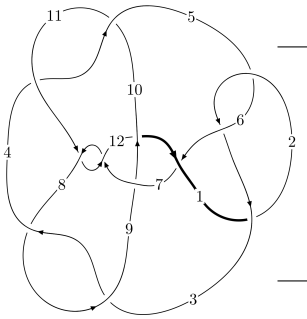
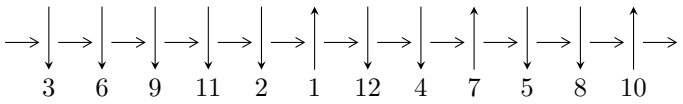
$12a_{0400}$ $(K12a_{0400})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 26679u^{42} + 790144u^{41} + \cdots + 8192b + 610828288,$$
$$10603u^{42} + 301637u^{41} + \cdots + 8192a + 19992576,\ u^{43} + 30u^{42} + \cdots + 385024u + 16384\rangle$$
$$I_2^u = \langle -8.60222 \times 10^{37}a^{27}u^2 - 3.77941 \times 10^{39}a^{26}u^2 + \cdots - 2.58200 \times 10^{42}a - 7.32442 \times 10^{41},$$
$$2a^{27}u^2 - 7a^{26}u^2 + \cdots + 3296a + 2157,\ u^3 - u^2 + 2u - 1\rangle$$
$$I_3^u = \langle -9u^{25} + 6u^{24} + \cdots + b - 9,\ 18u^{25} - 24u^{24} + \cdots + a + 8,\ u^{26} - u^{25} + \cdots + u + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 153 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.

$$\boldsymbol{I_1^u = \langle 2.67\times 10^4 u^{42} + 7.90\times 10^5 u^{41} + \cdots + 8192b + 6.11\times 10^8,\ 1.06\times 10^4 u^{42} + 3.02\times 10^5 u^{41} + \cdots + 8192a + 2.00\times 10^7,\ u^{43} + 30u^{42} + \cdots + 385024u + 16384\rangle}$$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.29431u^{42} - 36.8209u^{41} + \cdots - 81825.5u - 2440.50 \\ -3.25671u^{42} - 96.4531u^{41} + \cdots - 1.67525\times 10^6 u - 74564 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -4.55103u^{42} - 133.274u^{41} + \cdots - 1757075u - 77004.5 \\ -3.25671u^{42} - 96.4531u^{41} + \cdots - 1.67525\times 10^6 u - 74564 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.499939u^{42} + 14.4927u^{41} + \cdots + 183273.u + 8147 \\ 0.505493u^{42} + 14.6592u^{41} + \cdots + 184343.u + 8191 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -6.94025u^{42} - 203.805u^{41} + \cdots - 3.09936\times 10^6 u - 137933 \\ -3.15442u^{42} - 92.8909u^{41} + \cdots - 1.35488\times 10^6 u - 60351 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{91}{16384}u^{42} + \frac{341}{2048}u^{41} + \cdots + \frac{4275}{4}u + 45 \\ -0.505493u^{42} - 14.6592u^{41} + \cdots - 184342.u - 8191 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.237915u^{42} + 6.90613u^{41} + \cdots + 93291.5u + 4151.50 \\ -1.75134u^{42} - 51.0520u^{41} + \cdots - 736163.u - 32898 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 3.88507u^{42} + 113.576u^{41} + \cdots + 1.71937\times 10^6 u + 76981 \\ 0.272095u^{42} + 7.25439u^{41} + \cdots - 251149.u - 12291 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 3.28180u^{42} + 97.8960u^{41} + \cdots + 2709292u + 125155. \\ -2.14587u^{42} - 61.9363u^{41} + \cdots - 531596u - 22175 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{53359}{2048}u^{42} - \frac{97463}{128}u^{41} + \cdots - 12484440u - 560338$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{43}+21u^{42}+\cdots+224u+64$
c_2, c_5	$u^{43}+9u^{42}+\cdots+80u+8$
c_3, c_4, c_8 c_{10}	$u^{43}+18u^{41}+\cdots+2u+1$
c_6	$u^{43}+30u^{42}+\cdots+41536u+3032$
c_7, c_{11}	$u^{43}+30u^{42}+\cdots+385024u+16384$
c_9, c_{12}	$u^{43}+2u^{42}+\cdots+8u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{43} + 3y^{42} + \cdots + 39424y - 4096$
c_2, c_5	$y^{43} - 21y^{42} + \cdots + 224y - 64$
c_3, c_4, c_8 c_{10}	$y^{43} + 36y^{42} + \cdots + 4y - 1$
c_6	$y^{43} + 18y^{42} + \cdots + 78220512y - 9193024$
c_7, c_{11}	$y^{43} + 30y^{42} + \cdots + 2751463424y - 268435456$
