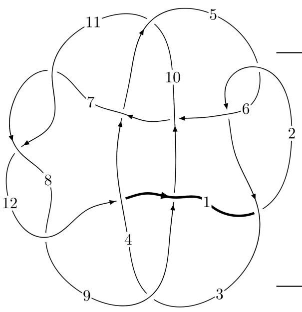
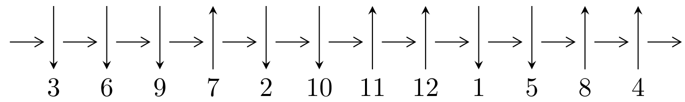
$12a_{0346}$ $(K12a_{0346})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 4.53998 \times 10^{26} u^{51} + 5.05817 \times 10^{27} u^{50} + \cdots + 2.07754 \times 10^{25} b - 7.39267 \times 10^{27}, \\
& 6.84425 \times 10^{27} u^{51} + 7.36349 \times 10^{28} u^{50} + \cdots + 1.66203 \times 10^{26} a - 9.03557 \times 10^{28}, \\
& u^{52} + 11u^{51} + \cdots - 105u - 8 \rangle \\
I_2^u = \langle & -2u^{41} a - 45u^{41} + \cdots + 6a + 347,\ 825u^{41} a - 163u^{41} + \cdots - 6825a - 727,\ u^{42} - 4u^{41} + \cdots - 23u + 3 \rangle \\
I_3^u = \langle & -3u^{15} + 11u^{14} + \cdots + b + 6,\ -4u^{15} + 13u^{14} + \cdots + a + 6, \\
& u^{16} - 4u^{15} + 5u^{14} + 4u^{13} - 19u^{12} + 23u^{11} - 11u^{10} - 3u^9 + 15u^8 - 29u^7 + 35u^6 - 22u^5 + 5u^4 + 3u^2 - 3u + \\
I_4^u = \langle & -u^3 a - u^2 a + u^3 + au + 2b + 1,\ u^2 a + 3u^3 + a^2 + au + 2u^2 - a - 3u - 2,\ u^4 - u^2 + 1 \rangle \\
I_5^u = \langle & b - a - 1,\ a^2 + 3a + 3,\ u + 1 \rangle \\
I_6^u = \langle & b - a + 1,\ a^4 - 6a^3 + 15a^2 - 18a + 7,\ u + 1 \rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 166 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. $I_1^u = \langle 4.54\times10^{26}u^{51}+5.06\times10^{27}u^{50}+\cdots+2.08\times10^{25}b-7.39\times10^{27},\ 6.84\times10^{27}u^{51}+7.36\times10^{28}u^{50}+\cdots+1.66\times10^{26}a-9.04\times10^{28},\ u^{52}+11u^{51}+\cdots-105u-8\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-41.1800u^{51}-443.041u^{50}+\cdots+6409.16u+543.645\\-21.8527u^{51}-243.469u^{50}+\cdots+4181.40u+355.837\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-7.78427u^{51}-87.7140u^{50}+\cdots+1359.23u+119.895\\5.98217u^{51}+53.3671u^{50}+\cdots+74.8168u+11.4814\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-19.3273u^{51}-199.572u^{50}+\cdots+2227.76u+187.808\\-21.8527u^{51}-243.469u^{50}+\cdots+4181.40u+355.837\end{pmatrix}$$
$$a_8 = \begin{pmatrix}4.76000u^{51}+46.4262u^{50}+\cdots-283.578u-23.1030\\-33.4051u^{51}-334.756u^{50}+\cdots+3096.45u+251.825\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-7.06370u^{51}-73.7381u^{50}+\cdots+927.555u+84.2568\\9.30260u^{51}+91.2779u^{50}+\cdots-515.128u-37.6927\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-31.4511u^{51}-330.139u^{50}+\cdots+3966.66u+334.341\\-9.22694u^{51}-119.633u^{50}+\cdots+3251.38u+281.203\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}37.4120u^{51}+372.930u^{50}+\cdots-3121.91u-246.831\\28.4339u^{51}+293.834u^{50}+\cdots-3277.17u-270.732\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{5525104092132536694524956 46}{415508677216418494982826 5}u^{51} - \frac{52616253465143029136872053 42}{41550867721641849498282 65}u^{50} + \cdots + \frac{213416557617400465778249992 82}{415508677216418494982826 5}u + \frac{149624283404620080796001152 2}{415508677216418494982826 5}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{52} + 19u^{51} + \cdots + 2465u + 64$
