}a-5.99\times10^{34},\ u^{62}+2u^{61}+\cdots+3u+1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.707309u^{61}+1.40355u^{60}+\cdots-3.00845u+1.03542\\0.611035u^{61}+1.27124u^{60}+\cdots+3.64899u+0.971135\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.977767u^{61}+2.00250u^{60}+\cdots-1.39856u+1.95121\\0.326563u^{61}+0.628916u^{60}+\cdots+4.36630u+1.06259\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^2+1\\u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1.05259u^{61}+2.11420u^{60}+\cdots-0.201565u+1.91539\\0.291426u^{61}+0.621179u^{60}+\cdots+2.89131u+0.940203\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.272512u^{61}-0.378181u^{60}+\cdots-1.40685u-0.0919374\\-0.0260682u^{61}-0.0324778u^{60}+\cdots-2.18207u-0.262833\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-0.272512u^{61}-0.378181u^{60}+\cdots-1.40685u-0.0919374\\0.193930u^{61}+0.304148u^{60}+\cdots+2.41008u+0.429675\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0309280u^{61}+0.299984u^{60}+\cdots+28.0488u+1.88545$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{62} - 5u^{61} + \cdots - 321u + 64$
c_2	$8(8u^{62} - 57u^{61} + \cdots - 5508u + 7609)$
c_3	$8(8u^{62} - 21u^{61} + \cdots + 2370u + 179)$
c_5, c_9	$u^{62} + 2u^{61} + \cdots + 3u + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$u^{62} - 2u^{61} + \cdots - 3u + 1$
c_{10}	$u^{62} + 3u^{61} + \cdots + 2496u + 1024$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{62} - 31y^{61} + \cdots + 34687y + 4096$
c_2	$64(64y^{62} + 223y^{61} + \cdots + 7.95786 \times 10^8 y + 5.78969 \times 10^7)$
c_3	$64(64y^{62} - 2857y^{61} + \cdots - 2988464y + 32041)$
c_5, c_9	$y^{62} - 34y^{61} + \cdots - 5y + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$y^{62} + 82y^{61} + \cdots - 5y + 1$
c_{10}	$y^{62} - 27y^{61} + \cdots - 9949184y + 1048576$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.070453 + 1.008300I$ $a = 2.41201 - 2.05029I$ $b = 1.89323 - 2.09210I$	$3.75467 + 0.00521I$	0
$u = 0.070453 - 1.008300I$ $a = 2.41201 + 2.05029I$ $b = 1.89323 + 2.09210I$	$3.75467 - 0.00521I$	0
$u = 0.181790 + 0.945505I$ $a = 0.482726 - 0.006483I$ $b = -1.190670 - 0.035089I$	$2.30320 - 4.63639I$	0
$u = 0.181790 - 0.945505I$ $a = 0.482726 + 0.006483I$ $b = -1.190670 + 0.035089I$	$2.30320 + 4.63639I$	0
$u = -0.329924 + 1.002430I$ $a = 0.681675 + 0.062269I$ $b = 0.920280 + 1.043650I$	$7.11283 + 2.06836I$	0
$u = -0.329924 - 1.002430I$ $a = 0.681675 - 0.062269I$ $b = 0.920280 - 1.043650I$	$7.11283 - 2.06836I$	0
$u = -0.110698 + 0.915218I$ $a = -0.906019 + 0.382288I$ $b = 0.097013 + 0.988332I$	$0.59146 + 1.40911I$	0
$u = -0.110698 - 0.915218I$ $a = -0.906019 - 0.382288I$ $b = 0.097013 - 0.988332I$	$0.59146 - 1.40911I$	0
$u = -0.241171 + 1.079550I$ $a = -0.263274 - 0.708351I$ $b = 0.13064 - 2.22317I$	$8.23800 + 6.15877I$	0
