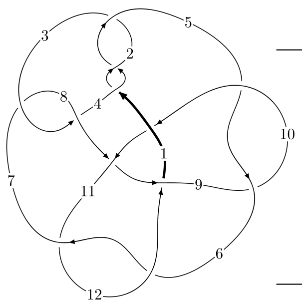
$12a_{0828}$ $(K12a_{0828})$



A knot diagram[1]

Linearized knot diagam

$$\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to\downarrow\to$$

4 5 8 2 10 12 3 11 6 1 7 9

Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & 1.48295\times10^{68}u^{41} + 7.81857\times10^{68}u^{40} + \cdots + 7.16827\times10^{67}b - 2.61630\times10^{70},\\
& -1.00081\times10^{69}u^{41} - 5.50129\times10^{69}u^{40} + \cdots + 5.73462\times10^{68}a + 2.57458\times10^{71},\\
& u^{42} + 6u^{41} + \cdots - 608u - 128\rangle\\
I^u_2 = \langle & 46u^7a^3 - 35u^7a^2 + \cdots + 42a - 8,\ 6u^7a^3 + 22u^7a^2 + \cdots - 74a + 151,\\
& u^8 - 3u^7 + 3u^6 + 2u^5 - 8u^4 + 9u^3 - 3u^2 - 2u + 2\rangle\\
I^u_3 = \langle & -2543842u^{17} - 14606334u^{16} + \cdots + 48416059b + 19223447,\\
& -118380102u^{17} - 83676763u^{16} + \cdots + 48416059a - 243963069,\ u^{18} + u^{17} + \cdots + u - 1\rangle\\
I^u_4 = \langle & 9.40126\times10^{20}a^7u^5 - 1.79850\times10^{21}a^6u^5 + \cdots - 8.65728\times10^{21}a + 3.41117\times10^{21},\\
& -2a^7u^5 - 15a^6u^5 + \cdots - 17a + 4,\ u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle
\end{aligned}$$

$$\begin{aligned}
I^v_1 &= \langle a,\ 8v^2 + b + 26v + 7,\ 4v^3 + 14v^2 + 7v + 1\rangle\\
I^v_2 &= \langle a,\ b^4 + b^3 + 2b^2 + 2b + 1,\ v - 1\rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 147 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. $I^u_1 = \langle 1.48\times10^{68}u^{41} + 7.82\times10^{68}u^{40} + \cdots + 7.17\times10^{67}b - 2.62\times10^{70},\ -1.00\times10^{69}u^{41} - 5.50\times10^{69}u^{40} + \cdots + 5.73\times10^{68}a + 2.57\times10^{71},\ u^{42} + 6u^{41} + \cdots - 608u - 128\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1.74520u^{41} + 9.59312u^{40} + \cdots - 1224.97u - 448.953\\-2.06877u^{41} - 10.9072u^{40} + \cdots + 1234.36u + 364.984\end{pmatrix}$$
$$a_9 = \begin{pmatrix}5.46026u^{41} + 28.9099u^{40} + \cdots - 3303.48u - 1037.79\\-0.875191u^{41} - 4.68441u^{40} + \cdots + 555.689u + 190.129\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}3.81397u^{41} + 20.5003u^{40} + \cdots - 2459.34u - 813.937\\-2.06877u^{41} - 10.9072u^{40} + \cdots + 1234.36u + 364.984\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-4.29657u^{41} - 22.4006u^{40} + \cdots + 2436.80u + 697.290\\0.303303u^{41} + 1.95238u^{40} + \cdots - 355.882u - 170.418\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1.88477u^{41} - 9.85936u^{40} + \cdots + 1085.97u + 325.842\\-1.16502u^{41} - 5.92185u^{40} + \cdots + 584.581u + 132.111\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}3.30608u^{41} + 17.3565u^{40} + \cdots - 1920.32u - 597.894\\-0.0369235u^{41} + 0.105769u^{40} + \cdots - 130.892u - 62.0948\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-1.33567u^{41} - 6.59646u^{40} + \cdots + 576.521u + 94.3766\\-2.96090u^{41} - 15.8041u^{40} + \cdots + 1860.27u + 602.914\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-3.00789u^{41} - 15.7631u^{40} + \cdots + 1745.87u + 515.839\\-0.0851750u^{41} - 0.0145890u^{40} + \cdots - 165.539u - 129.080\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 50.5421u^{41} + 265.980u^{40} + \cdots - 29786.7u - 9077.56$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4	$u^{42} - 3u^{41} + \cdots + 140u + 16$
c_3, c_7	$u^{42} - 6u^{41} + \cdots + 608u - 128$
c_5, c_6, c_9 c_{11}	$u^{42} + 16u^{40} + \cdots + u - 1$
c_8, c_{10}	$u^{42} + 2u^{41} + \cdots + 2u + 1$
c_{12}	$u^{42} + 39u^{41} + \cdots + 24641536u + 1048576$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^{42} - 37y^{41} + \cdots - 7536y + 256$
c_3, c_7	$y^{42} - 18y^{41} + \cdots - 388096y + 16384$
c_5, c_6, c_9 c_{11}	$y^{42} + 32y^{41} + \cdots - 19y + 1$
c_8, c_{10}	$y^{42} - 2y^{41} + \cdots - 52y + 1$
c_{12}	$y^{42} - y^{41} + \cdots - 16217796509696y + 1099511627776$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.943550 + 0.455289I$ $a = -1.34280 + 0.76709I$ $b = -0.753628 + 0.162890I$	$-1.59198 - 3.61998I$	$-15.2323 + 5.2048I$
$u = 0.943550 - 0.455289I$ $a = -1.34280 - 0.76709I$ $b = -0.753628 - 0.162890I$	$-1.59198 + 3.61998I$	$-15.2323 - 5.2048I$