c_9, c_{12}	$y^{43} + 42y^{41} + \cdots + 24y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.141174+0.991391I$ $a=-0.085886+0.903257I$ $b=\ \ 0.563509-0.402868I$	$0.045461-1.350040I$	0
$u=-0.141174-0.991391I$ $a=-0.085886-0.903257I$ $b=\ \ 0.563509+0.402868I$	$0.045461+1.350040I$	0
$u=-0.321326+0.968331I$ $a=\ \ 0.229246-0.655333I$ $b=-0.571811+0.178496I$	$1.45520+2.49719I$	0
$u=-0.321326-0.968331I$ $a=\ \ 0.229246+0.655333I$ $b=-0.571811-0.178496I$	$1.45520-2.49719I$	0
$u=-0.628507+0.854269I$ $a=\ \ 0.386710+0.186990I$ $b=-0.037084-0.487628I$	$-1.18844+2.49867I$	0
$u=-0.628507-0.854269I$ $a=\ \ 0.386710-0.186990I$ $b=-0.037084+0.487628I$	$-1.18844-2.49867I$	0
$u=-0.440030+1.016850I$ $a=\ \ 0.487011-0.449150I$ $b=-0.623560-0.104987I$	$0.70092+3.36027I$	0
$u=-0.440030-1.016850I$ $a=\ \ 0.487011+0.449150I$ $b=-0.623560+0.104987I$	$0.70092-3.36027I$	0
$u=-0.524536+1.018160I$ $a=-0.595872+0.207373I$ $b=\ \ 0.538712+0.351178I$	$-2.68991+0.53318I$	0
$u=-0.524536-1.018160I$ $a=-0.595872-0.207373I$ $b=\ \ 0.538712-0.351178I$	$-2.68991-0.53318I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.459036+1.056680I$ $a=-0.629338+0.454727I$ $b=\ \ 0.728720+0.191735I$	$-1.61281+7.80728I$	0
$u=-0.459036-1.056680I$ $a=-0.629338-0.454727I$ $b=\ \ 0.728720-0.191735I$	$-1.61281-7.80728I$	0
$u=-0.727722+0.345230I$ $a=-0.390881-0.271091I$ $b=-0.643766+0.587315I$	$-4.62705+4.05996I$	0
$u=-0.727722-0.345230I$ $a=-0.390881+0.271091I$ $b=-0.643766-0.587315I$	$-4.62705-4.05996I$	0
$u=-1.248100+0.323970I$ $a=\ \ 0.171912+0.390499I$ $b=\ \ 0.331711-1.306820I$	$1.77506+12.52070I$	0
$u=-1.248100-0.323970I$ $a=\ \ 0.171912-0.390499I$ $b=\ \ 0.331711+1.306820I$	$1.77506-12.52070I$	0
$u=-0.664252+0.222668I$ $a=-0.449126-0.203576I$ $b=-0.759214+0.398613I$	$-4.00770-3.63985I$	0
$u=-0.664252-0.222668I$ $a=-0.449126+0.203576I$ $b=-0.759214-0.398613I$	$-4.00770+3.63985I$	0
$u=-1.238890+0.500023I$ $a=\ \ 0.239069+0.432482I$ $b=\ \ 0.279145-1.158180I$	$-1.23780+4.03638I$	0
$u=-1.238890-0.500023I$ $a=\ \ 0.239069-0.432482I$ $b=\ \ 0.279145+1.158180I$	$-1.23780-4.03638I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.584884+0.309875I$ $a=\ \ 0.479239+0.287501I$ $b=\ \ 0.594121-0.396160I$	$-1.33046+0.54618I$	0
$u=-0.584884-0.309875I$ $a=\ \ 0.479239-0.287501I$ $b=\ \ 0.594121+0.396160I$	$-1.33046-0.54618I$	0
$u=-1.297050+0.349750I$ $a=-0.170490-0.416255I$ $b=-0.280409+1.286670I$	$4.20709+7.07734I$	0
$u=-1.297050-0.349750I$ $a=-0.170490+0.416255I$ $b=-0.280409-1.286670I$	$4.20709-7.07734I$	0
$u=-0.48161+1.51978I$ $a=-0.47157-1.60413I$ $b=-0.56874+1.55957I$	$7.6153+18.5782I$	0
$u=-0.48161-1.51978I$ $a=-0.47157+1.60413I$ $b=-0.56874-1.55957I$	$7.6153-18.5782I$	0
$u=-0.48644+1.53140I$ $a=\ \ 0.47480+1.56961I$ $b=\ \ 0.54001-1.53934I$	$10.1557+13.2774I$	0
$u=-0.48644-1.53140I$ $a=\ \ 0.47480-1.56961I$ $b=\ \ 0.54001+1.53934I$	$10.1557-13.2774I$	0
$u=-0.46452+1.54696I$ $a=-0.41321-1.54612I$ $b=-0.56187+1.47570I$	$5.11499+10.03670I$	0
$u=-0.46452-1.54696I$ $a=-0.41321+1.54612I$ $b=-0.56187-1.47570I$	$5.11499-10.03670I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.52604+1.57157I$ $a=\ \ 0.51299+1.44640I$ $b=\ \ 0.42087-1.49118I$	$12.6114+10.3447I$	0
$u=-0.52604-1.57157I$ $a=\ \ 0.51299-1.44640I$ $b=\ \ 0.42087+1.49118I$	$12.6114-10.3447I$	0
$u=-0.315713$ $a=\ \ 0.975950$ $b=\ \ 0.450279$	-0.825361	-12.5660
$u=-0.55239+1.60470I$ $a=-0.51074-1.37094I$ $b=-0.36428+1.44514I$	$12.24020+4.85185I$	0
