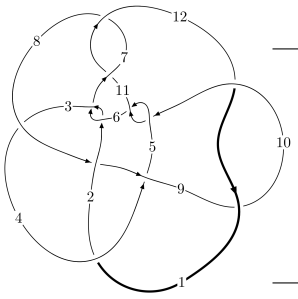
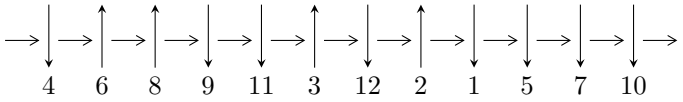
$12a_{0895}$ $(K12a_{0895})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -5.76967 \times 10^{713}u^{140} - 2.01798 \times 10^{714}u^{139} + \cdots + 5.49307 \times 10^{715}b - 4.88700 \times 10^{716}, \\
&\quad - 3.01897 \times 10^{716}u^{140} - 1.28805 \times 10^{717}u^{139} + \cdots + 4.46587 \times 10^{718}a + 4.49215 \times 10^{719}, \\
&\quad u^{141} + 4u^{140} + \cdots + 17088u - 2439\rangle \\
I_2^u &= \langle 7.04074 \times 10^{51}u^{39} - 4.76153 \times 10^{52}u^{38} + \cdots + 1.87032 \times 10^{52}b + 3.25362 \times 10^{52}, \\
&\quad - 9.67601 \times 10^{51}u^{39} + 7.48438 \times 10^{52}u^{38} + \cdots + 1.87032 \times 10^{52}a + 1.84688 \times 10^{53},\ u^{40} - 7u^{39} + \cdots - u + \\
I_3^u &= \langle 1.91827 \times 10^{15}u^{23} - 1.49385 \times 10^{15}u^{22} + \cdots + 6.45013 \times 10^{15}b - 5.92118 \times 10^{16}, \\
&\quad - 3.90530 \times 10^{16}u^{23} + 3.28309 \times 10^{16}u^{22} + \cdots + 7.09515 \times 10^{16}a + 1.19578 \times 10^{18}, \\
&\quad u^{24} + 6u^{22} + \cdots - 35u + 22\rangle \\
I_4^u &= \langle 2au + 5b + 4a + 2u - 1,\ 2a^2 + au + 2a + 7,\ u^2 + 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 209 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. $\boldsymbol{I_1^u = \langle -5.77 \times 10^{713} u^{140} - 2.02 \times 10^{714} u^{139} + \cdots + 5.49 \times 10^{715} b - 4.89 \times 10^{716},\ -3.02 \times 10^{716} u^{140} - 1.29 \times 10^{717} u^{139} + \cdots + 4.47 \times 10^{718} a + 4.49 \times 10^{719},\ u^{141} + 4u^{140} + \cdots + 17088u - 2439 \rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.00676008u^{140} + 0.0288421u^{139} + \cdots + 29.7986u - 10.0588 \\ 0.0105035u^{140} + 0.0367369u^{139} + \cdots - 98.0007u + 8.89665 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.00145415u^{140} - 0.0330147u^{139} + \cdots - 461.608u + 67.9518 \\ 0.000487711u^{140} + 0.000914384u^{139} + \cdots - 29.1630u + 4.04438 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0698353u^{140} + 0.335805u^{139} + \cdots + 725.297u - 128.431 \\ -0.0172725u^{140} - 0.0588641u^{139} + \cdots + 170.894u - 17.6429 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0172636u^{140} + 0.0655790u^{139} + \cdots - 68.2021u - 1.16219 \\ 0.0105035u^{140} + 0.0367369u^{139} + \cdots - 98.0007u + 8.89665 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0273329u^{140} + 0.108049u^{139} + \cdots - 59.1992u + 4.91525 \\ 0.00133350u^{140} + 0.00670385u^{139} + \cdots + 22.2324u - 4.11296 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.00194108u^{140} + 0.0360596u^{139} + \cdots + 750.730u - 108.524 \\ 0.000164712u^{140} + 0.000743466u^{139} + \cdots + 15.2249u - 1.76281 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.106236u^{140} + 0.508300u^{139} + \cdots + 1272.99u - 219.614 \\ -0.00228481u^{140} - 0.000604315u^{139} + \cdots + 187.057u - 25.4958 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.00248641u^{140} + 0.0321432u^{139} + \cdots + 722.092u - 104.111 \\ -0.000299686u^{140} - 0.00101533u^{139} + \cdots + 14.9075u - 1.58172 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0414932u^{140} + 0.207190u^{139} + \cdots + 724.356u - 117.682$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$4(4u^{141} - 32u^{140} + \cdots + 3141992u - 178832)$
c_2, c_6	$u^{141} + u^{140} + \cdots + 351u + 55$
c_3	$4(4u^{141} - 8u^{140} + \cdots + 6.23445 \times 10^8 u + 6.42613 \times 10^7)$
c_4	$u^{141} - 3u^{140} + \cdots - 220u + 8$
c_5, c_{10}	$4(4u^{141} + 132u^{140} + \cdots + 2.38371 \times 10^8 u + 8904704)$
c_7, c_{11}	$u^{141} - u^{140} + \cdots - 1837u + 121$
c_8	$u^{141} + 10u^{139} + \cdots + 111111u + 8833$
c_9, c_{12}	$u^{141} - 4u^{140} + \cdots + 17088u + 2439$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$16(16y^{141}+424y^{140}+\cdots-1.92565\times10^{12}y-3.19809\times10^{10})$
c_2, c_6	$y^{141}-69y^{140}+\cdots+134971y-3025$
c_3	$16(16y^{141}-152y^{140}+\cdots+1.54486\times10^{17}y-4.12952\times10^{15})$
c_4	$y^{141}+5y^{140}+\cdots-28352y-64$
c_5, c_{10}	16 $\cdot(16y^{141}-1384y^{140}+\cdots-256485850349568y-79293753327616)$
c_7, c_{11}	$y^{141}-85y^{140}+\cdots-1868361y-14641$
c_8	$y^{141}+20y^{140}+\cdots-1754905229y-78021889$
c_9, c_{12}	$y^{141}+96y^{140}+\cdots-196639272y-5948721$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.095449 + 0.996239I$ $a = -0.24990 + 2.49987I$ $b = 0.93960 - 2.16853I$	$3.80151 - 2.20413I$	0
$u = 0.095449 - 0.996239I$ $a = -0.24990 - 2.49987I$ $b = 0.93960 + 2.16853I$	$3.80151 + 2.20413I$	0
$u = -0.278400 + 0.967152I$ $a = 1.09229 - 1.41787I$ $b = -0.278031 + 0.544892I$	$-4.33096 + 1.67929I$	0
$u = -0.278400 - 0.967152I$ $a = 1.09229 + 1.41787I$ $b = -0.278031 - 0.544892I$	$-4.33096 - 1.67929I$	0