$u = -0.269584 + 0.910303I$ $a = 0.762837 + 0.613812I$ $b = 0.657573 - 0.228220I$	$-4.18007 - 1.80472I$	$-18.2389 + 0.1966I$
$u = -0.269584 - 0.910303I$ $a = 0.762837 - 0.613812I$ $b = 0.657573 + 0.228220I$	$-4.18007 + 1.80472I$	$-18.2389 - 0.1966I$
$u = 0.062598 + 1.055270I$ $a = -0.046684 + 0.319719I$ $b = -0.250114 - 1.286520I$	$7.85485 - 3.56337I$	$-2.67014 + 3.62743I$
$u = 0.062598 - 1.055270I$ $a = -0.046684 - 0.319719I$ $b = -0.250114 + 1.286520I$	$7.85485 + 3.56337I$	$-2.67014 - 3.62743I$
$u = 0.466056 + 0.981999I$ $a = -0.048754 - 0.335975I$ $b = -0.41161 + 1.40369I$	$8.88785 + 7.82161I$	$-5.25158 - 5.23582I$
$u = 0.466056 - 0.981999I$ $a = -0.048754 + 0.335975I$ $b = -0.41161 - 1.40369I$	$8.88785 - 7.82161I$	$-5.25158 + 5.23582I$
$u = -0.786496 + 0.002563I$ $a = -2.39632 + 0.05081I$ $b = -0.465074 - 0.281780I$	$-2.91939 - 0.16667I$	$-21.2268 + 8.1932I$
$u = -0.786496 - 0.002563I$ $a = -2.39632 - 0.05081I$ $b = -0.465074 + 0.281780I$	$-2.91939 + 0.16667I$	$-21.2268 - 8.1932I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.184420 + 0.429182I$ $a = 0.697295 + 0.202000I$ $b = 0.812246 + 0.378376I$	$-5.91413 + 2.39057I$	0
$u = -1.184420 - 0.429182I$ $a = 0.697295 - 0.202000I$ $b = 0.812246 - 0.378376I$	$-5.91413 - 2.39057I$	0
$u = 1.253720 + 0.213033I$ $a = -1.287820 + 0.268400I$ $b = -0.606517 - 0.635131I$	$-9.38202 - 1.73644I$	0
$u = 1.253720 - 0.213033I$ $a = -1.287820 - 0.268400I$ $b = -0.606517 + 0.635131I$	$-9.38202 + 1.73644I$	0
$u = -1.171280 + 0.521960I$ $a = 1.69502 - 0.32871I$ $b = 0.49391 - 1.37449I$	$4.28505 + 8.46529I$	0
$u = -1.171280 - 0.521960I$ $a = 1.69502 + 0.32871I$ $b = 0.49391 + 1.37449I$	$4.28505 - 8.46529I$	0
$u = -1.183490 + 0.564393I$ $a = -1.075040 - 0.521185I$ $b = -0.905363 - 0.213820I$	$-7.00695 + 7.14218I$	0
$u = -1.183490 - 0.564393I$ $a = -1.075040 + 0.521185I$ $b = -0.905363 + 0.213820I$	$-7.00695 - 7.14218I$	0
$u = 0.582949 + 0.315976I$ $a = 0.876169 - 0.195926I$ $b = 0.539552 - 0.112152I$	$-0.538615 - 0.005437I$	$-12.84477 - 0.43346I$
$u = 0.582949 - 0.315976I$ $a = 0.876169 + 0.195926I$ $b = 0.539552 + 0.112152I$	$-0.538615 + 0.005437I$	$-12.84477 + 0.43346I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.610840 + 1.193460I$ $a = -0.054193 + 0.342180I$ $b = -0.52479 - 1.40750I$	$3.43638 - 11.55830I$	0
$u = -0.610840 - 1.193460I$ $a = -0.054193 - 0.342180I$ $b = -0.52479 + 1.40750I$	$3.43638 + 11.55830I$	0
$u = 1.163520 + 0.689411I$ $a = 1.72107 - 0.08499I$ $b = 0.52703 + 1.44729I$	$6.7272 - 13.9058I$	0
$u = 1.163520 - 0.689411I$ $a = 1.72107 + 0.08499I$ $b = 0.52703 - 1.44729I$	$6.7272 + 13.9058I$	0
$u = 0.534889 + 1.254550I$ $a = 0.262606 - 0.299605I$ $b = -0.206473 + 0.740584I$	$-1.23399 + 1.54080I$	0
$u = 0.534889 - 1.254550I$ $a = 0.262606 + 0.299605I$ $b = -0.206473 - 0.740584I$	$-1.23399 - 1.54080I$	0
$u = -0.535582 + 0.088545I$ $a = -0.050104 + 0.333280I$ $b = -0.22875 - 1.51299I$	$7.50056 - 5.01376I$	$-21.5440 - 1.4253I$
$u = -0.535582 - 0.088545I$ $a = -0.050104 - 0.333280I$ $b = -0.22875 + 1.51299I$	$7.50056 + 5.01376I$	$-21.5440 + 1.4253I$
$u = -1.22163 + 0.80316I$ $a = 1.55023 + 0.27538I$ $b = 0.56950 - 1.48815I$	$1.4008 + 18.6869I$	0
$u = -1.22163 - 0.80316I$ $a = 1.55023 - 0.27538I$ $b = 0.56950 + 1.48815I$	$1.4008 - 18.6869I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.17869 + 0.90581I$ $a = -0.942618 - 0.308680I$ $b = -0.163308 + 1.189210I$	$-0.91717 + 9.50337I$	0
$u = -1.17869 - 0.90581I$ $a = -0.942618 + 0.308680I$ $b = -0.163308 - 1.189210I$	$-0.91717 - 9.50337I$	0
$u = -0.491641$ $a = -4.91091$ $b = -0.343981$	-2.80521	-47.0160
$u = 1.20729 + 0.91942I$ $a = -0.752800 + 0.170890I$ $b = -0.065111 - 1.139040I$	$4.02842 - 4.18037I$	0
$u = 1.20729 - 0.91942I$ $a = -0.752800 - 0.170890I$ $b = -0.065111 + 1.139040I$	$4.02842 + 4.18037I$	0
$u = 1.48911 + 0.29406I$ $a = 0.896680 + 0.297454I$ $b = 0.617444 + 1.108590I$	$-6.18728 - 8.08758I$	0
$u = 1.48911 - 0.29406I$ $a = 0.896680 - 0.297454I$ $b = 0.617444 - 1.108590I$	$-6.18728 + 8.08758I$	0
$u = -1.50353 + 0.22766I$ $a = 0.444601 - 0.413741I$ $b = 0.308344 - 0.976227I$	$1.53844 + 4.49579I$	0
$u = -1.50353 - 0.22766I$ $a = 0.444601 + 0.413741I$ $b = 0.308344 + 0.976227I$	$1.53844 - 4.49579I$	0