$u=-0.55239-1.60470I$ $a=-0.51074+1.37094I$ $b=-0.36428-1.44514I$	$12.24020-4.85185I$	0
$u=-1.72863+0.24263I$ $a=-0.072616-0.550295I$ $b=-0.064060+1.260030I$	$6.56444+3.14469I$	0
$u=-1.72863-0.24263I$ $a=-0.072616+0.550295I$ $b=-0.064060-1.260030I$	$6.56444-3.14469I$	0
$u=-1.12384+1.56359I$ $a=\ \ 0.462489+0.868585I$ $b=\ \ 0.066274-1.206250I$	$4.68041-4.47850I$	0
$u=-1.12384-1.56359I$ $a=\ \ 0.462489-0.868585I$ $b=\ \ 0.066274+1.206250I$	$4.68041+4.47850I$	0
$u=-0.27940+1.95370I$ $a=\ \ 0.225940+1.207500I$ $b=\ \ 0.355651-1.108640I$	$2.46971+6.73678I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.27940-1.95370I$ $a=\quad 0.225940-1.207500I$ $b=\quad 0.355651+1.108640I$	$2.46971-6.73678I$	0
$u=-0.92378+1.94706I$ $a=-0.367644-1.032200I$ $b=-0.169059+1.200010I$	$7.51100+1.64842I$	0
$u=-0.92378-1.94706I$ $a=-0.367644+1.032200I$ $b=-0.169059-1.200010I$	$7.51100-1.64842I$	0

II. $I_2^u = \langle -8.60\times 10^{37}a^{27}u^2 - 3.78\times 10^{39}a^{26}u^2 + \cdots - 2.58\times 10^{42}a - 7.32\times 10^{41},\ 2a^{27}u^2 - 7a^{26}u^2 + \cdots + 3296a + 2157,\ u^3 - u^2 + 2u - 1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ 0.0000696629a^{27}u^2 + 0.00306066a^{26}u^2 + \cdots + 2.09097a + 0.593150 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0000696629a^{27}u^2 + 0.00306066a^{26}u^2 + \cdots + 3.09097a + 0.593150 \\ 0.0000696629a^{27}u^2 + 0.00306066a^{26}u^2 + \cdots + 2.09097a + 0.593150 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.00358219a^{27}u^2 - 0.00427447a^{26}u^2 + \cdots - 0.386814a + 1.56523 \\ -0.00191659a^{27}u^2 - 0.00286074a^{26}u^2 + \cdots - 0.253071a + 1.66181 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.00248453a^{27}u^2 - 0.00893272a^{26}u^2 + \cdots - 13.7006a - 5.06251 \\ -0.00102338a^{27}u^2 - 0.00267878a^{26}u^2 + \cdots - 5.92254a - 1.61674 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.00279023a^{27}u^2 - 0.00308918a^{26}u^2 + \cdots - 0.197048a + 1.19803 \\ -0.000791967a^{27}u^2 - 0.00118528a^{26}u^2 + \cdots - 0.189767a + 1.56720 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.000696726a^{27}u^2 + 0.00438385a^{26}u^2 + \cdots + 4.36618a + 1.76693 \\ 0.000391131a^{27}u^2 + 0.00109796a^{26}u^2 + \cdots + 1.67363a - 0.773644 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.00166864a^{27}u^2 - 0.000705943a^{26}u^2 + \cdots + 2.78062a + 2.34278 \\ -0.00299725a^{27}u^2 - 0.00401772a^{26}u^2 + \cdots - 7.95573a - 0.515825 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.00243342a^{27}u^2 - 0.00342678a^{26}u^2 + \cdots - 7.31203a - 2.87622 \\ -0.00273069a^{27}u^2 - 0.00362666a^{26}u^2 + \cdots - 2.76642a - 2.34768 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.00519361a^{27}u^2 - 0.00202993a^{26}u^2 + \cdots - 11.2433a - 10.9384$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{14}+7u^{13}+\cdots+u+1)^6$
c_2, c_5	$(u^{14}-u^{13}+\cdots-u+1)^6$
c_3, c_4, c_8 c_{10}	$u^{84}-u^{83}+\cdots-1050404u+428849$
c_6	$(u^{14}-3u^{13}+\cdots-7u+3)^6$
c_7, c_{11}	$(u^3-u^2+2u-1)^{28}$
c_9, c_{12}	$u^{84}+15u^{83}+\cdots+36868u+1913$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{14}+y^{13}+\cdots+7y+1)^6$
c_2, c_5	$(y^{14}-7y^{13}+\cdots-y+1)^6$
c_3, c_4, c_8 c_{10}	$y^{84}+75y^{83}+\cdots-72738646416y+183911464801$
c_6	$(y^{14}+5y^{13}+\cdots+23y+9)^6$
c_7, c_{11}	$(y^3+3y^2+2y-1)^{28}$