c_2, c_5	$u^{52} + 11u^{51} + \cdots - 105u - 8$
c_3, c_{10}	$u^{52} + 12u^{50} + \cdots - 11u + 1$
c_4, c_{12}	$u^{52} + 4u^{51} + \cdots - 11u + 1$
c_6, c_9	$u^{52} - 4u^{51} + \cdots + u - 1$
c_7, c_8, c_{11}	$u^{52} - 14u^{51} + \cdots - 15u + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{52} + 21y^{51} + \cdots - 3151553y + 4096$
c_2, c_5	$y^{52} - 19y^{51} + \cdots - 2465y + 64$
c_3, c_{10}	$y^{52} + 24y^{51} + \cdots - 43y + 1$
c_4, c_{12}	$y^{52} + 12y^{51} + \cdots - 31y + 1$
c_6, c_9	$y^{52} - 30y^{51} + \cdots - 61y + 1$
c_7, c_8, c_{11}	$y^{52} - 58y^{51} + \cdots - 137y + 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.303052 + 0.952802I$ $a = 0.034989 + 0.198223I$ $b = 0.503950 - 0.617099I$	$1.05551 + 4.23466I$	$0. - 13.94078I$
$u = -0.303052 - 0.952802I$ $a = 0.034989 - 0.198223I$ $b = 0.503950 + 0.617099I$	$1.05551 - 4.23466I$	$0. + 13.94078I$
$u = 0.866782 + 0.510957I$ $a = 1.83194 - 0.77063I$ $b = 0.18058 + 1.43268I$	$-1.60266 - 2.06605I$	0
$u = 0.866782 - 0.510957I$ $a = 1.83194 + 0.77063I$ $b = 0.18058 - 1.43268I$	$-1.60266 + 2.06605I$	0
$u = -0.878833 + 0.450841I$ $a = 0.518755 + 1.197230I$ $b = 0.639394 + 0.765044I$	$-1.82299 + 2.11483I$	0
$u = -0.878833 - 0.450841I$ $a = 0.518755 - 1.197230I$ $b = 0.639394 - 0.765044I$	$-1.82299 - 2.11483I$	0
$u = 0.859521 + 0.581846I$ $a = -1.92008 + 0.82944I$ $b = -0.07577 - 1.77245I$	$3.98340 - 2.30844I$	0
$u = 0.859521 - 0.581846I$ $a = -1.92008 - 0.82944I$ $b = -0.07577 + 1.77245I$	$3.98340 + 2.30844I$	0
$u = 0.866761 + 0.407706I$ $a = -1.43190 + 1.02282I$ $b = -0.455587 - 0.870700I$	$1.79191 - 1.98663I$	$0. + 5.10991I$
$u = 0.866761 - 0.407706I$ $a = -1.43190 - 1.02282I$ $b = -0.455587 + 0.870700I$	$1.79191 + 1.98663I$	$0. - 5.10991I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.949503 + 0.456951I$ $a = -1.23169 - 1.28904I$ $b = -1.275250 - 0.565238I$	$2.17857 + 3.11727I$	0
$u = -0.949503 - 0.456951I$ $a = -1.23169 + 1.28904I$ $b = -1.275250 + 0.565238I$	$2.17857 - 3.11727I$	0
$u = 1.059230 + 0.081807I$ $a = 1.80017 + 0.56735I$ $b = 0.686878 + 0.509668I$	$-4.61713 - 2.77958I$	0
$u = 1.059230 - 0.081807I$ $a = 1.80017 - 0.56735I$ $b = 0.686878 - 0.509668I$	$-4.61713 + 2.77958I$	0
$u = -0.677772 + 0.818492I$ $a = -0.417172 + 0.333279I$ $b = -0.602964 - 0.807052I$	$1.60486 - 2.99292I$	0
$u = -0.677772 - 0.818492I$ $a = -0.417172 - 0.333279I$ $b = -0.602964 + 0.807052I$	$1.60486 + 2.99292I$	0