$u = -1.01992 + 1.13548I$ $a = -0.362994 - 0.380675I$ $b = 0.031656 + 1.071510I$	$0.04635 - 1.77468I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.01992 - 1.13548I$ $a = -0.362994 + 0.380675I$ $b = \ \ 0.031656 - 1.071510I$	$0.04635 + 1.77468I$	0
$u = \ \ 0.415199$ $a = \ \ 0.943147$ $b = \ \ 0.390970$	-0.638593	-15.1720

II. $I_2^u = \langle 46u^7a^3 - 35u^7a^2 + \cdots + 42a - 8,\ 6u^7a^3 + 22u^7a^2 + \cdots - 74a + 151,\ u^8 - 3u^7 + \cdots - 2u + 2\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ -1.58621a^3u^7 + 1.20690a^2u^7 + \cdots - 1.44828a + 0.275862 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.793103a^3u^7 + 0.206897a^2u^7 + \cdots + 0.275862a - 5.72414 \\ -0.206897a^2u^7 - 0.896552u^7 + \cdots + 0.551724a^2 - 0.275862 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1.58621a^3u^7 - 1.20690a^2u^7 + \cdots + 2.44828a - 0.275862 \\ -1.58621a^3u^7 + 1.20690a^2u^7 + \cdots - 1.44828a + 0.275862 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{3}{2}u^7 - \frac{7}{2}u^6 + \cdots + \frac{3}{2}u - 3 \\ -u^7 + 2u^6 - u^5 - 3u^4 + 5u^3 - 3u^2 - u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1.03448a^3u^7 - 1.17241a^2u^7 + \cdots - 4.62069a + 5.10345 \\ -0.241379a^3u^7 + 0.965517a^2u^7 + \cdots + 4.34483a + 2.62069 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1.58621a^3u^7 + 1.20690a^2u^7 + \cdots + 3.55172a - 5.72414 \\ 0.586207a^3u^7 - 0.206897a^2u^7 + \cdots - 4.55172a + 2.72414 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{2}u^7 - \frac{1}{2}u^6 + \cdots - \frac{1}{2}u^2 + \frac{3}{2}u \\ u^7 - 3u^6 + 2u^5 + 3u^4 - 8u^3 + 6u^2 - 3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{2}u^7 - \frac{3}{2}u^6 + \cdots + \frac{1}{2}u - 1 \\ -u^7 + 2u^6 - 3u^4 + 4u^3 - 2u^2 + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{48}{29}u^7a^3 + \frac{92}{29}u^7a^2 + \cdots - \frac{64}{29}a - \frac{264}{29}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4	$(u^8 - u^7 - 4u^6 + 3u^5 + 5u^4 - u^3 - u^2 - 3u - 1)^4$
c_3, c_7	$(u^8 + 3u^7 + 3u^6 - 2u^5 - 8u^4 - 9u^3 - 3u^2 + 2u + 2)^4$
c_5, c_6, c_9 c_{11}	$u^{32} + u^{31} + \cdots - 108u + 19$
c_8, c_{10}	$u^{32} - 7u^{31} + \cdots - 148u + 13$
c_{12}	$(u^2 - u + 1)^{16}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y^8 - 9y^7 + 32y^6 - 53y^5 + 31y^4 + 15y^3 - 15y^2 - 7y + 1)^4$
c_3, c_7	$(y^8 - 3y^7 + 5y^6 - 4y^5 + 2y^4 - 13y^3 + 13y^2 - 16y + 4)^4$
c_5, c_6, c_9 c_{11}	$y^{32} + 21y^{31} + \cdots + 6120y + 361$
c_8, c_{10}	$y^{32} + y^{31} + \cdots + 248y + 169$
c_{12}	$(y^2 + y + 1)^{16}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.821613 + 0.567011I$ $a = -0.496625 - 0.438250I$ $b = 0.52992 - 1.64688I$	$6.41985 - 0.23387I$	$-3.94128 + 1.06967I$
$u = 0.821613 + 0.567011I$ $a = 0.26645 - 1.48983I$ $b = 0.073416 + 1.309500I$	$6.41985 - 4.29364I$	$-3.94128 + 7.99788I$
$u = 0.821613 + 0.567011I$ $a = -2.39394 + 0.27463I$ $b = -0.73198 - 1.51497I$	$6.41985 - 4.29364I$	$-3.94128 + 7.99788I$
$u = 0.821613 + 0.567011I$ $a = 2.61276 - 0.79661I$ $b = -0.022697 + 1.179290I$	$6.41985 - 0.23387I$	$-3.94128 + 1.06967I$
$u = 0.821613 - 0.567011I$ $a = -0.496625 + 0.438250I$ $b = 0.52992 + 1.64688I$	$6.41985 + 0.23387I$	$-3.94128 - 1.06967I$
$u = 0.821613 - 0.567011I$ $a = 0.26645 + 1.48983I$ $b = 0.073416 - 1.309500I$	$6.41985 + 4.29364I$	$-3.94128 - 7.99788I$
$u = 0.821613 - 0.567011I$ $a = -2.39394 - 0.27463I$ $b = -0.73198 + 1.51497I$	$6.41985 + 4.29364I$	$-3.94128 - 7.99788I$
$u = 0.821613 - 0.567011I$ $a = 2.61276 + 0.79661I$ $b = -0.022697 - 1.179290I$	$6.41985 + 0.23387I$	$-3.94128 - 1.06967I$
$u = 0.432344 + 1.079150I$ $a = -0.100401 + 0.617152I$ $b = -1.201190 + 0.090721I$	$-1.29038 + 5.58743I$	$-12.52739 - 6.08899I$
$u = 0.432344 + 1.079150I$ $a = 0.361262 - 0.454625I$ $b = -0.207449 + 0.429798I$	$-1.29038 + 1.52767I$	$-12.52739 + 0.83921I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.432344 + 1.079150I$ $a = 0.451119 + 0.354898I$ $b = 0.341939 - 1.164380I$	$-1.29038 + 5.58743I$	$-12.52739 - 6.08899I$
$u = 0.432344 + 1.079150I$ $a = 0.305199 - 0.335131I$ $b = -0.292741 + 0.851162I$	$-1.29038 + 1.52767I$	$-12.52739 + 0.83921I$