c_9, c_{12}	$y^{84}-17y^{83}+\cdots-49043376y+3659569$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = 0.446492 + 0.770300I$ $b = 0.361715 - 0.283323I$	$1.89472 + 5.70311I$	$-3.21373 - 3.20086I$
$u = 0.215080 + 1.307140I$ $a = -0.153256 + 1.260880I$ $b = -0.96681 - 1.26598I$	$6.26422 - 1.42329I$	$-1.99952 + 2.44997I$
$u = 0.215080 + 1.307140I$ $a = 0.592822 + 0.277460I$ $b = -1.57401 - 0.22276I$	$1.89472 - 11.35940I$	$-3.21373 + 9.15975I$
$u = 0.215080 + 1.307140I$ $a = -0.341553 - 0.529574I$ $b = -0.524254 + 0.160677I$	$4.44645 + 0.80067I$	$-0.156420 + 0.347190I$
$u = 0.215080 + 1.307140I$ $a = 0.976934 - 0.984828I$ $b = 0.357506 + 0.990276I$	$6.26422 - 4.23296I$	$-1.99952 + 3.50893I$
$u = 0.215080 + 1.307140I$ $a = -0.480742 - 0.271257I$ $b = 1.46331 + 0.24708I$	$4.44645 - 6.45691I$	$-0.15642 + 5.61170I$
$u = 0.215080 + 1.307140I$ $a = -0.070671 + 0.534043I$ $b = 0.830538 - 0.324322I$	$0.13266 - 2.35757I$	$-5.81854 + 3.16294I$
$u = 0.215080 + 1.307140I$ $a = -0.29601 + 1.46533I$ $b = 0.462719 - 1.161180I$	$1.89472 + 5.70311I$	$-3.21373 - 3.20086I$
$u = 0.215080 + 1.307140I$ $a = 0.487475 + 0.072695I$ $b = -1.412770 - 0.055883I$	$0.13266 - 3.29867I$	$-5.81854 + 2.79596I$
$u = 0.215080 + 1.307140I$ $a = -0.054488 - 0.440320I$ $b = 1.107410 + 0.500106I$	$6.51855 - 5.01941I$	$0.74894 + 6.83663I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.376117 + 0.161014I$ $b = -0.698326 - 0.355577I$	$6.51855 - 0.63684I$	$0.748943 - 0.877732I$
$u = 0.215080 + 1.307140I$ $a = -0.07193 + 1.61908I$ $b = -1.00243 - 1.65746I$	$7.39513 - 7.89997I$	$1.18128 + 9.31071I$
$u = 0.215080 + 1.307140I$ $a = 0.24055 - 1.62126I$ $b = -0.295982 + 1.211070I$	$4.44645 + 0.80067I$	$-0.156420 + 0.347190I$
$u = 0.215080 + 1.307140I$ $a = 0.19759 - 1.66051I$ $b = 0.84511 + 1.67738I$	$9.32158 - 3.45671I$	$5.82626 + 4.40196I$
$u = 0.215080 + 1.307140I$ $a = 0.02908 + 1.69675I$ $b = 0.110703 - 1.038360I$	$0.13266 - 2.35757I$	$-5.81854 + 3.16294I$
$u = 0.215080 + 1.307140I$ $a = 0.33218 - 1.81648I$ $b = 0.61182 + 1.81822I$	$9.32158 - 2.19954I$	$5.82626 + 1.55694I$
$u = 0.215080 + 1.307140I$ $a = 1.35231 - 1.31410I$ $b = 0.150003 + 1.159650I$	$7.39513 + 2.24373I$	$1.18128 - 3.35182I$
$u = 0.215080 + 1.307140I$ $a = -1.22854 + 1.46718I$ $b = -0.200764 - 1.234310I$	$9.32158 - 2.19954I$	$5.82626 + 1.55694I$
$u = 0.215080 + 1.307140I$ $a = -0.35716 + 1.90012I$ $b = -0.52500 - 1.93052I$	$7.39513 + 2.24373I$	$1.18128 - 3.35182I$
$u = 0.215080 + 1.307140I$ $a = -0.50155 + 1.89040I$ $b = -0.27989 - 1.74547I$	$6.26422 - 4.23296I$	$-1.99952 + 3.50893I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = 0.37367 - 1.92287I$ $b = -0.02323 + 1.44630I$	$6.51855 - 0.63684I$	0
$u = 0.215080 + 1.307140I$ $a = -1.15079 + 1.79049I$ $b = -0.202204 - 1.366590I$	$9.32158 - 3.45671I$	0
$u = 0.215080 + 1.307140I$ $a = -0.35992 + 2.15275I$ $b = -0.148313 - 1.389180I$	$6.51855 - 5.01941I$	0
$u = 0.215080 + 1.307140I$ $a = 0.82724 - 2.03016I$ $b = 0.23424 + 1.46518I$	$6.26422 - 1.42329I$	0
$u = 0.215080 + 1.307140I$ $a = -0.00621 - 2.25135I$ $b = 0.220990 + 1.205880I$	$0.13266 - 3.29867I$	0
$u = 0.215080 + 1.307140I$ $a = 1.17653 - 1.95613I$ $b = 0.18091 + 1.41259I$	$7.39513 - 7.89997I$	0
$u = 0.215080 + 1.307140I$ $a = -0.12046 + 2.33883I$ $b = -0.242929 - 1.279150I$	$4.44645 - 6.45691I$	0
$u = 0.215080 + 1.307140I$ $a = 0.07631 - 2.41590I$ $b = 0.282528 + 1.270790I$	$1.89472 - 11.35940I$	0