$u = -0.592287 + 0.905759I$ $a = 0.073021 - 0.240968I$ $b = 0.759625 + 1.129160I$	$2.71314 - 8.81698I$	0
$u = -0.592287 - 0.905759I$ $a = 0.073021 + 0.240968I$ $b = 0.759625 - 1.129160I$	$2.71314 + 8.81698I$	0
$u = 0.754853 + 0.482158I$ $a = -1.006070 + 0.984106I$ $b = -0.206125 - 0.823600I$	$1.78251 - 2.04552I$	$5.02176 + 4.06371I$
$u = 0.754853 - 0.482158I$ $a = -1.006070 - 0.984106I$ $b = -0.206125 + 0.823600I$	$1.78251 + 2.04552I$	$5.02176 - 4.06371I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.809152 + 0.343854I$ $a = 0.19899 - 1.72190I$ $b = -0.16082 - 1.41998I$	$2.68462 + 1.40366I$	$1.58938 - 4.99897I$
$u = -0.809152 - 0.343854I$ $a = 0.19899 + 1.72190I$ $b = -0.16082 + 1.41998I$	$2.68462 - 1.40366I$	$1.58938 + 4.99897I$
$u = -0.571688 + 0.974680I$ $a = 0.079015 + 0.294171I$ $b = -0.78314 - 1.37043I$	$10.3015 - 12.7497I$	0
$u = -0.571688 - 0.974680I$ $a = 0.079015 - 0.294171I$ $b = -0.78314 + 1.37043I$	$10.3015 + 12.7497I$	0
$u = -1.097450 + 0.438565I$ $a = -0.647329 - 0.449697I$ $b = -0.761433 - 0.057762I$	$-2.17033 + 0.83260I$	0
$u = -1.097450 - 0.438565I$ $a = -0.647329 + 0.449697I$ $b = -0.761433 + 0.057762I$	$-2.17033 - 0.83260I$	0
$u = -0.808774$ $a = 1.40558$ $b = 1.17657$	3.21409	2.59480
$u = -0.983133 + 0.709385I$ $a = 0.424839 + 0.547549I$ $b = 0.291156 - 0.095304I$	$-1.12819 + 2.86961I$	0
$u = -0.983133 - 0.709385I$ $a = 0.424839 - 0.547549I$ $b = 0.291156 + 0.095304I$	$-1.12819 - 2.86961I$	0
$u = 1.207840 + 0.122118I$ $a = -1.48373 - 0.59924I$ $b = -0.901527 - 0.819910I$	$-4.39988 - 7.39386I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.207840 - 0.122118I$ $a = -1.48373 + 0.59924I$ $b = -0.901527 + 0.819910I$	$-4.39988 + 7.39386I$	0
$u = -0.878018 + 0.876003I$ $a = -0.078786 - 0.959376I$ $b = -0.020706 + 0.697334I$	$8.76056 + 3.51365I$	0
$u = -0.878018 - 0.876003I$ $a = -0.078786 + 0.959376I$ $b = -0.020706 - 0.697334I$	$8.76056 - 3.51365I$	0
$u = -1.027700 + 0.716646I$ $a = 1.67678 + 0.76544I$ $b = 0.700230 - 0.834328I$	$0.53141 + 8.76844I$	0
$u = -1.027700 - 0.716646I$ $a = 1.67678 - 0.76544I$ $b = 0.700230 + 0.834328I$	$0.53141 - 8.76844I$	0
$u = 0.915507 + 0.868903I$ $a = 0.654011 - 0.348314I$ $b = -0.000634 + 1.130420I$	$10.44970 - 3.21474I$	0
$u = 0.915507 - 0.868903I$ $a = 0.654011 + 0.348314I$ $b = -0.000634 - 1.130420I$	$10.44970 + 3.21474I$	0
$u = -0.969489 + 0.820816I$ $a = -0.978341 - 0.759518I$ $b = -0.058160 + 0.678489I$	$8.44609 + 2.83761I$	0
$u = -0.969489 - 0.820816I$ $a = -0.978341 + 0.759518I$ $b = -0.058160 - 0.678489I$	$8.44609 - 2.83761I$	0
$u = -0.305651 + 1.237930I$ $a = 0.088791 - 0.250502I$ $b = -0.643580 + 0.726750I$	$8.73516 + 6.32971I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.305651-1.237930I$ $a=\ \ 0.088791+0.250502I$ $b=-0.643580-0.726750I$	$8.73516-6.32971I$	0