$u = -0.241171 - 1.079550I$ $a = -0.263274 + 0.708351I$ $b = 0.13064 + 2.22317I$	$8.23800 - 6.15877I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.173893 + 1.094910I$ $a = 0.307305 - 0.647520I$ $b = -0.05498 - 1.49102I$	$4.39365 - 2.33302I$	0
$u = 0.173893 - 1.094910I$ $a = 0.307305 + 0.647520I$ $b = -0.05498 + 1.49102I$	$4.39365 + 2.33302I$	0
$u = 0.382128 + 1.060710I$ $a = -0.283114 + 0.498733I$ $b = -0.05935 + 1.53726I$	$1.82629 - 6.88277I$	0
$u = 0.382128 - 1.060710I$ $a = -0.283114 - 0.498733I$ $b = -0.05935 - 1.53726I$	$1.82629 + 6.88277I$	0
$u = -0.360863 + 1.083000I$ $a = 0.340097 + 0.839627I$ $b = 0.00161 + 2.17450I$	$5.31778 + 12.69260I$	0
$u = -0.360863 - 1.083000I$ $a = 0.340097 - 0.839627I$ $b = 0.00161 - 2.17450I$	$5.31778 - 12.69260I$	0
$u = -0.069609 + 0.834401I$ $a = -0.397322 + 0.616061I$ $b = 0.22387 + 2.04792I$	$0.09233 + 1.48715I$	$-2.19079 - 3.99799I$
$u = -0.069609 - 0.834401I$ $a = -0.397322 - 0.616061I$ $b = 0.22387 - 2.04792I$	$0.09233 - 1.48715I$	$-2.19079 + 3.99799I$
$u = 0.563401 + 0.581571I$ $a = 0.434752 - 0.199850I$ $b = -0.325684 + 0.214730I$	$-1.30352 - 0.70213I$	$1.08488 - 2.08211I$
$u = 0.563401 - 0.581571I$ $a = 0.434752 + 0.199850I$ $b = -0.325684 - 0.214730I$	$-1.30352 + 0.70213I$	$1.08488 + 2.08211I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.255043 + 1.200940I$ $a = -0.401233 - 0.467101I$ $b = -0.76852 - 1.23254I$	$6.76138 - 2.45433I$	0
$u = -0.255043 - 1.200940I$ $a = -0.401233 + 0.467101I$ $b = -0.76852 + 1.23254I$	$6.76138 + 2.45433I$	0
$u = -0.583913 + 0.454618I$ $a = -1.048110 - 0.044724I$ $b = 0.526648 + 0.216745I$	$1.44700 - 5.36748I$	$-1.39491 + 3.36000I$
$u = -0.583913 - 0.454618I$ $a = -1.048110 + 0.044724I$ $b = 0.526648 - 0.216745I$	$1.44700 + 5.36748I$	$-1.39491 - 3.36000I$
$u = 0.658726 + 0.253626I$ $a = -0.656410 + 0.567952I$ $b = 0.180230 - 0.443043I$	$-2.25995 - 3.35953I$	$-4.38672 + 6.99367I$
$u = 0.658726 - 0.253626I$ $a = -0.656410 - 0.567952I$ $b = 0.180230 + 0.443043I$	$-2.25995 + 3.35953I$	$-4.38672 - 6.99367I$
$u = -0.627368 + 0.304568I$ $a = 0.877042 + 0.926675I$ $b = -0.155103 - 0.758475I$	$0.99678 + 9.33410I$	$-2.66606 - 8.39608I$
$u = -0.627368 - 0.304568I$ $a = 0.877042 - 0.926675I$ $b = -0.155103 + 0.758475I$	$0.99678 - 9.33410I$	$-2.66606 + 8.39608I$
$u = -0.448611 + 0.353688I$ $a = -0.63018 - 1.63885I$ $b = 0.263806 + 0.539972I$	$3.76404 + 3.80466I$	$0.97266 - 6.48808I$
$u = -0.448611 - 0.353688I$ $a = -0.63018 + 1.63885I$ $b = 0.263806 - 0.539972I$	$3.76404 - 3.80466I$	$0.97266 + 6.48808I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.497757 + 0.225969I$ $a = 1.063150 + 0.042781I$ $b = -0.742489 - 0.206163I$	$3.37167 - 0.77892I$	$0.45056 - 2.40505I$
$u = -0.497757 - 0.225969I$ $a = 1.063150 - 0.042781I$ $b = -0.742489 + 0.206163I$	$3.37167 + 0.77892I$	$0.45056 + 2.40505I$
$u = 0.14026 + 1.52029I$ $a = 0.109842 - 0.293520I$ $b = 0.136239 - 0.648021I$	$5.58374 - 3.21684I$	0
$u = 0.14026 - 1.52029I$ $a = 0.109842 + 0.293520I$ $b = 0.136239 + 0.648021I$	$5.58374 + 3.21684I$	0