$u = 0.215080 - 1.307140I$ $a = 0.446492 - 0.770300I$ $b = 0.361715 + 0.283323I$	$1.89472 - 5.70311I$	$-3.21373 + 3.20086I$
$u = 0.215080 - 1.307140I$ $a = -0.153256 - 1.260880I$ $b = -0.96681 + 1.26598I$	$6.26422 + 1.42329I$	$-1.99952 - 2.44997I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 - 1.307140I$ $a = 0.592822 - 0.277460I$ $b = -1.57401 + 0.22276I$	$1.89472 + 11.35940I$	$-3.21373 - 9.15975I$
$u = 0.215080 - 1.307140I$ $a = -0.341553 + 0.529574I$ $b = -0.524254 - 0.160677I$	$4.44645 - 0.80067I$	$-0.156420 - 0.347190I$
$u = 0.215080 - 1.307140I$ $a = 0.976934 + 0.984828I$ $b = 0.357506 - 0.990276I$	$6.26422 + 4.23296I$	$-1.99952 - 3.50893I$
$u = 0.215080 - 1.307140I$ $a = -0.480742 + 0.271257I$ $b = 1.46331 - 0.24708I$	$4.44645 + 6.45691I$	$-0.15642 - 5.61170I$
$u = 0.215080 - 1.307140I$ $a = -0.070671 - 0.534043I$ $b = 0.830538 + 0.324322I$	$0.13266 + 2.35757I$	$-5.81854 - 3.16294I$
$u = 0.215080 - 1.307140I$ $a = -0.29601 - 1.46533I$ $b = 0.462719 + 1.161180I$	$1.89472 - 5.70311I$	$-3.21373 + 3.20086I$
$u = 0.215080 - 1.307140I$ $a = 0.487475 - 0.072695I$ $b = -1.412770 + 0.055883I$	$0.13266 + 3.29867I$	$-5.81854 - 2.79596I$
$u = 0.215080 - 1.307140I$ $a = -0.054488 + 0.440320I$ $b = 1.107410 - 0.500106I$	$6.51855 + 5.01941I$	$0.74894 - 6.83663I$
$u = 0.215080 - 1.307140I$ $a = -0.376117 - 0.161014I$ $b = -0.698326 + 0.355577I$	$6.51855 + 0.63684I$	$0.748943 + 0.877732I$
$u = 0.215080 - 1.307140I$ $a = -0.07193 - 1.61908I$ $b = -1.00243 + 1.65746I$	$7.39513 + 7.89997I$	$1.18128 - 9.31071I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 - 1.307140I$ $a = 0.24055 + 1.62126I$ $b = -0.295982 - 1.211070I$	$4.44645 - 0.80067I$	$-0.156420 - 0.347190I$
$u = 0.215080 - 1.307140I$ $a = 0.19759 + 1.66051I$ $b = 0.84511 - 1.67738I$	$9.32158 + 3.45671I$	$5.82626 - 4.40196I$
$u = 0.215080 - 1.307140I$ $a = 0.02908 - 1.69675I$ $b = 0.110703 + 1.038360I$	$0.13266 + 2.35757I$	$-5.81854 - 3.16294I$
$u = 0.215080 - 1.307140I$ $a = 0.33218 + 1.81648I$ $b = 0.61182 - 1.81822I$	$9.32158 + 2.19954I$	$5.82626 - 1.55694I$
$u = 0.215080 - 1.307140I$ $a = 1.35231 + 1.31410I$ $b = 0.150003 - 1.159650I$	$7.39513 - 2.24373I$	$1.18128 + 3.35182I$
$u = 0.215080 - 1.307140I$ $a = -1.22854 - 1.46718I$ $b = -0.200764 + 1.234310I$	$9.32158 + 2.19954I$	$5.82626 - 1.55694I$
$u = 0.215080 - 1.307140I$ $a = -0.35716 - 1.90012I$ $b = -0.52500 + 1.93052I$	$7.39513 - 2.24373I$	$1.18128 + 3.35182I$
$u = 0.215080 - 1.307140I$ $a = -0.50155 - 1.89040I$ $b = -0.27989 + 1.74547I$	$6.26422 + 4.23296I$	$-1.99952 - 3.50893I$
$u = 0.215080 - 1.307140I$ $a = 0.37367 + 1.92287I$ $b = -0.02323 - 1.44630I$	$6.51855 + 0.63684I$	0
$u = 0.215080 - 1.307140I$ $a = -1.15079 - 1.79049I$ $b = -0.202204 + 1.366590I$	$9.32158 + 3.45671I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 - 1.307140I$ $a = -0.35992 - 2.15275I$ $b = -0.148313 + 1.389180I$	$6.51855 + 5.01941I$	0
$u = 0.215080 - 1.307140I$ $a = 0.82724 + 2.03016I$ $b = 0.23424 - 1.46518I$	$6.26422 + 1.42329I$	0
$u = 0.215080 - 1.307140I$ $a = -0.00621 + 2.25135I$ $b = 0.220990 - 1.205880I$	$0.13266 + 3.29867I$	0
$u = 0.215080 - 1.307140I$ $a = 1.17653 + 1.95613I$ $b = 0.18091 - 1.41259I$	$7.39513 + 7.89997I$	0
$u = 0.215080 - 1.307140I$ $a = -0.12046 - 2.33883I$ $b = -0.242929 + 1.279150I$	$4.44645 + 6.45691I$	0
$u = 0.215080 - 1.307140I$ $a = 0.07631 + 2.41590I$ $b = 0.282528 - 1.270790I$	$1.89472 + 11.35940I$	0