$u=-1.087350+0.717339I$ $a=-1.76484-0.61554I$ $b=-0.85686+1.19595I$	$1.1878+14.8065I$	0
$u=-1.087350-0.717339I$ $a=-1.76484+0.61554I$ $b=-0.85686-1.19595I$	$1.1878-14.8065I$	0
$u=\ \ 0.692693$ $a=-2.67905$ $b=\ \ 0.160423$	2.79063	9.38280
$u=\ \ 1.311730+0.155198I$ $a=\ \ 1.29329+0.62840I$ $b=\ \ 0.98298+1.07363I$	$2.56871-10.65480I$	0
$u=\ \ 1.311730-0.155198I$ $a=\ \ 1.29329-0.62840I$ $b=\ \ 0.98298-1.07363I$	$2.56871+10.65480I$	0
$u=-1.121430+0.731849I$ $a=\ \ 1.80711+0.50804I$ $b=\ \ 0.85609-1.46709I$	$8.5842+18.9717I$	0
$u=-1.121430-0.731849I$ $a=\ \ 1.80711-0.50804I$ $b=\ \ 0.85609+1.46709I$	$8.5842-18.9717I$	0
$u=-1.41178$ $a=\ \ 0.588810$ $b=\ \ 0.957114$	3.53219	0
$u=-0.231217+0.451747I$ $a=-0.804630-0.251513I$ $b=-0.392803+0.547987I$	$-0.630419+1.163880I$	$-3.53445-4.93440I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.231217-0.451747I$ $a=-0.804630+0.251513I$ $b=-0.392803-0.547987I$	$-0.630419-1.163880I$	$-3.53445+4.93440I$
$u=-0.189131$ $a=\quad 4.12539$ $b=\quad 0.894842$	3.37184	1.02460

II. $\boldsymbol{I_2^u = \langle -2u^{41}a - 45u^{41} + \cdots + 6a + 347,\ 825u^{41}a - 163u^{41} + \cdots - 6825a - 727,\ u^{42} - 4u^{41} + \cdots - 23u + 3\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ \frac{1}{2}u^{41}a + \frac{45}{4}u^{41} + \cdots - \frac{3}{2}a - \frac{347}{4} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -6.25000au^{41} - 1.83333u^{41} + \cdots + 15.7500a + 19.6667 \\ \frac{23}{4}u^{41}a - \frac{87}{4}u^{40}a + \cdots - \frac{147}{4}a - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.500000au^{41} - 11.2500u^{41} + \cdots + 2.50000a + 86.7500 \\ \frac{1}{2}u^{41}a + \frac{45}{4}u^{41} + \cdots - \frac{3}{2}a - \frac{347}{4} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -9.75000au^{41} - 5.58333u^{41} + \cdots + 34.2500a + 21.4167 \\ -\frac{9}{2}u^{41}a + \frac{15}{4}u^{41} + \cdots + 15a - \frac{11}{4} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 13u^{41}a - \frac{59}{12}u^{41} + \cdots - \frac{181}{2}a + \frac{43}{12} \\ -\frac{9}{4}u^{41}a + \frac{1}{4}u^{41} + \cdots + \frac{69}{4}a - \frac{7}{4} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{2}u^{41}a + \frac{9}{4}u^{41} + \cdots - \frac{1}{2}a + \frac{9}{4} \\ -\frac{1}{2}u^{41}a + \frac{19}{2}u^{41} + \cdots + \frac{3}{2}a - 83 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -1.25000au^{41} - 1.58333u^{41} + \cdots + 14.2500a + 17.9167 \\ \frac{23}{2}u^{41}a + \frac{1}{2}u^{41} + \cdots - 36a - \frac{5}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{201}{4}u^{41} + \frac{677}{4}u^{40} + \cdots - \frac{2695}{2}u + \frac{853}{4}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{42} + 18u^{41} + \cdots + 139u + 9)^2$