$u = 0.432344 - 1.079150I$ $a = -0.100401 - 0.617152I$ $b = -1.201190 - 0.090721I$	$-1.29038 - 5.58743I$	$-12.52739 + 6.08899I$
$u = 0.432344 - 1.079150I$ $a = 0.361262 + 0.454625I$ $b = -0.207449 - 0.429798I$	$-1.29038 - 1.52767I$	$-12.52739 - 0.83921I$
$u = 0.432344 - 1.079150I$ $a = 0.451119 - 0.354898I$ $b = 0.341939 + 1.164380I$	$-1.29038 - 5.58743I$	$-12.52739 + 6.08899I$
$u = 0.432344 - 1.079150I$ $a = 0.305199 + 0.335131I$ $b = -0.292741 - 0.851162I$	$-1.29038 - 1.52767I$	$-12.52739 - 0.83921I$
$u = -1.38845$ $a = -0.810223 + 0.602331I$ $b = -0.367950 + 0.903689I$	$-8.50968 + 2.02988I$	$-16.3375 - 3.4641I$
$u = -1.38845$ $a = -0.810223 - 0.602331I$ $b = -0.367950 - 0.903689I$	$-8.50968 - 2.02988I$	$-16.3375 + 3.4641I$
$u = -1.38845$ $a = 1.129680 + 0.049021I$ $b = 1.122510 - 0.403244I$	$-8.50968 - 2.02988I$	$-16.3375 + 3.4641I$
$u = -1.38845$ $a = 1.129680 - 0.049021I$ $b = 1.122510 + 0.403244I$	$-8.50968 + 2.02988I$	$-16.3375 - 3.4641I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.215250 + 0.684012I$ $a = 1.165160 - 0.211690I$ $b = 0.639095 + 1.148790I$	$-3.80498 - 7.85312I$	$-13.28252 + 2.60552I$
$u = 1.215250 + 0.684012I$ $a = 1.086450 - 0.626118I$ $b = 1.43070 + 0.15248I$	$-3.80498 - 11.91290I$	$-13.2825 + 9.5337I$
$u = 1.215250 + 0.684012I$ $a = -0.387082 - 0.088325I$ $b = -0.213058 + 0.253663I$	$-3.80498 - 7.85312I$	$-13.28252 + 2.60552I$
$u = 1.215250 + 0.684012I$ $a = -1.73531 + 0.10229I$ $b = -0.429159 - 1.222660I$	$-3.80498 - 11.91290I$	$-13.2825 + 9.5337I$
$u = 1.215250 - 0.684012I$ $a = 1.165160 + 0.211690I$ $b = 0.639095 - 1.148790I$	$-3.80498 + 7.85312I$	$-13.28252 - 2.60552I$
$u = 1.215250 - 0.684012I$ $a = 1.086450 + 0.626118I$ $b = 1.43070 - 0.15248I$	$-3.80498 + 11.91290I$	$-13.2825 - 9.5337I$
$u = 1.215250 - 0.684012I$ $a = -0.387082 + 0.088325I$ $b = -0.213058 - 0.253663I$	$-3.80498 + 7.85312I$	$-13.28252 - 2.60552I$
$u = 1.215250 - 0.684012I$ $a = -1.73531 - 0.10229I$ $b = -0.429159 + 1.222660I$	$-3.80498 + 11.91290I$	$-13.2825 - 9.5337I$
$u = -0.549965$ $a = 2.01507 + 0.46937I$ $b = 0.255913 + 1.378810I$	$4.21577 - 2.02988I$	$-12.16015 + 3.46410I$
$u = -0.549965$ $a = 2.01507 - 0.46937I$ $b = 0.255913 - 1.378810I$	$4.21577 + 2.02988I$	$-12.16015 - 3.46410I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.549965$ $a = \quad 0.53043 + 4.87830I$ $b = -0.427270 + 1.082010I$	$4.21577 + 2.02988I$	$-12.16015 - 3.46410I$
$u = -0.549965$ $a = \quad 0.53043 - 4.87830I$ $b = -0.427270 - 1.082010I$	$4.21577 - 2.02988I$	$-12.16015 + 3.46410I$

III.
$\boldsymbol{I^u_3 = \langle -2.54\times10^6u^{17} - 1.46\times10^7u^{16} + \cdots + 4.84\times10^7b + 1.92\times10^7,\ -1.18\times10^8u^{17} - 8.37\times10^7u^{16} + \cdots + 4.84\times10^7a - 2.44\times10^8,\ u^{18} + u^{17} + \cdots + u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2.44506u^{17} + 1.72829u^{16} + \cdots - 2.56183u + 5.03889 \\ 0.0525413u^{17} + 0.301684u^{16} + \cdots + 0.880761u - 0.397047 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.999862u^{17} + 1.73119u^{16} + \cdots - 5.39506u - 5.34506 \\ -0.411438u^{17} - 0.578846u^{16} + \cdots + 0.180593u + 0.176599 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 2.39252u^{17} + 1.42660u^{16} + \cdots - 3.44259u + 5.43593 \\ 0.0525413u^{17} + 0.301684u^{16} + \cdots + 0.880761u - 0.397047 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.482663u^{17} + 0.187223u^{16} + \cdots - 0.596217u + 0.702631 \\ 0.0998597u^{17} + 0.114275u^{16} + \cdots + 0.581502u - 0.0462974 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 3.34248u^{17} + 4.59289u^{16} + \cdots - 17.7756u + 0.849286 \\ -0.0239398u^{17} - 0.417477u^{16} + \cdots + 2.28107u + 0.680274 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2.03362u^{17} + 1.14944u^{16} + \cdots - 2.38124u + 6.21549 \\ 0.0525413u^{17} + 0.301684u^{16} + \cdots + 0.880761u - 0.397047 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.602448u^{17} - 0.364456u^{16} + \cdots + 0.792818u - 0.951774 \\ 0.119785u^{17} + 0.177233u^{16} + \cdots - 0.196601u + 0.249142 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.527854u^{17} + 0.454267u^{16} + \cdots - 1.43666u + 0.940623 \\ -0.0332079u^{17} - 0.113318u^{16} + \cdots + 1.24528u - 0.0624363 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{191549447}{48416059}u^{17} - \frac{183440518}{48416059}u^{16} + \cdots + \frac{478561907}{48416059}u - \frac{255825818}{48416059}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$u^{18} + 3u^{17} + \cdots + 3u - 1$