$u = 0.673598 + 0.748269I$ $a = 0.099029 + 0.593807I$ $b = -0.432598 + 0.199508I$	$-1.97243 - 1.27647I$	0
$u = 0.673598 - 0.748269I$ $a = 0.099029 - 0.593807I$ $b = -0.432598 - 0.199508I$	$-1.97243 + 1.27647I$	0
$u = 0.223039 + 0.987573I$ $a = 0.58442 - 2.32933I$ $b = 0.375446 + 0.667281I$	$1.30063 + 0.67197I$	0
$u = 0.223039 - 0.987573I$ $a = 0.58442 + 2.32933I$ $b = 0.375446 - 0.667281I$	$1.30063 - 0.67197I$	0
$u = -0.861339 + 0.471457I$ $a = -0.841235 + 0.248130I$ $b = 1.049060 + 0.677654I$	$-5.60110 + 1.90491I$	0
$u = -0.861339 - 0.471457I$ $a = -0.841235 - 0.248130I$ $b = 1.049060 - 0.677654I$	$-5.60110 - 1.90491I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.578248+0.849511I$ $a=\ \ 0.16209+1.76372I$ $b=\ \ 0.450976-0.250429I$	$-5.57625+5.13631I$	0
$u=-0.578248-0.849511I$ $a=\ \ 0.16209-1.76372I$ $b=\ \ 0.450976+0.250429I$	$-5.57625-5.13631I$	0
$u=-0.033831+1.031260I$ $a=\ \ 2.32764+3.12623I$ $b=\ \ 0.367131-0.392934I$	$-0.026952-0.379141I$	0
$u=-0.033831-1.031260I$ $a=\ \ 2.32764-3.12623I$ $b=\ \ 0.367131+0.392934I$	$-0.026952+0.379141I$	0
$u=\ \ 1.016850+0.206866I$ $a=-0.033017-0.247268I$ $b=-0.939675-0.380482I$	$-3.61008-3.14065I$	0
$u=\ \ 1.016850-0.206866I$ $a=-0.033017+0.247268I$ $b=-0.939675+0.380482I$	$-3.61008+3.14065I$	0
$u=-0.209952+1.035660I$ $a=-0.31694-1.62986I$ $b=\ \ 0.94747+1.52081I$	$-2.20475+4.72856I$	0
$u=-0.209952-1.035660I$ $a=-0.31694+1.62986I$ $b=\ \ 0.94747-1.52081I$	$-2.20475-4.72856I$	0
$u=-0.922781+0.181538I$ $a=\ \ 0.539393-0.043026I$ $b=-1.098240-0.402940I$	$-8.54223-0.85326I$	0
$u=-0.922781-0.181538I$ $a=\ \ 0.539393+0.043026I$ $b=-1.098240+0.402940I$	$-8.54223+0.85326I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.675697+0.821263I$ $a=\ \ 0.364305-0.208869I$ $b=\ \ 1.018160+0.063668I$	$-5.68601-0.21782I$	0
$u=-0.675697-0.821263I$ $a=\ \ 0.364305+0.208869I$ $b=\ \ 1.018160-0.063668I$	$-5.68601+0.21782I$	0
$u=-0.189768+1.050750I$ $a=\ \ 0.73522+2.04080I$ $b=-1.26158-1.97879I$	$0.13706+10.32340I$	0
$u=-0.189768-1.050750I$ $a=\ \ 0.73522-2.04080I$ $b=-1.26158+1.97879I$	$0.13706-10.32340I$	0
$u=\ \ 0.461850+0.966092I$ $a=\ \ 0.286025+1.188000I$ $b=-0.380600-0.160610I$	$-1.52047-1.82440I$	0
$u=\ \ 0.461850-0.966092I$ $a=\ \ 0.286025-1.188000I$ $b=-0.380600+0.160610I$	$-1.52047+1.82440I$	0
$u=\ \ 0.044679+1.080780I$ $a=\ \ 2.14087+1.72159I$ $b=-0.0247542-0.0353605I$	$-0.477909-0.034324I$	0
$u=\ \ 0.044679-1.080780I$ $a=\ \ 2.14087-1.72159I$ $b=-0.0247542+0.0353605I$	$-0.477909+0.034324I$	0
$u=\ \ 1.095870+0.052456I$ $a=-0.349762-0.256249I$ $b=\ \ 0.940163-0.629172I$	$-1.03152+7.37835I$	0
$u=\ \ 1.095870-0.052456I$ $a=-0.349762+0.256249I$ $b=\ \ 0.940163+0.629172I$	$-1.03152-7.37835I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.019656+1.101390I$ $a=-0.01077-1.42051I$ $b=-0.611209+1.110780I$	$3.11731-0.70452I$	0
$u=-0.019656-1.101390I$ $a=-0.01077+1.42051I$ $b=-0.611209-1.110780I$	$3.11731+0.70452I$	0
$u=-0.489040+0.987743I$ $a=\ \ 0.24346-1.85055I$ $b=-0.488190+0.283367I$	$-2.72546+11.86230I$	0
$u=-0.489040-0.987743I$ $a=\ \ 0.24346+1.85055I$ $b=-0.488190-0.283367I$	$-2.72546-11.86230I$	0
$u=-0.155070+0.883628I$ $a=-0.0614654-0.0052386I$ $b=\ \ 1.60945-0.00209I$	$-3.84260+5.33344I$	0
$u=-0.155070-0.883628I$ $a=-0.0614654+0.0052386I$ $b=\ \ 1.60945+0.00209I$	$-3.84260-5.33344I$	0
$u=-0.694327+0.555340I$ $a=-0.417191+0.457679I$ $b=-1.119510-0.110845I$	$-4.04522-7.29883I$	0
$u=-0.694327-0.555340I$ $a=-0.417191-0.457679I$ $b=-1.119510+0.110845I$	$-4.04522+7.29883I$	0
$u=-1.025070+0.445390I$ $a=\ \ 0.796456+0.041793I$ $b=-0.857853-0.711688I$	$-7.38816-1.30257I$	0
$u=-1.025070-0.445390I$ $a=\ \ 0.796456-0.041793I$ $b=-0.857853+0.711688I$	$-7.38816+1.30257I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.038976 + 1.120640I$ $a = -0.46583 + 1.43064I$ $b = 1.30233 - 1.15628I$	$3.62778 + 2.27571I$	0
$u = 0.038976 - 1.120640I$ $a = -0.46583 - 1.43064I$ $b = 1.30233 + 1.15628I$	$3.62778 - 2.27571I$	0
$u = 0.791794 + 0.364067I$ $a = 0.658338 - 0.489197I$ $b = 0.662326 + 0.952354I$	$-0.23836 - 8.83833I$	0
$u = 0.791794 - 0.364067I$ $a = 0.658338 + 0.489197I$ $b = 0.662326 - 0.952354I$	$-0.23836 + 8.83833I$	0
$u = -0.108520 + 0.864015I$ $a = -0.304622 + 0.778437I$ $b = -1.36169 - 0.42386I$	$-5.07629 + 0.01794I$	0
$u = -0.108520 - 0.864015I$ $a = -0.304622 - 0.778437I$ $b = -1.36169 + 0.42386I$	$-5.07629 - 0.01794I$	0
$u = 0.433497 + 1.079400I$ $a = -0.45407 - 1.46625I$ $b = 0.541968 + 0.409617I$	$0.59225 - 6.29271I$	0
$u = 0.433497 - 1.079400I$ $a = -0.45407 + 1.46625I$ $b = 0.541968 - 0.409617I$	$0.59225 + 6.29271I$	0
$u = 0.772808 + 0.284016I$ $a = -0.794886 + 0.073393I$ $b = -0.655988 - 0.614001I$	$-2.84985 - 3.74641I$	0
$u = 0.772808 - 0.284016I$ $a = -0.794886 - 0.073393I$ $b = -0.655988 + 0.614001I$	$-2.84985 + 3.74641I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.116995 + 1.186880I$ $a = 1.17084 + 1.75963I$ $b = -1.64443 - 1.68412I$	$6.13081 - 0.95901I$	0