$u = 0.569840$ $a = -0.808428 + 0.692390I$ $b = 0.12559 + 1.44322I$	$3.25754 + 5.07185I$	$-5.34798 - 6.33126I$
$u = 0.569840$ $a = -0.808428 - 0.692390I$ $b = 0.12559 - 1.44322I$	$3.25754 - 5.07185I$	$-5.34798 + 6.33126I$
$u = 0.569840$ $a = 0.670591 + 0.828888I$ $b = -0.165610 + 1.371160I$	$5.18400 - 0.62859I$	$-0.70300 + 1.42251I$
$u = 0.569840$ $a = 0.670591 - 0.828888I$ $b = -0.165610 - 1.371160I$	$5.18400 + 0.62859I$	$-0.70300 - 1.42251I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.569840$ $a = \ 0.297525 + 0.697087I$ $b = \ 0.156597 - 1.056340I$	$2.38096 + 2.19128I$	$-5.78032 - 3.85718I$
$u = \ 0.569840$ $a = \ 0.297525 - 0.697087I$ $b = \ 0.156597 + 1.056340I$	$2.38096 - 2.19128I$	$-5.78032 + 3.85718I$
$u = \ 0.569840$ $a = \ 0.679371 + 1.079220I$ $b = \ 0.499832 - 0.974163I$	$0.30887 + 3.62879I$	$-6.68569 - 2.63226I$
$u = \ 0.569840$ $a = \ 0.679371 - 1.079220I$ $b = \ 0.499832 + 0.974163I$	$0.30887 - 3.62879I$	$-6.68569 + 2.63226I$
$u = \ 0.569840$ $a = \ 0.578384 + 1.152540I$ $b = -0.287758 + 1.253680I$	$5.18400 + 0.62859I$	$-0.70300 - 1.42251I$
$u = \ 0.569840$ $a = \ 0.578384 - 1.152540I$ $b = -0.287758 - 1.253680I$	$5.18400 - 0.62859I$	$-0.70300 + 1.42251I$
$u = \ 0.569840$ $a = -0.791512 + 1.118030I$ $b = -0.581483 - 1.011450I$	$-2.24286 - 8.53123I$	$-9.74299 + 6.18031I$
$u = \ 0.569840$ $a = -0.791512 - 1.118030I$ $b = -0.581483 + 1.011450I$	$-2.24286 + 8.53123I$	$-9.74299 - 6.18031I$
$u = \ 0.569840$ $a = -0.502487 + 0.301443I$ $b = -0.010694 + 1.353720I$	$2.12664 - 1.40484I$	$-8.52878 + 0.52948I$
$u = \ 0.569840$ $a = -0.502487 - 0.301443I$ $b = -0.010694 - 1.353720I$	$2.12664 + 1.40484I$	$-8.52878 - 0.52948I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.569840$ $a = -0.61948 + 1.27674I$ $b = -0.570092 - 0.821363I$	$-4.00492 - 0.47055I$	$-12.34780 - 0.18349I$
$u = 0.569840$ $a = -0.61948 - 1.27674I$ $b = -0.570092 + 0.821363I$	$-4.00492 + 0.47055I$	$-12.34780 + 0.18349I$
$u = 0.569840$ $a = -0.60950 + 1.31572I$ $b = 0.389110 + 1.216960I$	$3.25754 - 5.07185I$	$-5.34798 + 6.33126I$
$u = 0.569840$ $a = -0.60950 - 1.31572I$ $b = 0.389110 - 1.216960I$	$3.25754 + 5.07185I$	$-5.34798 - 6.33126I$
$u = 0.569840$ $a = -0.27366 + 1.43244I$ $b = 0.292431 + 0.943180I$	$2.12664 + 1.40484I$	$-8.52878 - 0.52948I$
$u = 0.569840$ $a = -0.27366 - 1.43244I$ $b = 0.292431 - 0.943180I$	$2.12664 - 1.40484I$	$-8.52878 + 0.52948I$
$u = 0.569840$ $a = -0.01603 + 1.64904I$ $b = -0.258777 + 0.204719I$	$2.38096 + 2.19128I$	$-5.78032 - 3.85718I$
$u = 0.569840$ $a = -0.01603 - 1.64904I$ $b = -0.258777 - 0.204719I$	$2.38096 - 2.19128I$	$-5.78032 + 3.85718I$
$u = 0.569840$ $a = 0.32258 + 1.70088I$ $b = 0.677865 - 0.259490I$	$-4.00492 - 0.47055I$	$-12.34780 - 0.18349I$
$u = 0.569840$ $a = 0.32258 - 1.70088I$ $b = 0.677865 + 0.259490I$	$-4.00492 + 0.47055I$	$-12.34780 + 0.18349I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.569840$ $a = -0.20519 + 1.76940I$ $b = -0.671957 - 0.059864I$	$0.30887 + 3.62879I$	$-6.68569 - 2.63226I$
$u = \ 0.569840$ $a = -0.20519 - 1.76940I$ $b = -0.671957 + 0.059864I$	$0.30887 - 3.62879I$	$-6.68569 + 2.63226I$
$u = \ 0.569840$ $a = \ 0.23804 + 1.83570I$ $b = \ 0.782388 - 0.060736I$	$-2.24286 - 8.53123I$	$-9.74299 + 6.18031I$
$u = \ 0.569840$ $a = \ 0.23804 - 1.83570I$ $b = \ 0.782388 + 0.060736I$	$-2.24286 + 8.53123I$	$-9.74299 - 6.18031I$

III.