c_3	$u^{18} - u^{17} + \cdots - u - 1$
c_4	$u^{18} - 3u^{17} + \cdots - 3u - 1$
c_5, c_{11}	$u^{18} + 10u^{16} + \cdots - 10u + 1$
c_6, c_9	$u^{18} + 10u^{16} + \cdots + 10u + 1$
c_7	$u^{18} + u^{17} + \cdots + u - 1$
c_8, c_{10}	$u^{18} + 2u^{17} + \cdots - 3u + 1$
c_{12}	$u^{18} + 3u^{17} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^{18} - 17y^{17} + \cdots + 7y + 1$
c_3, c_7	$y^{18} - 9y^{17} + \cdots - y + 1$
c_5, c_6, c_9 c_{11}	$y^{18} + 20y^{17} + \cdots - 54y + 1$
c_8, c_{10}	$y^{18} + 2y^{17} + \cdots - 3y + 1$
c_{12}	$y^{18} - 3y^{17} + \cdots + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.667124 + 0.619286I$ $a = 1.01984 + 1.11236I$ $b = 0.212619 - 1.347020I$	$5.76963 + 2.84768I$	$-5.80039 - 3.08267I$
$u = -0.667124 - 0.619286I$ $a = 1.01984 - 1.11236I$ $b = 0.212619 + 1.347020I$	$5.76963 - 2.84768I$	$-5.80039 + 3.08267I$
$u = -1.055780 + 0.337935I$ $a = 0.752306 + 0.462739I$ $b = 0.52727 + 1.35411I$	$0.149777 + 0.573147I$	$-11.90162 - 1.71738I$
$u = -1.055780 - 0.337935I$ $a = 0.752306 - 0.462739I$ $b = 0.52727 - 1.35411I$	$0.149777 - 0.573147I$	$-11.90162 + 1.71738I$
$u = 1.033920 + 0.533161I$ $a = 1.072240 - 0.558681I$ $b = 0.25310 + 1.50609I$	$1.35611 - 6.05440I$	$-11.20100 + 4.57946I$
$u = 1.033920 - 0.533161I$ $a = 1.072240 + 0.558681I$ $b = 0.25310 - 1.50609I$	$1.35611 + 6.05440I$	$-11.20100 - 4.57946I$
$u = 1.29032$ $a = -1.10366$ $b = -0.542837$	-9.23099	-17.8620
$u = 0.558729 + 0.320333I$ $a = 0.56850 - 2.05955I$ $b = 0.410236 - 1.270600I$	$4.90710 + 1.43926I$	$-3.61056 + 2.10868I$
$u = 0.558729 - 0.320333I$ $a = 0.56850 + 2.05955I$ $b = 0.410236 + 1.270600I$	$4.90710 - 1.43926I$	$-3.61056 - 2.10868I$
$u = -0.620039$ $a = -2.97714$ $b = -0.128138$	-2.58277	0.576260

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.31870 + 0.61305I$ $a = -0.711353 - 0.204327I$ $b = -0.313099 - 0.878541I$	$2.11412 - 4.59078I$	$-5.85313 + 11.31334I$
$u = 1.31870 - 0.61305I$ $a = -0.711353 + 0.204327I$ $b = -0.313099 + 0.878541I$	$2.11412 + 4.59078I$	$-5.85313 - 11.31334I$
$u = -1.25726 + 0.73302I$ $a = -0.981696 - 0.076103I$ $b = -0.547277 + 0.825974I$	$-3.59976 + 9.26853I$	$-12.3886 - 8.3976I$
$u = -1.25726 - 0.73302I$ $a = -0.981696 + 0.076103I$ $b = -0.547277 - 0.825974I$	$-3.59976 - 9.26853I$	$-12.3886 + 8.3976I$
$u = 0.154725 + 0.410246I$ $a = 6.48299 - 9.35699I$ $b = -0.334159 + 1.303000I$	$3.14889 + 2.15923I$	$-0.71378 + 11.60791I$
$u = 0.154725 - 0.410246I$ $a = 6.48299 + 9.35699I$ $b = -0.334159 - 1.303000I$	$3.14889 - 2.15923I$	$-0.71378 - 11.60791I$
$u = -0.92104 + 1.30056I$ $a = -0.162423 - 0.197229I$ $b = 0.126798 + 0.744120I$	$-1.35926 - 1.84701I$	$-25.8879 + 15.8048I$
$u = -0.92104 - 1.30056I$ $a = -0.162423 + 0.197229I$ $b = 0.126798 - 0.744120I$	$-1.35926 + 1.84701I$	$-25.8879 - 15.8048I$

IV. $I^u_4 = \langle 9.40\times10^{20}a^7u^5 - 1.80\times10^{21}a^6u^5 + \cdots - 8.66\times10^{21}a + 3.41\times10^{21},\ -2a^7u^5 - 15a^6u^5 + \cdots - 17a + 4,\ u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a \\ -0.619077a^7u^5 + 1.18432a^6u^5 + \cdots + 5.70086a - 2.24627 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.144354a^7u^5 - 0.0472911a^6u^5 + \cdots + 2.04271a + 1.04864 \\ -0.432105a^7u^5 - 0.470608a^6u^5 + \cdots + 6.51432a + 0.283008 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.619077a^7u^5 - 1.18432a^6u^5 + \cdots - 4.70086a + 2.24627 \\ -0.619077a^7u^5 + 1.18432a^6u^5 + \cdots + 5.70086a - 2.24627 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.504551a^7u^5 - 1.18691a^6u^5 + \cdots - 6.01844a + 2.02586 \\ -0.324435a^7u^5 - 0.258046a^6u^5 + \cdots + 6.15154a + 0.0467776 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.548791a^7u^5 - 0.215845a^6u^5 + \cdots + 10.3830a + 0.685023 \\ 0.693145a^7u^5 + 0.263136a^6u^5 + \cdots - 12.4257a + 0.266333 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.365245a^7u^5 - 2.17240a^6u^5 + \cdots - 2.92393a + 3.61311 \\ -1.24989a^7u^5 + 1.93322a^6u^5 + \cdots + 15.2852a - 3.25253 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.178710a^7u^5 + 0.628134a^6u^5 + \cdots - 3.07508a - 1.50634 \\ 0.325841a^7u^5 - 1.81504a^6u^5 + \cdots - 2.94336a + 3.53220 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.109496a^7u^5 - 1.15664a^6u^5 + \cdots + 0.510002a + 2.23395 \\ -0.236751a^7u^5 + 1.06982a^6u^5 + \cdots + 3.70555a - 2.28804 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $=$