c_2, c_5	$(u^{42} - 4u^{41} + \cdots - 23u + 3)^2$
c_3, c_{10}	$u^{84} - 2u^{83} + \cdots + 277053u - 23701$
c_4, c_{12}	$u^{84} + 10u^{83} + \cdots - 117u + 513$
c_6, c_9	$u^{84} - u^{83} + \cdots + 8u - 1$
c_7, c_8, c_{11}	$(u^{42} + 5u^{41} + \cdots - 8u - 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{42}+18y^{41}+\cdots+317y+81)^2$
c_2, c_5	$(y^{42}-18y^{41}+\cdots-139y+9)^2$
c_3, c_{10}	$y^{84}+30y^{83}+\cdots-54716197799y+561737401$
c_4, c_{12}	$y^{84}-34y^{83}+\cdots-6200469y+263169$
c_6, c_9	$y^{84}+17y^{83}+\cdots-72y+1$
c_7, c_8, c_{11}	$(y^{42}-45y^{41}+\cdots-96y+4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.510010 + 0.891471I$ $a = -0.217501 + 0.082995I$ $b = 0.709398 - 1.077620I$	$3.96533 + 2.20033I$	$7.78344 - 3.54101I$
$u = 0.510010 + 0.891471I$ $a = -0.204654 - 0.010293I$ $b = -0.194625 + 0.780336I$	$3.96533 + 2.20033I$	$7.78344 - 3.54101I$
$u = 0.510010 - 0.891471I$ $a = -0.217501 - 0.082995I$ $b = 0.709398 + 1.077620I$	$3.96533 - 2.20033I$	$7.78344 + 3.54101I$
$u = 0.510010 - 0.891471I$ $a = -0.204654 + 0.010293I$ $b = -0.194625 - 0.780336I$	$3.96533 - 2.20033I$	$7.78344 + 3.54101I$
$u = 0.730561 + 0.637744I$ $a = -0.161192 + 1.028670I$ $b = 0.163687 - 0.913124I$	$1.88224 - 1.77676I$	$3.40533 + 1.54020I$
$u = 0.730561 + 0.637744I$ $a = -1.091270 + 0.713205I$ $b = -0.624504 - 0.895096I$	$1.88224 - 1.77676I$	$3.40533 + 1.54020I$
$u = 0.730561 - 0.637744I$ $a = -0.161192 - 1.028670I$ $b = 0.163687 + 0.913124I$	$1.88224 + 1.77676I$	$3.40533 - 1.54020I$
$u = 0.730561 - 0.637744I$ $a = -1.091270 - 0.713205I$ $b = -0.624504 + 0.895096I$	$1.88224 + 1.77676I$	$3.40533 - 1.54020I$
$u = -0.779828 + 0.674893I$ $a = -0.435770 - 0.013571I$ $b = 0.72936 + 1.57734I$	$10.25860 - 4.34016I$	$5.15506 + 1.20379I$
$u = -0.779828 + 0.674893I$ $a = 2.07249 + 0.66236I$ $b = -0.136878 - 0.796276I$	$10.25860 - 4.34016I$	$5.15506 + 1.20379I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.779828-0.674893I$ $a=-0.435770+0.013571I$ $b=\ \ 0.72936-1.57734I$	$10.25860+4.34016I$	$5.15506-1.20379I$
$u=-0.779828-0.674893I$ $a=\ \ 2.07249-0.66236I$ $b=-0.136878+0.796276I$	$10.25860+4.34016I$	$5.15506-1.20379I$
$u=-0.822928+0.631892I$ $a=-0.176436-0.110160I$ $b=-0.733366-1.134380I$	$3.00889-0.33164I$	$4.36259+0.I$
$u=-0.822928+0.631892I$ $a=-2.08391-0.64936I$ $b=-0.347636+0.639214I$	$3.00889-0.33164I$	$4.36259+0.I$
$u=-0.822928-0.631892I$ $a=-0.176436+0.110160I$ $b=-0.733366+1.134380I$	$3.00889+0.33164I$	$4.36259+0.I$
$u=-0.822928-0.631892I$ $a=-2.08391+0.64936I$ $b=-0.347636-0.639214I$	$3.00889+0.33164I$	$4.36259+0.I$
$u=-0.875027+0.294558I$ $a=-1.50259-1.83848I$ $b=-0.183063-0.439638I$	$-0.96070+1.25401I$	$-8.94945+0.67445I$