$u = 0.116995 - 1.186880I$ $a = 1.17084 - 1.75963I$ $b = -1.64443 + 1.68412I$	$6.13081 + 0.95901I$	0
$u = 0.762710 + 0.257587I$ $a = 0.076333 + 0.424199I$ $b = 1.130040 + 0.010546I$	$-1.88596 + 1.89489I$	0
$u = 0.762710 - 0.257587I$ $a = 0.076333 - 0.424199I$ $b = 1.130040 - 0.010546I$	$-1.88596 - 1.89489I$	0
$u = -0.270954 + 1.170260I$ $a = 0.170206 + 1.303010I$ $b = 1.024440 - 0.947296I$	$2.74652 + 3.73023I$	0
$u = -0.270954 - 1.170260I$ $a = 0.170206 - 1.303010I$ $b = 1.024440 + 0.947296I$	$2.74652 - 3.73023I$	0
$u = 1.201760 + 0.060830I$ $a = -0.1256270 + 0.0200055I$ $b = 0.420361 - 0.575058I$	$0.589234 - 0.358253I$	0
$u = 1.201760 - 0.060830I$ $a = -0.1256270 - 0.0200055I$ $b = 0.420361 + 0.575058I$	$0.589234 + 0.358253I$	0
$u = 0.821312 + 0.905452I$ $a = -0.583524 + 0.792567I$ $b = -0.648764 - 0.500737I$	$-2.35045 - 4.14937I$	0
$u = 0.821312 - 0.905452I$ $a = -0.583524 - 0.792567I$ $b = -0.648764 + 0.500737I$	$-2.35045 + 4.14937I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.404991 + 1.154850I$ $a = 0.630534 - 0.842574I$ $b = 0.835140 + 0.646297I$	$5.82172 - 3.79345I$	0
$u = 0.404991 - 1.154850I$ $a = 0.630534 + 0.842574I$ $b = 0.835140 - 0.646297I$	$5.82172 + 3.79345I$	0
$u = -0.753077 + 0.180043I$ $a = -0.365478 + 0.123764I$ $b = 1.228850 + 0.603117I$	$-6.46992 - 5.49078I$	0
$u = -0.753077 - 0.180043I$ $a = -0.365478 - 0.123764I$ $b = 1.228850 - 0.603117I$	$-6.46992 + 5.49078I$	0
$u = -0.364004 + 1.192990I$ $a = -0.24811 - 1.48008I$ $b = -0.98163 + 1.13955I$	$7.36986 + 7.93251I$	0
$u = -0.364004 - 1.192990I$ $a = -0.24811 + 1.48008I$ $b = -0.98163 - 1.13955I$	$7.36986 - 7.93251I$	0
$u = 0.028388 + 1.257480I$ $a = 0.402500 - 1.176360I$ $b = -0.810417 + 1.090670I$	$2.80486 - 1.03172I$	0
$u = 0.028388 - 1.257480I$ $a = 0.402500 + 1.176360I$ $b = -0.810417 - 1.090670I$	$2.80486 + 1.03172I$	0
$u = -1.027780 + 0.752205I$ $a = -0.522991 - 0.578895I$ $b = -0.167769 + 0.850939I$	$-0.42952 - 3.99608I$	0
$u = -1.027780 - 0.752205I$ $a = -0.522991 + 0.578895I$ $b = -0.167769 - 0.850939I$	$-0.42952 + 3.99608I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.239749+1.262670I$ $a=-0.381170-1.110580I$ $b=-0.821813+0.811462I$	$5.66996-1.40079I$	0
$u=-0.239749-1.262670I$ $a=-0.381170+1.110580I$ $b=-0.821813-0.811462I$	$5.66996+1.40079I$	0
$u=-0.424657+1.215650I$ $a=-0.44057+1.89762I$ $b=1.17671-1.30359I$	$-3.24276+9.88118I$	0
$u=-0.424657-1.215650I$ $a=-0.44057-1.89762I$ $b=1.17671+1.30359I$	$-3.24276-9.88118I$	0
$u=-1.296020+0.062738I$ $a=0.266504-0.067133I$ $b=-0.903362-0.647003I$	$-4.4975-13.8083I$	0
$u=-1.296020-0.062738I$ $a=0.266504+0.067133I$ $b=-0.903362+0.647003I$	$-4.4975+13.8083I$	0
$u=-0.090997+0.689676I$ $a=0.75731-2.87460I$ $b=0.15772+1.62523I$	$-1.16476-8.75716I$	$-4.00000+6.32566I$
$u=-0.090997-0.689676I$ $a=0.75731+2.87460I$ $b=0.15772-1.62523I$	$-1.16476+8.75716I$	$-4.00000-6.32566I$
$u=0.696925+1.105420I$ $a=-0.586808+1.100390I$ $b=0.021083-1.331250I$	$4.08935-3.81621I$	0
$u=0.696925-1.105420I$ $a=-0.586808-1.100390I$ $b=0.021083+1.331250I$	$4.08935+3.81621I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.692163+0.026852I$ $a=-0.341080-0.457206I$ $b=-0.467671-0.837379I$	$3.94525-4.12110I$	$2.00476+6.03155I$
$u=-0.692163-0.026852I$ $a=-0.341080+0.457206I$ $b=-0.467671+0.837379I$	$3.94525+4.12110I$	$2.00476-6.03155I$
$u=-0.368285+1.256350I$ $a=0.492021+0.837457I$ $b=0.184064-0.976095I$	$7.75006-0.16742I$	0
$u=-0.368285-1.256350I$ $a=0.492021-0.837457I$ $b=0.184064+0.976095I$	$7.75006+0.16742I$	0
$u=0.082752+0.682213I$ $a=0.25986-1.59581I$ $b=-0.480821+0.125817I$	$2.90833+0.54985I$	$0.-2.49912I$
$u=0.082752-0.682213I$ $a=0.25986+1.59581I$ $b=-0.480821-0.125817I$	$2.90833-0.54985I$	$0.+2.49912I$
$u=-0.572117+1.188010I$ $a=0.22700-1.63667I$ $b=-1.04827+1.41722I$	$-4.84048+7.04288I$	0
$u=-0.572117-1.188010I$ $a=0.22700+1.63667I$ $b=-1.04827-1.41722I$	$-4.84048-7.04288I$	0
$u=0.118677+1.315820I$ $a=-1.165210+0.647451I$ $b=1.54492-0.70662I$	$3.51125-5.42172I$	0
$u=0.118677-1.315820I$ $a=-1.165210-0.647451I$ $b=1.54492+0.70662I$	$3.51125+5.42172I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.304472 + 1.288300I$ $a = -0.273508 - 1.095850I$ $b = 0.823513 + 0.980253I$	$3.22138 - 3.22005I$	0
$u = 0.304472 - 1.288300I$ $a = -0.273508 + 1.095850I$ $b = 0.823513 - 0.980253I$	$3.22138 + 3.22005I$	0
$u = -0.474912 + 1.258850I$ $a = 0.52311 - 1.64667I$ $b = -1.13901 + 1.24021I$	$-5.10546 + 5.89115I$	0
$u = -0.474912 - 1.258850I$ $a = 0.52311 + 1.64667I$ $b = -1.13901 - 1.24021I$	$-5.10546 - 5.89115I$	0
$u = -0.147529 + 0.634432I$ $a = 0.39125 - 2.89761I$ $b = -0.332874 + 0.493773I$	$2.48180 + 0.60490I$	$1.40848 - 10.75245I$
$u = -0.147529 - 0.634432I$ $a = 0.39125 + 2.89761I$ $b = -0.332874 - 0.493773I$	$2.48180 - 0.60490I$	$1.40848 + 10.75245I$
$u = 0.368719 + 1.312350I$ $a = 0.25224 - 1.50950I$ $b = 0.954925 + 1.041100I$	$4.65207 - 12.80880I$	0