$u = 0.382370 + 0.144909I$ $a = -2.29821 - 1.74988I$ $b = -0.105131 + 0.442226I$	$-1.00840 - 2.70031I$	$-7.30327 + 8.03455I$
$u = 0.382370 - 0.144909I$ $a = -2.29821 + 1.74988I$ $b = -0.105131 - 0.442226I$	$-1.00840 + 2.70031I$	$-7.30327 - 8.03455I$
$u = 0.257995 + 0.303118I$ $a = -0.360406 - 0.861445I$ $b = -0.005399 + 0.393666I$	$-0.107004 - 0.841367I$	$-2.66690 + 7.99137I$
$u = 0.257995 - 0.303118I$ $a = -0.360406 + 0.861445I$ $b = -0.005399 - 0.393666I$	$-0.107004 + 0.841367I$	$-2.66690 - 7.99137I$
$u = 0.171710 + 0.316302I$ $a = -0.600051 - 0.117965I$ $b = 0.29575 + 1.66039I$	$-0.194780 + 0.812413I$	$0.93566 + 8.09045I$
$u = 0.171710 - 0.316302I$ $a = -0.600051 + 0.117965I$ $b = 0.29575 - 1.66039I$	$-0.194780 - 0.812413I$	$0.93566 - 8.09045I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.324588+0.004379I$ $a=2.89984-0.03792I$ $b=0.408718+0.019164I$	$-2.18849+0.0001I$	$-8.36748+0.29865I$
$u=-0.324588-0.004379I$ $a=2.89984+0.03792I$ $b=0.408718-0.019164I$	$-2.18849-0.0001I$	$-8.36748-0.29865I$
$u=-0.00897+1.69781I$ $a=-0.39272-3.11626I$ $b=-0.72887-4.08987I$	$9.22742+1.71660I$	0
$u=-0.00897-1.69781I$ $a=-0.39272+3.11626I$ $b=-0.72887+4.08987I$	$9.22742-1.71660I$	0
$u=-0.02316+1.70966I$ $a=-0.43712-1.36309I$ $b=-1.14797-1.80302I$	$10.01640+1.89978I$	0
$u=-0.02316-1.70966I$ $a=-0.43712+1.36309I$ $b=-1.14797+1.80302I$	$10.01640-1.89978I$	0
$u=0.03865+1.71177I$ $a=1.64069+0.08478I$ $b=2.76769+0.00130I$	$11.79830-5.46026I$	0
$u=0.03865-1.71177I$ $a=1.64069-0.08478I$ $b=2.76769-0.00130I$	$11.79830+5.46026I$	0
$u=-0.09249+1.72353I$ $a=-1.00407-1.43069I$ $b=-0.84968-2.10785I$	$16.7807+3.8111I$	0
$u=-0.09249-1.72353I$ $a=-1.00407+1.43069I$ $b=-0.84968+2.10785I$	$16.7807-3.8111I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.01534 + 1.72861I$ $a = -3.06068 + 1.08280I$ $b = -2.72644 + 1.01992I$	$13.59990 - 0.32504I$	0
$u = 0.01534 - 1.72861I$ $a = -3.06068 - 1.08280I$ $b = -2.72644 - 1.01992I$	$13.59990 + 0.32504I$	0
$u = 0.10151 + 1.73858I$ $a = 0.30042 - 2.09901I$ $b = -0.09887 - 2.80202I$	$11.7585 - 8.8832I$	0
$u = 0.10151 - 1.73858I$ $a = 0.30042 + 2.09901I$ $b = -0.09887 + 2.80202I$	$11.7585 + 8.8832I$	0
$u = -0.06180 + 1.74280I$ $a = 0.02606 + 2.99792I$ $b = -0.42662 + 4.03827I$	$18.3544 + 7.4189I$	0
$u = -0.06180 - 1.74280I$ $a = 0.02606 - 2.99792I$ $b = -0.42662 - 4.03827I$	$18.3544 - 7.4189I$	0
$u = -0.09644 + 1.74449I$ $a = -0.35373 - 2.76349I$ $b = 0.12777 - 3.62070I$	$15.3794 + 14.6067I$	0
$u = -0.09644 - 1.74449I$ $a = -0.35373 + 2.76349I$ $b = 0.12777 + 3.62070I$	$15.3794 - 14.6067I$	0
$u = 0.04860 + 1.74694I$ $a = -0.05763 + 2.17932I$ $b = 0.31904 + 2.84558I$	$14.6212 - 3.2967I$	0
$u = 0.04860 - 1.74694I$ $a = -0.05763 - 2.17932I$ $b = 0.31904 - 2.84558I$	$14.6212 + 3.2967I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.05441 + 1.76916I$ $a = 0.76218 + 1.84328I$ $b = 0.78075 + 2.48268I$	$17.4935 - 1.1900I$	0
$u = -0.05441 - 1.76916I$ $a = 0.76218 - 1.84328I$ $b = 0.78075 - 2.48268I$	$17.4935 + 1.1900I$	0

II.