$\frac{19685370949816372}{64944255491057667}a^7u^5 - \frac{2890452071925236}{64944255491057667}a^6u^5 + \cdots - \frac{318855097360929472}{64944255491057667}a - \frac{635548858610032834}{64944255491057667}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4	$(u^{12} - u^{11} - 4u^{10} + 2u^9 + 7u^8 + u^7 - 5u^6 - 5u^5 - u^4 + 3u^3 + 2u^2 + 1)^4$
c_3, c_7	$(u^6 - u^5 - u^4 + 2u^3 - u + 1)^8$
c_5, c_6, c_9 c_{11}	$u^{48} + u^{47} + \cdots - 6u + 67$
c_8, c_{10}	$u^{48} - 15u^{47} + \cdots - 1598u + 181$
c_{12}	$(u^2 - u + 1)^{24}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y^{12} - 9y^{11} + \cdots + 4y + 1)^4$
c_3, c_7	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^8$
c_5, c_6, c_9 c_{11}	$y^{48} + 45y^{47} + \cdots + 147096y + 4489$
c_8, c_{10}	$y^{48} + 21y^{47} + \cdots + 890464y + 32761$
c_{12}	$(y^2 + y + 1)^{24}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = 0.775552 - 0.660384I$ $b = 0.509589 + 0.258929I$	$-0.245672 + 1.105580I$	$-13.71672 - 2.66988I$
$u = 1.002190 + 0.295542I$ $a = -0.707173 + 0.866335I$ $b = -1.13881 + 0.88777I$	$-0.245672 + 1.105580I$	$-13.71672 - 2.66988I$
$u = 1.002190 + 0.295542I$ $a = 0.567084 + 0.568800I$ $b = 0.23682 - 1.40073I$	$-0.245672 + 1.105580I$	$-13.71672 - 2.66988I$
$u = 1.002190 + 0.295542I$ $a = 1.059310 - 0.667850I$ $b = 0.034695 - 0.596516I$	$-0.24567 - 2.95419I$	$-13.7167 + 4.2583I$
$u = 1.002190 + 0.295542I$ $a = 0.617928 + 1.137550I$ $b = 0.031020 + 0.957172I$	$-0.245672 + 1.105580I$	$-13.71672 - 2.66988I$
$u = 1.002190 + 0.295542I$ $a = 0.253602 + 0.071603I$ $b = -0.02794 + 1.63414I$	$-0.24567 - 2.95419I$	$-13.7167 + 4.2583I$
$u = 1.002190 + 0.295542I$ $a = 1.74575 - 0.31336I$ $b = 1.068290 + 0.063919I$	$-0.24567 - 2.95419I$	$-13.7167 + 4.2583I$
$u = 1.002190 + 0.295542I$ $a = -2.02925 - 1.13201I$ $b = -0.285419 - 1.140150I$	$-0.24567 - 2.95419I$	$-13.7167 + 4.2583I$
$u = 1.002190 - 0.295542I$ $a = 0.775552 + 0.660384I$ $b = 0.509589 - 0.258929I$	$-0.245672 - 1.105580I$	$-13.71672 + 2.66988I$
$u = 1.002190 - 0.295542I$ $a = -0.707173 - 0.866335I$ $b = -1.13881 - 0.88777I$	$-0.245672 - 1.105580I$	$-13.71672 + 2.66988I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002190 - 0.295542I$ $a = 0.567084 - 0.568800I$ $b = 0.23682 + 1.40073I$	$-0.245672 - 1.105580I$	$-13.71672 + 2.66988I$
$u = 1.002190 - 0.295542I$ $a = 1.059310 + 0.667850I$ $b = 0.034695 + 0.596516I$	$-0.24567 + 2.95419I$	$-13.7167 - 4.2583I$
$u = 1.002190 - 0.295542I$ $a = 0.617928 - 1.137550I$ $b = 0.031020 - 0.957172I$	$-0.245672 - 1.105580I$	$-13.71672 + 2.66988I$
$u = 1.002190 - 0.295542I$ $a = 0.253602 - 0.071603I$ $b = -0.02794 - 1.63414I$	$-0.24567 + 2.95419I$	$-13.7167 - 4.2583I$
$u = 1.002190 - 0.295542I$ $a = 1.74575 + 0.31336I$ $b = 1.068290 - 0.063919I$	$-0.24567 + 2.95419I$	$-13.7167 - 4.2583I$
$u = 1.002190 - 0.295542I$ $a = -2.02925 + 1.13201I$ $b = -0.285419 + 1.140150I$	$-0.24567 + 2.95419I$	$-13.7167 - 4.2583I$
$u = -0.428243 + 0.664531I$ $a = 0.424006 + 0.749679I$ $b = -0.347802 + 0.145509I$	$3.53554 + 1.10558I$	$-6.28328 - 2.66988I$
$u = -0.428243 + 0.664531I$ $a = -0.109037 - 0.835332I$ $b = -0.980418 - 0.347385I$	$3.53554 - 2.95419I$	$-6.28328 + 4.25833I$
$u = -0.428243 + 0.664531I$ $a = 0.514379 - 0.344758I$ $b = 0.236687 + 1.251690I$	$3.53554 - 2.95419I$	$-6.28328 + 4.25833I$
$u = -0.428243 + 0.664531I$ $a = -1.51339 + 0.24563I$ $b = 0.63729 + 1.39949I$	$3.53554 - 2.95419I$	$-6.28328 + 4.25833I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.428243+0.664531I$ $a=\ \ 0.395311+0.191403I$ $b=-0.063487-1.241750I$	$3.53554+1.10558I$	$-6.28328-2.66988I$
$u=-0.428243+0.664531I$ $a=-0.51608+2.28821I$ $b=\ \ 0.118211-1.155270I$	$3.53554+1.10558I$	$-6.28328-2.66988I$