$u = 0.368719 - 1.312350I$ $a = 0.25224 + 1.50950I$ $b = 0.954925 - 1.041100I$	$4.65207 + 12.80880I$	0
$u = 0.436981 + 1.293490I$ $a = -0.070782 + 1.161930I$ $b = -1.104490 - 0.864456I$	$1.64150 - 8.12827I$	0
$u = 0.436981 - 1.293490I$ $a = -0.070782 - 1.161930I$ $b = -1.104490 + 0.864456I$	$1.64150 + 8.12827I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.589650$ $a = -0.0844322$ $b = 0.503916$	-0.993656	-9.42120
$u = -0.72142 + 1.21826I$ $a = -0.221152 - 1.170240I$ $b = -0.867133 + 1.102440I$	$5.18531 + 8.67679I$	0
$u = -0.72142 - 1.21826I$ $a = -0.221152 + 1.170240I$ $b = -0.867133 - 1.102440I$	$5.18531 - 8.67679I$	0
$u = -1.42311 + 0.14289I$ $a = -0.240043 + 0.065262I$ $b = 0.788948 + 0.535738I$	$-6.86872 - 6.52858I$	0
$u = -1.42311 - 0.14289I$ $a = -0.240043 - 0.065262I$ $b = 0.788948 - 0.535738I$	$-6.86872 + 6.52858I$	0
$u = 0.11954 + 1.43299I$ $a = 1.26768 + 0.67811I$ $b = -1.87514 - 0.59266I$	$3.48668 - 6.32406I$	0
$u = 0.11954 - 1.43299I$ $a = 1.26768 - 0.67811I$ $b = -1.87514 + 0.59266I$	$3.48668 + 6.32406I$	0
$u = 0.53069 + 1.34040I$ $a = 0.305157 + 1.310640I$ $b = -1.29375 - 1.09616I$	$0.81939 - 8.57995I$	0
$u = 0.53069 - 1.34040I$ $a = 0.305157 - 1.310640I$ $b = -1.29375 + 1.09616I$	$0.81939 + 8.57995I$	0
$u = 0.56155 + 1.33754I$ $a = -0.27150 - 1.48735I$ $b = 1.25418 + 1.29637I$	$2.97127 - 13.23700I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.56155 - 1.33754I$ $a = -0.27150 + 1.48735I$ $b = 1.25418 - 1.29637I$	$2.97127 + 13.23700I$	0
$u = 0.47650 + 1.37102I$ $a = 0.273115 + 1.264520I$ $b = -1.26634 - 0.97467I$	$1.14752 - 8.38055I$	0
$u = 0.47650 - 1.37102I$ $a = 0.273115 - 1.264520I$ $b = -1.26634 + 0.97467I$	$1.14752 + 8.38055I$	0
$u = 0.55306 + 1.35665I$ $a = 0.016611 - 1.287340I$ $b = 0.90183 + 1.09110I$	$4.76509 - 5.67698I$	0
$u = 0.55306 - 1.35665I$ $a = 0.016611 + 1.287340I$ $b = 0.90183 - 1.09110I$	$4.76509 + 5.67698I$	0
$u = 0.39319 + 1.42101I$ $a = -0.249934 + 0.773927I$ $b = -0.437830 - 0.774382I$	$5.90469 - 5.99126I$	0
$u = 0.39319 - 1.42101I$ $a = -0.249934 - 0.773927I$ $b = -0.437830 + 0.774382I$	$5.90469 + 5.99126I$	0
$u = 0.472360 + 0.148330I$ $a = 1.071760 + 0.764314I$ $b = 0.753831 - 0.733289I$	$-0.91799 - 3.33318I$	$-7.98281 + 6.38975I$
$u = 0.472360 - 0.148330I$ $a = 1.071760 - 0.764314I$ $b = 0.753831 + 0.733289I$	$-0.91799 + 3.33318I$	$-7.98281 - 6.38975I$
$u = -0.74301 + 1.30989I$ $a = 0.247964 + 1.026490I$ $b = 0.353615 - 1.199870I$	$1.68452 + 11.14580I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.74301-1.30989I$ $a=\ 0.247964-1.026490I$ $b=\ 0.353615+1.199870I$	$1.68452-11.14580I$	0
$u=-0.62087+1.38320I$ $a=\ 0.17734-1.42748I$ $b=-1.21219+1.20921I$	$-0.3495+20.4090I$	0
$u=-0.62087-1.38320I$ $a=\ 0.17734+1.42748I$ $b=-1.21219-1.20921I$	$-0.3495-20.4090I$	0
$u=-0.66607+1.37632I$ $a=-0.131806+1.283250I$ $b=\ 1.16053-1.10406I$	$-2.94876+13.56370I$	0
$u=-0.66607-1.37632I$ $a=-0.131806-1.283250I$ $b=\ 1.16053+1.10406I$	$-2.94876-13.56370I$	0
$u=\ 0.350187+0.100007I$ $a=\ 1.69469-1.48006I$ $b=-0.307860-0.494384I$	$2.93289+0.31451I$	$-0.636286-0.320969I$
$u=\ 0.350187-0.100007I$ $a=\ 1.69469+1.48006I$ $b=-0.307860+0.494384I$	$2.93289-0.31451I$	$-0.636286+0.320969I$
$u=-0.78322+1.44536I$ $a=\ 0.019178-0.755213I$ $b=-0.436793+0.877558I$	$-2.15491+5.33149I$	0
$u=-0.78322-1.44536I$ $a=\ 0.019178+0.755213I$ $b=-0.436793-0.877558I$	$-2.15491-5.33149I$	0
$u=\ 0.238393+0.248820I$ $a=-2.16462+0.63875I$ $b=-0.218505+0.787591I$	$-1.63741+0.14479I$	$-8.98491+0.24333I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.238393 - 0.248820I$ $a = -2.16462 - 0.63875I$ $b = -0.218505 - 0.787591I$	$-1.63741 - 0.14479I$	$-8.98491 - 0.24333I$
$u = -0.293589 + 0.157443I$ $a = 0.21073 + 1.84452I$ $b = 0.338272 + 0.531830I$	$-0.164711 - 1.313570I$	$-2.39050 + 4.68838I$
$u = -0.293589 - 0.157443I$ $a = 0.21073 - 1.84452I$ $b = 0.338272 - 0.531830I$	$-0.164711 + 1.313570I$	$-2.39050 - 4.68838I$
$u = 0.96201 + 1.36726I$ $a = -0.339505 + 0.371102I$ $b = 0.158786 - 0.662280I$	$1.59809 + 2.43719I$	0
$u = 0.96201 - 1.36726I$ $a = -0.339505 - 0.371102I$ $b = 0.158786 + 0.662280I$	$1.59809 - 2.43719I$	0
$u = 0.40919 + 1.62261I$ $a = -0.287219 - 0.648808I$ $b = 0.485277 + 0.700341I$	$0.38531 - 3.74014I$	0
$u = 0.40919 - 1.62261I$ $a = -0.287219 + 0.648808I$ $b = 0.485277 - 0.700341I$	$0.38531 + 3.74014I$	0
$u = 0.082835 + 0.202285I$ $a = -4.21014 - 4.41810I$ $b = 0.276785 + 0.589204I$	$0.89037 - 2.84402I$	$0.58704 + 10.23878I$
$u = 0.082835 - 0.202285I$ $a = -4.21014 + 4.41810I$ $b = 0.276785 - 0.589204I$	$0.89037 + 2.84402I$	$0.58704 - 10.23878I$
$u = -0.22220 + 2.23712I$ $a = 0.175325 + 0.048584I$ $b = 0.0469480 - 0.1227540I$	$1.76811 - 6.01909I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.22220-2.23712I$		
$a=\quad 0.175325-0.048584I$	$1.76811+6.01909I$	0
$b=\quad 0.0469480+0.1227540I$		

II.