$\boldsymbol{I_2^u = \langle -5u^3+2u^2+8b-9u+3,\ -5u^3+2u^2+8a-9u+3,\ u^4-u^3+3u^2-2u+1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{5}{8}u^3-\frac{1}{4}u^2+\frac{9}{8}u-\frac{3}{8} \\ \frac{5}{8}u^3-\frac{1}{4}u^2+\frac{9}{8}u-\frac{3}{8} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2+1 \\ -u^3+u^2-2u+1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{7}{8}u^3-\frac{3}{4}u^2+\frac{11}{8}u-\frac{9}{8} \\ \frac{5}{4}u^3-\frac{1}{2}u^2+\frac{9}{4}u-\frac{3}{4} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{7}{8}u^3-\frac{3}{4}u^2+\frac{19}{8}u-\frac{9}{8} \\ \frac{1}{4}u^3-\frac{1}{2}u^2+\frac{5}{4}u-\frac{3}{4} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ -u^3-u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{279}{64}u^3 - \frac{51}{32}u^2 + \frac{731}{64}u - \frac{609}{64}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^4$
c_2	$8(8u^4-15u^3+12u^2-5u+1)$
c_3	$8(8u^4-3u^3+6u^2-u+1)$
c_4	$(u+1)^4$
c_5	$u^4-u^3+u^2+1$
c_6, c_7, c_8	$u^4-u^3+3u^2-2u+1$
c_9	$u^4+u^3+u^2+1$
c_{10}	u^4
c_{11}, c_{12}	$u^4+u^3+3u^2+2u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y-1)^4$
c_2	$64(64y^4 - 33y^3 + 10y^2 - y + 1)$
c_3	$64(64y^4 + 87y^3 + 46y^2 + 11y + 1)$
c_5, c_9	$y^4 + y^3 + 3y^2 + 2y + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_{10}	y^4

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = -0.057058 + 0.537058I$ $b = -0.057058 + 0.537058I$	$-1.85594 - 1.41510I$	$-5.90053 + 5.61802I$
$u = 0.395123 - 0.506844I$ $a = -0.057058 - 0.537058I$ $b = -0.057058 - 0.537058I$	$-1.85594 + 1.41510I$	$-5.90053 - 5.61802I$
$u = 0.10488 + 1.55249I$ $a = -0.130442 - 0.641504I$ $b = -0.130442 - 0.641504I$	$5.14581 - 3.16396I$	$-7.79478 + 1.12451I$
$u = 0.10488 - 1.55249I$ $a = -0.130442 + 0.641504I$ $b = -0.130442 + 0.641504I$	$5.14581 + 3.16396I$	$-7.79478 - 1.12451I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^4)(u^{62}-5u^{61}+\cdots-321u+64)$
c_2	$64(8u^4-15u^3+\cdots-5u+1)(8u^{62}-57u^{61}+\cdots-5508u+7609)$
c_3	$64(8u^4-3u^3+\cdots-u+1)(8u^{62}-21u^{61}+\cdots+2370u+179)$
c_4	$((u+1)^4)(u^{62}-5u^{61}+\cdots-321u+64)$
c_5	$(u^4-u^3+u^2+1)(u^{62}+2u^{61}+\cdots+3u+1)$
c_6, c_7, c_8	$(u^4-u^3+3u^2-2u+1)(u^{62}-2u^{61}+\cdots-3u+1)$
c_9	$(u^4+u^3+u^2+1)(u^{62}+2u^{61}+\cdots+3u+1)$
c_{10}	$u^4(u^{62}+3u^{61}+\cdots+2496u+1024)$
c_{11}, c_{12}	$(u^4+u^3+3u^2+2u+1)(u^{62}-2u^{61}+\cdots-3u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^4)(y^{62} - 31y^{61} + \cdots + 34687y + 4096)$
c_2	$4096(64y^4 - 33y^3 + 10y^2 - y + 1)$ $\cdot\,(64y^{62} + 223y^{61} + \cdots + 795786284y + 57896881)$
c_3	$4096(64y^4 + 87y^3 + 46y^2 + 11y + 1)$ $\cdot\,(64y^{62} - 2857y^{61} + \cdots - 2988464y + 32041)$
c_5, c_9	$(y^4 + y^3 + 3y^2 + 2y + 1)(y^{62} - 34y^{61} + \cdots - 5y + 1)$
c_6, c_7, c_8 c_{11}, c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)(y^{62} + 82y^{61} + \cdots - 5y + 1)$
c_{10}	$y^4(y^{62} - 27y^{61} + \cdots - 9949184y + 1048576)$