$u=-0.875027+0.294558I$ $a=\ \ 2.34203-0.82616I$ $b=\ \ 0.35785-1.95258I$	$-0.96070+1.25401I$	$-8.94945+0.67445I$
$u=-0.875027-0.294558I$ $a=-1.50259+1.83848I$ $b=-0.183063+0.439638I$	$-0.96070-1.25401I$	$-8.94945-0.67445I$
$u=-0.875027-0.294558I$ $a=\ \ 2.34203+0.82616I$ $b=\ \ 0.35785+1.95258I$	$-0.96070-1.25401I$	$-8.94945-0.67445I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.876145 + 0.628792I$ $a = 0.539905 - 0.602343I$ $b = 0.234384 + 0.870708I$	$2.84261 + 5.26736I$	$3.35403 - 7.60586I$
$u = -0.876145 + 0.628792I$ $a = 2.13558 + 0.80967I$ $b = 0.930602 - 1.036450I$	$2.84261 + 5.26736I$	$3.35403 - 7.60586I$
$u = -0.876145 - 0.628792I$ $a = 0.539905 + 0.602343I$ $b = 0.234384 - 0.870708I$	$2.84261 - 5.26736I$	$3.35403 + 7.60586I$
$u = -0.876145 - 0.628792I$ $a = 2.13558 - 0.80967I$ $b = 0.930602 + 1.036450I$	$2.84261 - 5.26736I$	$3.35403 + 7.60586I$
$u = 0.527466 + 0.964532I$ $a = 0.432004 - 0.205116I$ $b = -0.89197 + 1.43000I$	$10.61430 + 2.69864I$	$6.67505 - 1.90999I$
$u = 0.527466 + 0.964532I$ $a = 0.359003 + 0.138407I$ $b = -0.227656 - 0.861311I$	$10.61430 + 2.69864I$	$6.67505 - 1.90999I$
$u = 0.527466 - 0.964532I$ $a = 0.432004 + 0.205116I$ $b = -0.89197 - 1.43000I$	$10.61430 - 2.69864I$	$6.67505 + 1.90999I$
$u = 0.527466 - 0.964532I$ $a = 0.359003 - 0.138407I$ $b = -0.227656 + 0.861311I$	$10.61430 - 2.69864I$	$6.67505 + 1.90999I$
$u = -1.093320 + 0.179580I$ $a = 0.89041 + 1.21145I$ $b = 0.453625 + 0.650671I$	$-3.70743 - 0.52130I$	$-13.5326 + 9.1617I$
$u = -1.093320 + 0.179580I$ $a = -1.80070 + 0.29530I$ $b = -1.09872 + 1.14420I$	$-3.70743 - 0.52130I$	$-13.5326 + 9.1617I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.093320-0.179580I$ $a=\;\;0.89041-1.21145I$ $b=\;\;0.453625-0.650671I$	$-3.70743+0.52130I$	$-13.5326-9.1617I$
$u=-1.093320-0.179580I$ $a=-1.80070-0.29530I$ $b=-1.09872-1.14420I$	$-3.70743+0.52130I$	$-13.5326-9.1617I$
$u=-0.916400+0.651883I$ $a=-0.207802+0.995231I$ $b=\;\;0.124308-1.016930I$	$9.83608+9.47995I$	$3.75244-7.98910I$
$u=-0.916400+0.651883I$ $a=-2.29406-0.72813I$ $b=-0.90398+1.59431I$	$9.83608+9.47995I$	$3.75244-7.98910I$
$u=-0.916400-0.651883I$ $a=-0.207802-0.995231I$ $b=\;\;0.124308+1.016930I$	$9.83608-9.47995I$	$3.75244+7.98910I$
$u=-0.916400-0.651883I$ $a=-2.29406+0.72813I$ $b=-0.90398-1.59431I$	$9.83608-9.47995I$	$3.75244+7.98910I$
$u=\;\;0.938483+0.622081I$ $a=-0.290651-0.867054I$ $b=\;\;0.78135-1.19741I$	$1.25328-3.16772I$	$1.51749+5.49111I$
$u=\;\;0.938483+0.622081I$ $a=-1.82859+0.92274I$ $b=-0.327871-0.874472I$	$1.25328-3.16772I$	$1.51749+5.49111I$
$u=\;\;0.938483-0.622081I$ $a=-0.290651+0.867054I$ $b=\;\;0.78135+1.19741I$	$1.25328+3.16772I$	$1.51749-5.49111I$