$\boldsymbol{I_2^u = \langle 7.04\times 10^{51}u^{39}-4.76\times 10^{52}u^{38}+\cdots+1.87\times 10^{52}b+3.25\times 10^{52},\ -9.68\times 10^{51}u^{39}+7.48\times 10^{52}u^{38}+\cdots+1.87\times 10^{52}a+1.85\times 10^{53},\ u^{40}-7u^{39}+\cdots-u+1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.517346u^{39} - 4.00166u^{38} + \cdots + 29.0470u - 9.87469 \\ -0.376446u^{39} + 2.54584u^{38} + \cdots - 4.50569u - 1.73961 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.746990u^{39} - 4.99380u^{38} + \cdots - 17.5519u + 12.1534 \\ 0.308064u^{39} - 2.13174u^{38} + \cdots + 6.29908u + 1.96875 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1.41085u^{39} - 9.18105u^{38} + \cdots + 8.37890u + 9.27228 \\ 0.164414u^{39} - 1.20753u^{38} + \cdots + 7.15413u + 0.946038 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.140900u^{39} - 1.45582u^{38} + \cdots + 24.5413u - 11.6143 \\ -0.376446u^{39} + 2.54584u^{38} + \cdots - 4.50569u - 1.73961 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2.19551u^{39} + 15.6904u^{38} + \cdots - 62.0796u - 0.779416 \\ -0.198038u^{39} + 1.37113u^{38} + \cdots - 10.8428u + 0.718068 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.928856u^{39} - 6.92910u^{38} + \cdots + 60.1391u - 11.5032 \\ -0.224848u^{39} + 1.41613u^{38} + \cdots + 2.57250u - 2.49551 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.25590u^{39} + 9.04130u^{38} + \cdots - 14.3346u - 14.9166 \\ -0.571063u^{39} + 3.89660u^{38} + \cdots - 14.5436u - 1.55020 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.971298u^{39} - 7.16873u^{38} + \cdots + 61.6895u - 11.7936 \\ -0.141405u^{39} + 0.843708u^{38} + \cdots + 4.13793u - 2.84333 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0.761502u^{39} - 5.64558u^{38} + \cdots + 34.2395u - 13.7197$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{40} - 12u^{39} + \cdots + 10u^2 + 1$
c_2	$u^{40} - 8u^{39} + \cdots - 12u + 1$
c_3	$u^{40} + 18u^{38} + \cdots - 37u + 17$
c_4	$u^{40} - 3u^{37} + \cdots + 2u + 1$
c_5	$u^{40} + 2u^{38} + \cdots + 4u + 1$
c_6	$u^{40} + 8u^{39} + \cdots + 12u + 1$
c_7	$u^{40} - 12u^{38} + \cdots - 4u + 1$
c_8	$u^{40} - 7u^{39} + \cdots - 18u^2 + 1$
c_9	$u^{40} - 7u^{39} + \cdots - u + 1$
c_{10}	$u^{40} + 2u^{38} + \cdots - 4u + 1$
c_{11}	$u^{40} - 12u^{38} + \cdots + 4u + 1$
c_{12}	$u^{40} + 7u^{39} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{40} - 28y^{39} + \cdots + 20y + 1$
c_2, c_6	$y^{40} - 20y^{39} + \cdots - 28y + 1$
c_3	$y^{40} + 36y^{39} + \cdots - 1403y + 289$
c_4	$y^{40} - 2y^{38} + \cdots + 4y + 1$
c_5, c_{10}	$y^{40} + 4y^{39} + \cdots + 6y + 1$
c_7, c_{11}	$y^{40} - 24y^{39} + \cdots - 36y + 1$
c_8	$y^{40} + 5y^{39} + \cdots - 36y + 1$
c_9, c_{12}	$y^{40} + 29y^{39} + \cdots + 99y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.946242+0.349510I$ $a=-0.805978+0.023558I$ $b=\ \ 0.933770+0.612301I$	$-7.51617-0.95415I$	$-8.43163-6.77725I$
$u=-0.946242-0.349510I$ $a=-0.805978-0.023558I$ $b=\ \ 0.933770-0.612301I$	$-7.51617+0.95415I$	$-8.43163+6.77725I$
$u=\ \ 0.030719+1.023790I$ $a=-0.39619+4.44348I$ $b=-0.042380-0.505633I$	$-0.221429+0.251934I$	$2.5500+14.3415I$
$u=\ \ 0.030719-1.023790I$ $a=-0.39619-4.44348I$ $b=-0.042380+0.505633I$	$-0.221429-0.251934I$	$2.5500-14.3415I$
$u=\ \ 0.564372+0.790539I$ $a=\ \ 0.992142-0.673448I$ $b=-0.261083+0.332273I$	$0.91210+1.80500I$	$-3.21044-0.95556I$
$u=\ \ 0.564372-0.790539I$ $a=\ \ 0.992142+0.673448I$ $b=-0.261083-0.332273I$	$0.91210-1.80500I$	$-3.21044+0.95556I$
$u=-0.387689+0.973413I$ $a=-0.58689-2.21445I$ $b=\ \ 0.00553+1.62010I$	$-1.01828+10.54540I$	$-4.40885-9.72254I$
$u=-0.387689-0.973413I$ $a=-0.58689+2.21445I$ $b=\ \ 0.00553-1.62010I$	$-1.01828-10.54540I$	$-4.40885+9.72254I$
$u=-0.663444+0.842376I$ $a=\ \ 0.67238+1.41264I$ $b=\ \ 0.291967-0.854619I$	$-4.39411+4.92275I$	$-7.18399-6.96673I$
$u=-0.663444-0.842376I$ $a=\ \ 0.67238-1.41264I$ $b=\ \ 0.291967+0.854619I$	$-4.39411-4.92275I$	$-7.18399+6.96673I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.055620 + 0.366287I$ $a = -0.189697 - 0.179477I$ $b = -0.936460 - 0.330534I$	$-3.99576 - 3.61565I$	$-18.3816 + 10.7652I$
$u = 1.055620 - 0.366287I$ $a = -0.189697 + 0.179477I$ $b = -0.936460 + 0.330534I$	$-3.99576 + 3.61565I$	$-18.3816 - 10.7652I$
$u = 0.452170 + 1.084660I$ $a = 0.40680 - 1.69607I$ $b = 0.09525 + 1.68813I$	$3.24706 - 3.50491I$	$-4.00000 + 5.54002I$