$u=-0.428243+0.664531I$ $a=-3.30609-2.45775I$ $b=-0.46396+1.53136I$	$3.53554+1.10558I$	$-6.28328-2.66988I$
$u=-0.428243+0.664531I$ $a=\ \ 3.27764+3.14924I$ $b=-0.138713-1.288100I$	$3.53554-2.95419I$	$-6.28328+4.25833I$
$u=-0.428243-0.664531I$ $a=\ \ 0.424006-0.749679I$ $b=-0.347802-0.145509I$	$3.53554-1.10558I$	$-6.28328+2.66988I$
$u=-0.428243-0.664531I$ $a=-0.109037+0.835332I$ $b=-0.980418+0.347385I$	$3.53554+2.95419I$	$-6.28328-4.25833I$
$u=-0.428243-0.664531I$ $a=\ \ 0.514379+0.344758I$ $b=\ \ 0.236687-1.251690I$	$3.53554+2.95419I$	$-6.28328-4.25833I$
$u=-0.428243-0.664531I$ $a=-1.51339-0.24563I$ $b=\ \ 0.63729-1.39949I$	$3.53554+2.95419I$	$-6.28328-4.25833I$
$u=-0.428243-0.664531I$ $a=\ \ 0.395311-0.191403I$ $b=-0.063487+1.241750I$	$3.53554-1.10558I$	$-6.28328+2.66988I$
$u=-0.428243-0.664531I$ $a=-0.51608-2.28821I$ $b=\ \ 0.118211+1.155270I$	$3.53554-1.10558I$	$-6.28328+2.66988I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.428243 - 0.664531I$ $a = -3.30609 + 2.45775I$ $b = -0.46396 - 1.53136I$	$3.53554 - 1.10558I$	$-6.28328 + 2.66988I$
$u = -0.428243 - 0.664531I$ $a = \quad 3.27764 - 3.14924I$ $b = -0.138713 + 1.288100I$	$3.53554 + 2.95419I$	$-6.28328 - 4.25833I$
$u = -1.073950 + 0.558752I$ $a = \quad 0.243335 + 1.147080I$ $b = \quad 0.049252 - 1.384420I$	$1.64493 + 7.72290I$	$-10.00000 - 8.97467I$
$u = -1.073950 + 0.558752I$ $a = \quad 1.243930 - 0.068036I$ $b = \quad 0.422756 - 1.046490I$	$1.64493 + 3.66314I$	$-10.0000 - 2.04647I$
$u = -1.073950 + 0.558752I$ $a = \quad 1.33854 + 0.68306I$ $b = \quad 1.276570 - 0.165471I$	$1.64493 + 7.72290I$	$-10.00000 - 8.97467I$
$u = -1.073950 + 0.558752I$ $a = -0.276943 + 0.247722I$ $b = \quad 0.48789 + 1.80331I$	$1.64493 + 3.66314I$	$-10.00000 - 2.04647I$
$u = -1.073950 + 0.558752I$ $a = -0.135569 + 0.287270I$ $b = \quad 0.021435 - 0.262960I$	$1.64493 + 3.66314I$	$-10.00000 - 2.04647I$
$u = -1.073950 + 0.558752I$ $a = -1.71509 - 0.08243I$ $b = -0.90809 + 1.55445I$	$1.64493 + 7.72290I$	$-10.0000 - 8.97467I$
$u = -1.073950 + 0.558752I$ $a = \quad 1.93484 + 0.49453I$ $b = \quad 0.088785 - 1.144550I$	$1.64493 + 3.66314I$	$-10.0000 - 2.04647I$
$u = -1.073950 + 0.558752I$ $a = -2.08258 + 0.16719I$ $b = -0.364647 + 1.204880I$	$1.64493 + 7.72290I$	$-10.0000 - 8.97467I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.073950 - 0.558752I$ $a = \quad 0.243335 - 1.147080I$ $b = \quad 0.049252 + 1.384420I$	$1.64493 - 7.72290I$	$-10.00000 + 8.97467I$
$u = -1.073950 - 0.558752I$ $a = \quad 1.243930 + 0.068036I$ $b = \quad 0.422756 + 1.046490I$	$1.64493 - 3.66314I$	$-10.0000 + 2.04647I$
$u = -1.073950 - 0.558752I$ $a = \quad 1.33854 - 0.68306I$ $b = \quad 1.276570 + 0.165471I$	$1.64493 - 7.72290I$	$-10.00000 + 8.97467I$
$u = -1.073950 - 0.558752I$ $a = -0.276943 - 0.247722I$ $b = \quad 0.48789 - 1.80331I$	$1.64493 - 3.66314I$	$-10.00000 + 2.04647I$
$u = -1.073950 - 0.558752I$ $a = -0.135569 - 0.287270I$ $b = \quad 0.021435 + 0.262960I$	$1.64493 - 3.66314I$	$-10.00000 + 2.04647I$
$u = -1.073950 - 0.558752I$ $a = -1.71509 + 0.08243I$ $b = -0.90809 - 1.55445I$	$1.64493 - 7.72290I$	$-10.0000 + 8.97467I$
$u = -1.073950 - 0.558752I$ $a = \quad 1.93484 - 0.49453I$ $b = \quad 0.088785 + 1.144550I$	$1.64493 - 3.66314I$	$-10.0000 + 2.04647I$
$u = -1.073950 - 0.558752I$ $a = -2.08258 - 0.16719I$ $b = -0.364647 - 1.204880I$	$1.64493 - 7.72290I$	$-10.0000 + 8.97467I$

V. $\boldsymbol{I_1^v = \langle a,\ 8v^2 + b + 26v + 7,\ 4v^3 + 14v^2 + 7v + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -8v^2 - 26v - 7 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 4v^2 + 12v + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 8v^2 + 26v + 7 \\ -8v^2 - 26v - 7 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 4v^2 + 14v + 7 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 4v^2 + 12v + 2 \\ -4v^2 - 12v - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -8v^2 - 26v - 7 \\ 20v^2 + 64v + 16 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -4v^2 - 14v - 7 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} v - 1 \\ 4v^2 + 14v + 7 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 45v^2 + 150v + 41$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^3$