$\boldsymbol{I_3^u = \langle -9u^{25}+6u^{24}+\cdots+b-9,\ 18u^{25}-24u^{24}+\cdots+a+8,\ u^{26}-u^{25}+\cdots+u+1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -18u^{25} + 24u^{24} + \cdots - 20u - 8 \\ 9u^{25} - 6u^{24} + \cdots + 10u + 9 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -9u^{25} + 18u^{24} + \cdots - 10u + 1 \\ 9u^{25} - 6u^{24} + \cdots + 10u + 9 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{25} + 2u^{24} + \cdots - 6u + 1 \\ u^{25} - u^{24} + \cdots + 3u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -8u^{25} + 6u^{24} + \cdots - 20u - 11 \\ -5u^{25} + 15u^{24} + \cdots - 3u + 17 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -2u^{25} + 3u^{24} + \cdots - 8u + 1 \\ u^{25} - u^{24} + \cdots + 2u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 4u^{25} - 4u^{24} + \cdots + 8u^2 + 12u \\ -u^{25} - u^{24} + \cdots - 5u - 3 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 4u^{25} - 16u^{24} + \cdots + u - 15 \\ -10u^{25} + 11u^{24} + \cdots - 9u + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -5u^{25} + 4u^{24} + \cdots + 7u - 4 \\ -3u^{25} + 11u^{24} + \cdots + 9u^2 - 9u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 18u^{25} - 73u^{24} + 304u^{23} - 889u^{22} + 2011u^{21} - 4662u^{20} + 7114u^{19} - 14178u^{18} + 15519u^{17} - 28627u^{16} + 22509u^{15} - 41212u^{14} + 22013u^{13} - 43680u^{12} + 13676u^{11} - 34421u^{10} + 4309u^9 - 19742u^8 - 137u^7 - 7608u^6 - 379u^5 - 1694u^4 + 8u^3 - 197u^2 + 6u - 33$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{26} - 14u^{25} + \cdots - 8u + 1$
c_2	$u^{26} + 2u^{25} + \cdots + 2u + 1$
c_3, c_{10}	$u^{26} + 14u^{24} + \cdots - u + 1$
c_4, c_8	$u^{26} + 14u^{24} + \cdots + u + 1$
c_5	$u^{26} - 2u^{25} + \cdots - 2u + 1$
c_6	$u^{26} - 3u^{25} + \cdots - 4u + 1$
c_7	$u^{26} + u^{25} + \cdots - u + 1$
c_9, c_{12}	$u^{26} - 2u^{25} + \cdots + u + 1$
c_{11}	$u^{26} - u^{25} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{26}+2y^{25}+\cdots+12y+1$
c_2, c_5	$y^{26}-14y^{25}+\cdots-8y+1$
c_3, c_4, c_8 c_{10}	$y^{26}+28y^{25}+\cdots+11y+1$
c_6	$y^{26}+13y^{25}+\cdots+14y+1$
c_7, c_{11}	$y^{26}+27y^{25}+\cdots+13y+1$
c_9, c_{12}	$y^{26}-4y^{25}+\cdots-5y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.538786+0.927958I$ $a=-0.112900-0.570257I$ $b=\ \ 0.222980+0.266051I$	$-1.75224+2.38712I$	$-13.9122-2.8805I$
$u=-0.538786-0.927958I$ $a=-0.112900+0.570257I$ $b=\ \ 0.222980-0.266051I$	$-1.75224-2.38712I$	$-13.9122+2.8805I$
$u=-0.385729+0.815157I$ $a=\ \ 0.918364+0.023525I$ $b=-0.433428+0.278716I$	$-2.45237+1.53374I$	$-6.64758-3.23071I$
$u=-0.385729-0.815157I$ $a=\ \ 0.918364-0.023525I$ $b=-0.433428-0.278716I$	$-2.45237-1.53374I$	$-6.64758+3.23071I$
$u=\ \ 0.730968+0.900749I$ $a=\ \ 0.864910-0.641217I$ $b=\ \ 0.051962+1.327580I$	$4.86648+3.58079I$	$-0.55619-2.13740I$
$u=\ \ 0.730968-0.900749I$ $a=\ \ 0.864910+0.641217I$ $b=\ \ 0.051962-1.327580I$	$4.86648-3.58079I$	$-0.55619+2.13740I$
$u=-0.286870+0.746325I$ $a=\ \ 1.41967-0.12345I$ $b=-0.552506+0.530432I$	$-0.58107+9.20519I$	$-3.22347-8.30608I$
$u=-0.286870-0.746325I$ $a=\ \ 1.41967+0.12345I$ $b=-0.552506-0.530432I$	$-0.58107-9.20519I$	$-3.22347+8.30608I$
$u=-0.327261+0.703730I$ $a=-1.312270+0.330457I$ $b=\ \ 0.437480-0.545304I$	$1.80693+4.30322I$	$0.37768-4.82059I$
$u=-0.327261-0.703730I$ $a=-1.312270-0.330457I$ $b=\ \ 0.437480+0.545304I$	$1.80693-4.30322I$	$0.37768+4.82059I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.210837 + 1.210730I$ $a = 0.85501 - 1.70045I$ $b = 0.45375 + 1.55359I$	$6.67132 - 6.55082I$	$-2.32316 + 4.78372I$