$u = 0.452170 - 1.084660I$ $a = 0.40680 + 1.69607I$ $b = 0.09525 - 1.68813I$	$3.24706 + 3.50491I$	$-4.00000 - 5.54002I$
$u = 0.148629 + 1.244320I$ $a = -0.794828 - 0.577364I$ $b = 1.40506 + 0.27340I$	$5.24080 - 1.41344I$	$0. + 4.19264I$
$u = 0.148629 - 1.244320I$ $a = -0.794828 + 0.577364I$ $b = 1.40506 - 0.27340I$	$5.24080 + 1.41344I$	$0. - 4.19264I$
$u = 0.401610 + 1.220670I$ $a = 0.41750 + 1.41563I$ $b = -0.87285 - 1.47486I$	$3.76804 - 0.18785I$	0
$u = 0.401610 - 1.220670I$ $a = 0.41750 - 1.41563I$ $b = -0.87285 + 1.47486I$	$3.76804 + 0.18785I$	0
$u = -0.440501 + 0.558188I$ $a = 0.692735 - 0.930380I$ $b = 1.039970 - 0.058216I$	$-6.14307 + 0.98694I$	$-11.27137 - 3.84049I$
$u = -0.440501 - 0.558188I$ $a = 0.692735 + 0.930380I$ $b = 1.039970 + 0.058216I$	$-6.14307 - 0.98694I$	$-11.27137 + 3.84049I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.424966 + 0.560119I$ $a = -0.488198 + 0.386585I$ $b = -0.209886 + 0.523726I$	$-1.16356 - 1.39520I$	$-3.05172 + 4.03753I$
$u = 0.424966 - 0.560119I$ $a = -0.488198 - 0.386585I$ $b = -0.209886 - 0.523726I$	$-1.16356 + 1.39520I$	$-3.05172 - 4.03753I$
$u = -0.494864 + 1.218550I$ $a = -0.38116 + 1.71946I$ $b = 1.07649 - 1.41659I$	$-4.58294 + 6.21882I$	0
$u = -0.494864 - 1.218550I$ $a = -0.38116 - 1.71946I$ $b = 1.07649 + 1.41659I$	$-4.58294 - 6.21882I$	0
$u = 0.613241 + 1.185480I$ $a = 0.243665 - 1.223480I$ $b = 0.902854 + 1.081210I$	$5.76751 - 7.92139I$	0
$u = 0.613241 - 1.185480I$ $a = 0.243665 + 1.223480I$ $b = 0.902854 - 1.081210I$	$5.76751 + 7.92139I$	0
$u = 0.950498 + 0.949142I$ $a = -0.484931 + 0.632484I$ $b = -0.525538 - 0.481617I$	$-2.03645 - 3.80527I$	0
$u = 0.950498 - 0.949142I$ $a = -0.484931 - 0.632484I$ $b = -0.525538 + 0.481617I$	$-2.03645 + 3.80527I$	0
$u = 0.209858 + 1.331430I$ $a = 0.918312 + 0.308142I$ $b = -1.53975 - 0.33334I$	$4.22311 - 4.85234I$	0
$u = 0.209858 - 1.331430I$ $a = 0.918312 - 0.308142I$ $b = -1.53975 + 0.33334I$	$4.22311 + 4.85234I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.44858 + 1.39285I$ $a = \ 0.378650 + 1.221020I$ $b = -1.34970 - 0.94623I$	$1.37535 - 8.67378I$	0
$u = \ 0.44858 - 1.39285I$ $a = \ 0.378650 - 1.221020I$ $b = -1.34970 + 0.94623I$	$1.37535 + 8.67378I$	0
$u = -0.022856 + 0.307036I$ $a = -0.95756 - 3.84593I$ $b = \ 0.569691 + 0.151923I$	$2.29224 - 0.06479I$	$-7.88478 - 2.95573I$
$u = -0.022856 - 0.307036I$ $a = -0.95756 + 3.84593I$ $b = \ 0.569691 - 0.151923I$	$2.29224 + 0.06479I$	$-7.88478 + 2.95573I$
$u = \ 1.25883 + 1.14060I$ $a = -0.259034 + 0.200620I$ $b = \ 0.147262 - 0.615239I$	$4.23721 + 1.26029I$	0
$u = \ 1.25883 - 1.14060I$ $a = -0.259034 - 0.200620I$ $b = \ 0.147262 + 0.615239I$	$4.23721 - 1.26029I$	0
$u = -0.024178 + 0.166635I$ $a = -4.53771 + 2.88086I$ $b = -1.262050 - 0.197915I$	$-4.82914 - 4.69377I$	$-9.21447 + 3.31739I$
$u = -0.024178 - 0.166635I$ $a = -4.53771 - 2.88086I$ $b = -1.262050 + 0.197915I$	$-4.82914 + 4.69377I$	$-9.21447 - 3.31739I$
$u = -0.07932 + 2.04703I$ $a = -0.340021 - 0.029482I$ $b = \ 0.531855 - 0.041257I$	$1.54762 - 5.97634I$	0
$u = -0.07932 - 2.04703I$ $a = -0.340021 + 0.029482I$ $b = \ 0.531855 + 0.041257I$	$1.54762 + 5.97634I$	0

III. $I_3^u = \langle 1.92\times 10^{15}u^{23} - 1.49\times 10^{15}u^{22} + \cdots + 6.45\times 10^{15}b - 5.92\times 10^{16},\ -3.91\times 10^{16}u^{23} + 3.28\times 10^{16}u^{22} + \cdots + 7.10\times 10^{16}a + 1.20\times 10^{18},\ u^{24} + 6u^{22} + \cdots - 35u + 22\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.550418u^{23} - 0.462724u^{22} + \cdots + 47.6321u - 16.8535 \\ -0.297399u^{23} + 0.231600u^{22} + \cdots - 28.3045u + 9.17993 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.550418u^{23} + 0.462724u^{22} + \cdots - 47.6321u + 17.8535 \\ 0.297399u^{23} - 0.231600u^{22} + \cdots + 28.3045u - 9.17993 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.253019u^{23} - 0.231124u^{22} + \cdots + 19.3275u - 7.67353 \\ -0.297399u^{23} + 0.231600u^{22} + \cdots - 28.3045u + 9.17993 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.279884u^{23} - 0.480690u^{22} + \cdots + 15.1249u - 14.8525 \\ 0.0570544u^{23} + 0.287597u^{22} + \cdots - 17.2953u + 11.3359 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.232519u^{23} - 0.396682u^{22} + \cdots + 28.1335u - 16.8365 \\ -0.151039u^{23} - 0.149718u^{22} + \cdots - 5.79689u - 0.666677 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.457463u^{23} - 0.471451u^{22} + \cdots + 8.49636u - 14.0918 \\ 0.258109u^{23} + 0.239135u^{22} + \cdots - 13.0652u + 11.1327 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.157721u^{23} - 0.410205u^{22} + \cdots + 37.7150u - 19.6197 \\ -0.0934508u^{23} - 0.177033u^{22} + \cdots + 1.66566u - 3.15234 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{3219464987438840}{3225066998988613}u^{23} - \frac{5302445282536782}{3225066998988613}u^{22} + \cdots + \frac{333221500168387398}{3225066998988613}u - \frac{157691199113955302}{3225066998988613}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^4+u^3+u^2+1)^6$