c_3, c_7	y^3
c_5, c_6, c_8 c_9, c_{10}, c_{11}	$y^3 + 4y^2 + 4y - 1$
c_{12}	$y^3 + y^2 + 13y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.283866 + 0.068399I$ $a = 0$ $b = -0.22670 - 1.46771I$	$7.79580 - 5.13794I$	$1.83568 + 8.51237I$
$v = -0.283866 - 0.068399I$ $a = 0$ $b = -0.22670 + 1.46771I$	$7.79580 + 5.13794I$	$1.83568 - 8.51237I$
$v = -2.93227$ $a = 0$ $b = 0.453398$	-2.43213	-11.9210

VI. $I_2^v = \langle a,\ b^4 + b^3 + 2b^2 + 2b + 1,\ v - 1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ b \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ b^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -b \\ b \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -b^3 - 2b \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} b^2 + 1 \\ -b^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2b^3 + b^2 + 3b + 3 \\ -b^3 - b - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} b^3 + 2b \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -b^3 - 2b + 1 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4b^3 - 4b - 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = -0.621744 + 0.440597I$	$1.64493 + 2.02988I$	$-10.00000 - 3.46410I$
$v = 1.00000$ $a = 0$ $b = -0.621744 - 0.440597I$	$1.64493 - 2.02988I$	$-10.00000 + 3.46410I$
$v = 1.00000$ $a = 0$ $b = 0.121744 + 1.306620I$	$1.64493 - 2.02988I$	$-10.00000 + 3.46410I$
$v = 1.00000$ $a = 0$ $b = 0.121744 - 1.306620I$	$1.64493 + 2.02988I$	$-10.00000 - 3.46410I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^7(u^8-u^7-4u^6+3u^5+5u^4-u^3-u^2-3u-1)^4$ $\cdot(u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1)^4$ $\cdot(u^{18}+3u^{17}+\cdots+3u-1)(u^{42}-3u^{41}+\cdots+140u+16)$
c_3	$u^7(u^6-u^5-u^4+2u^3-u+1)^8$ $\cdot(u^8+3u^7+3u^6-2u^5-8u^4-9u^3-3u^2+2u+2)^4$ $\cdot(u^{18}-u^{17}+\cdots-u-1)(u^{42}-6u^{41}+\cdots+608u-128)$
c_4	$(u+1)^7(u^8-u^7-4u^6+3u^5+5u^4-u^3-u^2-3u-1)^4$ $\cdot(u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1)^4$ $\cdot(u^{18}-3u^{17}+\cdots-3u-1)(u^{42}-3u^{41}+\cdots+140u+16)$
c_5	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{18}+10u^{16}+\cdots-10u+1)$ $\cdot(u^{32}+u^{31}+\cdots-108u+19)(u^{42}+16u^{40}+\cdots+u-1)$ $\cdot(u^{48}+u^{47}+\cdots-6u+67)$
c_6	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{18}+10u^{16}+\cdots+10u+1)$ $\cdot(u^{32}+u^{31}+\cdots-108u+19)(u^{42}+16u^{40}+\cdots+u-1)$ $\cdot(u^{48}+u^{47}+\cdots-6u+67)$
c_7	$u^7(u^6-u^5-u^4+2u^3-u+1)^8$ $\cdot(u^8+3u^7+3u^6-2u^5-8u^4-9u^3-3u^2+2u+2)^4$ $\cdot(u^{18}+u^{17}+\cdots+u-1)(u^{42}-6u^{41}+\cdots+608u-128)$
c_8, c_{10}	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{18}+2u^{17}+\cdots-3u+1)$ $\cdot(u^{32}-7u^{31}+\cdots-148u+13)(u^{42}+2u^{41}+\cdots+2u+1)$ $\cdot(u^{48}-15u^{47}+\cdots-1598u+181)$
c_9	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{18}+10u^{16}+\cdots+10u+1)$ $\cdot(u^{32}+u^{31}+\cdots-108u+19)(u^{42}+16u^{40}+\cdots+u-1)$ $\cdot(u^{48}+u^{47}+\cdots-6u+67)$
c_{11}	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{18}+10u^{16}+\cdots-10u+1)$ $\cdot(u^{32}+u^{31}+\cdots-108u+19)(u^{42}+16u^{40}+\cdots+u-1)$ $\cdot(u^{48}+u^{47}+\cdots-6u+67)$
c_{12}	$((u^2-u+1)^{42})(u^3+3u^2+5u+2)(u^{18}+3u^{17}+\cdots-2u+1)$ $\cdot(u^{42}+39u^{41}+\cdots+24641536u+1048576)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^7(y^8-9y^7+32y^6-53y^5+31y^4+15y^3-15y^2-7y+1)^4$ $\cdot((y^{12}-9y^{11}+\cdots+4y+1)^4)(y^{18}-17y^{17}+\cdots+7y+1)$ $\cdot(y^{42}-37y^{41}+\cdots-7536y+256)$
c_3, c_7	$y^7(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^8$ $\cdot(y^8-3y^7+5y^6-4y^5+2y^4-13y^3+13y^2-16y+4)^4$ $\cdot(y^{18}-9y^{17}+\cdots-y+1)(y^{42}-18y^{41}+\cdots-388096y+16384)$
c_5, c_6, c_9 c_{11}	$(y^3+4y^2+4y-1)(y^4+3y^3+2y^2+1)(y^{18}+20y^{17}+\cdots-54y+1)$ $\cdot(y^{32}+21y^{31}+\cdots+6120y+361)(y^{42}+32y^{41}+\cdots-19y+1)$ $\cdot(y^{48}+45y^{47}+\cdots+147096y+4489)$
c_8, c_{10}	$(y^3+4y^2+4y-1)(y^4+3y^3+2y^2+1)(y^{18}+2y^{17}+\cdots-3y+1)$ $\cdot(y^{32}+y^{31}+\cdots+248y+169)(y^{42}-2y^{41}+\cdots-52y+1)$ $\cdot(y^{48}+21y^{47}+\cdots+890464y+32761)$
c_{12}	$((y^2+y+1)^{42})(y^3+y^2+13y-4)(y^{18}-3y^{17}+\cdots+2y+1)$ $\cdot(y^{42}-y^{41}+\cdots-16217796509696y+1099511627776)$