$u = 0.210837 - 1.210730I$ $a = 0.85501 + 1.70045I$ $b = 0.45375 - 1.55359I$	$6.67132 + 6.55082I$	$-2.32316 - 4.78372I$
$u = 0.158437 + 1.249590I$ $a = 0.67810 - 1.77851I$ $b = 0.55249 + 1.49240I$	$6.25739 + 0.03067I$	$-2.30536 - 3.14986I$
$u = 0.158437 - 1.249590I$ $a = 0.67810 + 1.77851I$ $b = 0.55249 - 1.49240I$	$6.25739 - 0.03067I$	$-2.30536 + 3.14986I$
$u = 0.257779 + 1.247520I$ $a = -0.80164 + 1.55464I$ $b = -0.40111 - 1.48164I$	$8.43711 - 2.51138I$	$0.761345 - 0.589032I$
$u = 0.257779 - 1.247520I$ $a = -0.80164 - 1.55464I$ $b = -0.40111 + 1.48164I$	$8.43711 + 2.51138I$	$0.761345 + 0.589032I$
$u = 0.162202 + 1.315430I$ $a = -0.56367 + 1.65852I$ $b = -0.52745 - 1.39209I$	$7.86913 - 3.31219I$	$2.10270 + 3.46382I$
$u = 0.162202 - 1.315430I$ $a = -0.56367 - 1.65852I$ $b = -0.52745 + 1.39209I$	$7.86913 + 3.31219I$	$2.10270 - 3.46382I$
$u = -0.333869 + 0.320216I$ $a = -1.57614 + 1.82817I$ $b = 0.147799 - 0.800490I$	$3.50519 + 2.37158I$	$3.44007 - 4.77951I$
$u = -0.333869 - 0.320216I$ $a = -1.57614 - 1.82817I$ $b = 0.147799 + 0.800490I$	$3.50519 - 2.37158I$	$3.44007 + 4.77951I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.279100 + 0.287750I$ $a = 1.98871 + 1.03413I$ $b = -0.103078 + 1.153030I$	$3.19567 - 1.81789I$	$0.76577 + 3.77634I$
$u = 0.279100 - 0.287750I$ $a = 1.98871 - 1.03413I$ $b = -0.103078 - 1.153030I$	$3.19567 + 1.81789I$	$0.76577 - 3.77634I$
$u = 0.64419 + 1.48810I$ $a = -0.545796 + 1.078510I$ $b = -0.222723 - 1.261530I$	$7.10098 - 1.73215I$	0
$u = 0.64419 - 1.48810I$ $a = -0.545796 - 1.078510I$ $b = -0.222723 + 1.261530I$	$7.10098 + 1.73215I$	0
$u = -0.07100 + 1.82525I$ $a = 0.187650 - 1.267600I$ $b = 0.373837 + 1.040950I$	$2.77856 - 6.53404I$	0
$u = -0.07100 - 1.82525I$ $a = 0.187650 + 1.267600I$ $b = 0.373837 - 1.040950I$	$2.77856 + 6.53404I$	0

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^{14}+7u^{13}+\cdots+u+1)^6)(u^{26}-14u^{25}+\cdots-8u+1)$ $\cdot(u^{43}+21u^{42}+\cdots+224u+64)$
c_2	$((u^{14}-u^{13}+\cdots-u+1)^6)(u^{26}+2u^{25}+\cdots+2u+1)$ $\cdot(u^{43}+9u^{42}+\cdots+80u+8)$
c_3, c_{10}	$(u^{26}+14u^{24}+\cdots-u+1)(u^{43}+18u^{41}+\cdots+2u+1)$ $\cdot(u^{84}-u^{83}+\cdots-1050404u+428849)$
c_4, c_8	$(u^{26}+14u^{24}+\cdots+u+1)(u^{43}+18u^{41}+\cdots+2u+1)$ $\cdot(u^{84}-u^{83}+\cdots-1050404u+428849)$
c_5	$((u^{14}-u^{13}+\cdots-u+1)^6)(u^{26}-2u^{25}+\cdots-2u+1)$ $\cdot(u^{43}+9u^{42}+\cdots+80u+8)$
c_6	$((u^{14}-3u^{13}+\cdots-7u+3)^6)(u^{26}-3u^{25}+\cdots-4u+1)$ $\cdot(u^{43}+30u^{42}+\cdots+41536u+3032)$
c_7	$((u^3-u^2+2u-1)^{28})(u^{26}+u^{25}+\cdots-u+1)$ $\cdot(u^{43}+30u^{42}+\cdots+385024u+16384)$
c_9, c_{12}	$(u^{26}-2u^{25}+\cdots+u+1)(u^{43}+2u^{42}+\cdots+8u+1)$ $\cdot(u^{84}+15u^{83}+\cdots+36868u+1913)$
c_{11}	$((u^3-u^2+2u-1)^{28})(u^{26}-u^{25}+\cdots+u+1)$ $\cdot(u^{43}+30u^{42}+\cdots+385024u+16384)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^{14}+y^{13}+\cdots+7y+1)^6)(y^{26}+2y^{25}+\cdots+12y+1)$ $\cdot(y^{43}+3y^{42}+\cdots+39424y-4096)$
c_2, c_5	$((y^{14}-7y^{13}+\cdots-y+1)^6)(y^{26}-14y^{25}+\cdots-8y+1)$ $\cdot(y^{43}-21y^{42}+\cdots+224y-64)$
c_3, c_4, c_8 c_{10}	$(y^{26}+28y^{25}+\cdots+11y+1)(y^{43}+36y^{42}+\cdots+4y-1)$ $\cdot(y^{84}+75y^{83}+\cdots-72738646416y+183911464801)$
c_6	$((y^{14}+5y^{13}+\cdots+23y+9)^6)(y^{26}+13y^{25}+\cdots+14y+1)$ $\cdot(y^{43}+18y^{42}+\cdots+78220512y-9193024)$
c_7, c_{11}	$((y^3+3y^2+2y-1)^{28})(y^{26}+27y^{25}+\cdots+13y+1)$ $\cdot(y^{43}+30y^{42}+\cdots+2751463424y-268435456)$
c_9, c_{12}	$(y^{26}-4y^{25}+\cdots-5y+1)(y^{43}+42y^{41}+\cdots+24y-1)$ $\cdot(y^{84}-17y^{83}+\cdots-49043376y+3659569)$