c_2, c_6	$u^{24}-6u^{22}+\cdots-11u+4$
c_3	$u^{24}-4u^{22}+\cdots-25u+4$
c_4	$u^{24}+2u^{22}+\cdots-7u+2$
c_5, c_{10}	$(u-1)^{24}$
c_7, c_{11}	$u^{24}-2u^{22}+\cdots+5u+2$
c_8	$u^{24}-2u^{22}+\cdots-15u+4$
c_9, c_{12}	$u^{24}+6u^{22}+\cdots+35u+22$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^4+y^3+3y^2+2y+1)^6$
c_2, c_6	$y^{24}-12y^{23}+\cdots-81y+16$
c_3	$y^{24}-8y^{23}+\cdots+327y+16$
c_4	$y^{24}+4y^{23}+\cdots+323y+4$
c_5, c_{10}	$(y-1)^{24}$
c_7, c_{11}	$y^{24}-4y^{23}+\cdots-29y+4$
c_8	$y^{24}-4y^{23}+\cdots+247y+16$
c_9, c_{12}	$y^{24}+12y^{23}+\cdots+4539y+484$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.191001+0.964913I$ $a=\ \ 0.675439+0.382407I$ $b=-1.46328-0.59106I$	$3.50087+1.41510I$	$-2.17326-4.90874I$
$u=-0.191001-0.964913I$ $a=\ \ 0.675439-0.382407I$ $b=-1.46328+0.59106I$	$3.50087-1.41510I$	$-2.17326+4.90874I$
$u=\ \ 0.927562+0.073825I$ $a=-0.030547-0.484905I$ $b=-0.959705-0.418739I$	$-3.50087-3.16396I$	$-5.82674+2.56480I$
$u=\ \ 0.927562-0.073825I$ $a=-0.030547+0.484905I$ $b=-0.959705+0.418739I$	$-3.50087+3.16396I$	$-5.82674-2.56480I$
$u=-0.340095+0.864091I$ $a=-1.15633+1.44532I$ $b=\ \ 0.579115-0.232353I$	$-3.50087-3.16396I$	$-5.82674+2.56480I$
$u=-0.340095-0.864091I$ $a=-1.15633-1.44532I$ $b=\ \ 0.579115+0.232353I$	$-3.50087+3.16396I$	$-5.82674-2.56480I$
$u=\ \ 0.070799+0.921614I$ $a=-0.43805-2.45448I$ $b=-0.30982+2.01530I$	$3.50087+1.41510I$	$-2.17326-4.90874I$
$u=\ \ 0.070799-0.921614I$ $a=-0.43805+2.45448I$ $b=-0.30982-2.01530I$	$3.50087-1.41510I$	$-2.17326+4.90874I$
$u=\ \ 0.985551+0.481588I$ $a=-0.125689-0.164530I$ $b=-0.936751-0.240963I$	$-3.50087-3.16396I$	$-5.82674+2.56480I$
$u=\ \ 0.985551-0.481588I$ $a=-0.125689+0.164530I$ $b=-0.936751+0.240963I$	$-3.50087+3.16396I$	$-5.82674-2.56480I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.546299 + 0.953039I$ $a = 0.58594 - 1.44011I$ $b = 0.14224 + 1.48836I$	$3.50087 - 1.41510I$	$-2.17326 + 4.90874I$
$u = 0.546299 - 0.953039I$ $a = 0.58594 + 1.44011I$ $b = 0.14224 - 1.48836I$	$3.50087 + 1.41510I$	$-2.17326 - 4.90874I$
$u = -0.513768 + 1.113040I$ $a = -0.24136 + 1.72443I$ $b = 1.20751 - 1.40509I$	$-3.50087 + 3.16396I$	$-5.82674 - 2.56480I$
$u = -0.513768 - 1.113040I$ $a = -0.24136 - 1.72443I$ $b = 1.20751 + 1.40509I$	$-3.50087 - 3.16396I$	$-5.82674 + 2.56480I$
$u = -0.052945 + 0.727017I$ $a = -0.75174 + 2.52693I$ $b = -0.410238 - 1.270660I$	$-3.50087 - 3.16396I$	$-5.82674 + 2.56480I$
$u = -0.052945 - 0.727017I$ $a = -0.75174 - 2.52693I$ $b = -0.410238 + 1.270660I$	$-3.50087 + 3.16396I$	$-5.82674 - 2.56480I$
$u = 0.205824 + 1.387780I$ $a = -1.32198 - 0.65925I$ $b = 1.86665 + 0.48652I$	$3.50087 - 1.41510I$	$-2.17326 + 4.90874I$
$u = 0.205824 - 1.387780I$ $a = -1.32198 + 0.65925I$ $b = 1.86665 - 0.48652I$	$3.50087 + 1.41510I$	$-2.17326 - 4.90874I$
$u = -1.00630 + 1.03348I$ $a = 0.344521 + 0.739985I$ $b = 0.520069 - 0.757627I$	$-3.50087 + 3.16396I$	$-5.82674 - 2.56480I$
$u = -1.00630 - 1.03348I$ $a = 0.344521 - 0.739985I$ $b = 0.520069 + 0.757627I$	$-3.50087 - 3.16396I$	$-5.82674 + 2.56480I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.67225 + 1.49689I$ $a = -0.277734 - 0.232694I$ $b = -0.034888 - 0.142731I$	$3.50087 + 1.41510I$	$-2.17326 - 4.90874I$
$u = \quad 0.67225 - 1.49689I$ $a = -0.277734 + 0.232694I$ $b = -0.034888 + 0.142731I$	$3.50087 - 1.41510I$	$-2.17326 + 4.90874I$
$u = -1.30418 + 1.04259I$ $a = \quad 0.305721 + 0.224832I$ $b = -0.200908 - 0.693376I$	$3.50087 - 1.41510I$	$-2.17326 + 4.90874I$
$u = -1.30418 - 1.04259I$ $a = \quad 0.305721 - 0.224832I$ $b = -0.200908 + 0.693376I$	$3.50087 + 1.41510I$	$-2.17326 - 4.90874I$

IV. $I_4^u = \langle 2au + 5b + 4a + 2u - 1,\ 2a^2 + au + 2a + 7,\ u^2 + 1 \rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ -\frac{2}{5}au - \frac{4}{5}a - \frac{2}{5}u + \frac{1}{5} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{10}au - \frac{1}{5}a + \frac{7}{5}u + \frac{3}{10} \\ -u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{5}au + \frac{7}{20}a + \frac{1}{20}u - \frac{9}{10} \\ -\frac{1}{5}au - \frac{2}{5}a - \frac{1}{5}u + \frac{3}{5} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{2}{5}au + \frac{1}{5}a - \frac{2}{5}u + \frac{1}{5} \\ -\frac{2}{5}au - \frac{4}{5}a - \frac{2}{5}u + \frac{1}{5} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{5}au - \frac{1}{10}a - \frac{3}{10}u + \frac{2}{5} \\ -1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{5}au + \frac{1}{10}a + \frac{3}{10}u + \frac{3}{5} \\ 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{4}a - \frac{1}{4}u - \frac{1}{2} \\ -\frac{1}{5}au - \frac{2}{5}a - \frac{1}{5}u - \frac{2}{5} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{5}au + \frac{1}{10}a + \frac{3}{10}u - \frac{2}{5} \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$4(4u^4+4u^3+5u^2+2u+2)$
c_2, c_8	$(u+1)^4$
c_3	$4(4u^4+12u^3+17u^2+12u+5)$
c_4	$u^4+2u^3+5u^2+4u+8$
c_5	$4(4u^4-3u^2+2u+2)$
c_6	$(u-1)^4$
c_7, c_9, c_{11} c_{12}	$(u^2+1)^2$
c_{10}	$4(4u^4-3u^2-2u+2)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$16(16y^4+24y^3+25y^2+16y+4)$
c_2, c_6, c_8	$(y-1)^4$
c_3	$16(16y^4-8y^3+41y^2+26y+25)$
c_4	$y^4+6y^3+25y^2+64y+64$
c_5, c_{10}	$16(16y^4-24y^3+25y^2-16y+4)$
c_7, c_9, c_{11} c_{12}	$(y+1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.43137 + 1.57132I$ $b = 1.17362 - 1.48451I$	4.93480	4.00000
$u = 1.000000I$ $a = -0.56863 - 2.07132I$ $b = -0.17362 + 1.48451I$	4.93480	4.00000
$u = -1.000000I$ $a = -0.43137 - 1.57132I$ $b = 1.17362 + 1.48451I$	4.93480	4.00000
$u = -1.000000I$ $a = -0.56863 + 2.07132I$ $b = -0.17362 - 1.48451I$	4.93480	4.00000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$16(u^4+u^3+u^2+1)^6(4u^4+4u^3+5u^2+2u+2)$ $\cdot(u^{40}-12u^{39}+\cdots+10u^2+1)$ $\cdot(4u^{141}-32u^{140}+\cdots+3141992u-178832)$
c_2	$((u+1)^4)(u^{24}-6u^{22}+\cdots-11u+4)(u^{40}-8u^{39}+\cdots-12u+1)$ $\cdot(u^{141}+u^{140}+\cdots+351u+55)$
c_3	$16(4u^4+12u^3+\cdots+12u+5)(u^{24}-4u^{22}+\cdots-25u+4)$ $\cdot(u^{40}+18u^{38}+\cdots-37u+17)$ $\cdot(4u^{141}-8u^{140}+\cdots+623445392u+64261303)$
c_4	$(u^4+2u^3+5u^2+4u+8)(u^{24}+2u^{22}+\cdots-7u+2)$ $\cdot(u^{40}-3u^{37}+\cdots+2u+1)(u^{141}-3u^{140}+\cdots-220u+8)$
c_5	$16(u-1)^{24}(4u^4-3u^2+2u+2)(u^{40}+2u^{38}+\cdots+4u+1)$ $\cdot(4u^{141}+132u^{140}+\cdots+238370816u+8904704)$
c_6	$((u-1)^4)(u^{24}-6u^{22}+\cdots-11u+4)(u^{40}+8u^{39}+\cdots+12u+1)$ $\cdot(u^{141}+u^{140}+\cdots+351u+55)$
c_7	$((u^2+1)^2)(u^{24}-2u^{22}+\cdots+5u+2)(u^{40}-12u^{38}+\cdots-4u+1)$ $\cdot(u^{141}-u^{140}+\cdots-1837u+121)$
c_8	$((u+1)^4)(u^{24}-2u^{22}+\cdots-15u+4)(u^{40}-7u^{39}+\cdots-18u^2+1)$ $\cdot(u^{141}+10u^{139}+\cdots+111111u+8833)$
c_9	$((u^2+1)^2)(u^{24}+6u^{22}+\cdots+35u+22)(u^{40}-7u^{39}+\cdots-u+1)$ $\cdot(u^{141}-4u^{140}+\cdots+17088u+2439)$
c_{10}	$16(u-1)^{24}(4u^4-3u^2-2u+2)(u^{40}+2u^{38}+\cdots-4u+1)$ $\cdot(4u^{141}+132u^{140}+\cdots+238370816u+8904704)$
c_{11}	$((u^2+1)^2)(u^{24}-2u^{22}+\cdots+5u+2)(u^{40}-12u^{38}+\cdots+4u+1)$ $\cdot(u^{141}-u^{140}+\cdots-1837u+121)$
c_{12}	$((u^2+1)^2)(u^{24}+6u^{22}+\cdots+35u+22)(u^{40}+7u^{39}+\cdots+u+1)$ $\cdot(u^{141}-4u^{140}+\cdots+17088u+2439)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$256(y^4+y^3+3y^2+2y+1)^6(16y^4+24y^3+25y^2+16y+4)$ $\cdot(y^{40}-28y^{39}+\cdots+20y+1)$ $\cdot(16y^{141}+424y^{140}+\cdots-1925653632960y-31980884224)$
c_2, c_6	$((y-1)^4)(y^{24}-12y^{23}+\cdots-81y+16)(y^{40}-20y^{39}+\cdots-28y+1)$ $\cdot(y^{141}-69y^{140}+\cdots+134971y-3025)$
c_3	$256(16y^4-8y^3+\cdots+26y+25)(y^{24}-8y^{23}+\cdots+327y+16)$ $\cdot(y^{40}+36y^{39}+\cdots-1403y+289)$ $\cdot(16y^{141}-152y^{140}+\cdots+1.54\times10^{17}y-4.13\times10^{15})$
c_4	$(y^4+6y^3+25y^2+64y+64)(y^{24}+4y^{23}+\cdots+323y+4)$ $\cdot(y^{40}-2y^{38}+\cdots+4y+1)(y^{141}+5y^{140}+\cdots-28352y-64)$
c_5, c_{10}	$256(y-1)^{24}(16y^4-24y^3+\cdots-16y+4)(y^{40}+4y^{39}+\cdots+6y+1)$ $\cdot(16y^{141}-1384y^{140}+\cdots-256485850349568y-79293753327616)$
c_7, c_{11}	$((y+1)^4)(y^{24}-4y^{23}+\cdots-29y+4)(y^{40}-24y^{39}+\cdots-36y+1)$ $\cdot(y^{141}-85y^{140}+\cdots-1868361y-14641)$
c_8	$((y-1)^4)(y^{24}-4y^{23}+\cdots+247y+16)(y^{40}+5y^{39}+\cdots-36y+1)$ $\cdot(y^{141}+20y^{140}+\cdots-1754905229y-78021889)$
c_9, c_{12}	$((y+1)^4)(y^{24}+12y^{23}+\cdots+4539y+484)$ $\cdot(y^{40}+29y^{39}+\cdots+99y+1)$ $\cdot(y^{141}+96y^{140}+\cdots-196639272y-5948721)$