$u=\;\;0.938483-0.622081I$ $a=-1.82859-0.92274I$ $b=-0.327871+0.874472I$	$1.25328+3.16772I$	$1.51749-5.49111I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.853008 + 0.796431I$ $a = 1.159190 - 0.401879I$ $b = -0.155456 + 0.938638I$	$10.22430 - 2.96196I$	$5.75050 + 2.92195I$
$u = 0.853008 + 0.796431I$ $a = 0.187162 - 0.377050I$ $b = 0.104765 + 1.073070I$	$10.22430 - 2.96196I$	$5.75050 + 2.92195I$
$u = 0.853008 - 0.796431I$ $a = 1.159190 + 0.401879I$ $b = -0.155456 - 0.938638I$	$10.22430 + 2.96196I$	$5.75050 - 2.92195I$
$u = 0.853008 - 0.796431I$ $a = 0.187162 + 0.377050I$ $b = 0.104765 - 1.073070I$	$10.22430 + 2.96196I$	$5.75050 - 2.92195I$
$u = 1.028580 + 0.594924I$ $a = -0.674443 + 1.145360I$ $b = -1.47342 + 0.43019I$	$-1.01198 - 7.11892I$	$-6.76502 + 8.90706I$
$u = 1.028580 + 0.594924I$ $a = 2.04370 - 0.39791I$ $b = 0.626826 + 0.982813I$	$-1.01198 - 7.11892I$	$-6.76502 + 8.90706I$
$u = 1.028580 - 0.594924I$ $a = -0.674443 - 1.145360I$ $b = -1.47342 - 0.43019I$	$-1.01198 + 7.11892I$	$-6.76502 - 8.90706I$
$u = 1.028580 - 0.594924I$ $a = 2.04370 + 0.39791I$ $b = 0.626826 - 0.982813I$	$-1.01198 + 7.11892I$	$-6.76502 - 8.90706I$
$u = 0.266931 + 0.728758I$ $a = 0.760979 + 0.917167I$ $b = -1.413160 + 0.001121I$	$6.40895 + 5.19119I$	$1.23750 - 4.36469I$
$u = 0.266931 + 0.728758I$ $a = 0.221346 + 0.006852I$ $b = 0.580068 - 1.153180I$	$6.40895 + 5.19119I$	$1.23750 - 4.36469I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.266931 - 0.728758I$ $a = 0.760979 - 0.917167I$ $b = -1.413160 - 0.001121I$	$6.40895 - 5.19119I$	$1.23750 + 4.36469I$
$u = 0.266931 - 0.728758I$ $a = 0.221346 - 0.006852I$ $b = 0.580068 + 1.153180I$	$6.40895 - 5.19119I$	$1.23750 + 4.36469I$
$u = 1.101200 + 0.576052I$ $a = 1.30305 - 1.16985I$ $b = 1.96596 + 0.22334I$	$4.13777 - 10.06040I$	0
$u = 1.101200 + 0.576052I$ $a = -2.01391 + 0.02178I$ $b = -0.769329 - 1.160160I$	$4.13777 - 10.06040I$	0
$u = 1.101200 - 0.576052I$ $a = 1.30305 + 1.16985I$ $b = 1.96596 - 0.22334I$	$4.13777 + 10.06040I$	0
$u = 1.101200 - 0.576052I$ $a = -2.01391 - 0.02178I$ $b = -0.769329 + 1.160160I$	$4.13777 + 10.06040I$	0
$u = -1.226880 + 0.231515I$ $a = -0.399605 - 1.256660I$ $b = -0.499288 - 0.861891I$	$1.74664 - 2.01379I$	0
$u = -1.226880 + 0.231515I$ $a = 1.77450 + 0.14681I$ $b = 1.76505 - 0.97612I$	$1.74664 - 2.01379I$	0
$u = -1.226880 - 0.231515I$ $a = -0.399605 + 1.256660I$ $b = -0.499288 + 0.861891I$	$1.74664 + 2.01379I$	0
$u = -1.226880 - 0.231515I$ $a = 1.77450 - 0.14681I$ $b = 1.76505 + 0.97612I$	$1.74664 + 2.01379I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.25241$ $a=-1.13370$ $b=-1.13825$	-2.53306	13.6300
$u=-1.25241$ $a=\ \ 0.342638$ $b=\ \ 0.0874617$	-2.53306	13.6300
$u=\ \ 0.492169+0.550529I$ $a=-0.551572-0.482028I$ $b=-0.441630+0.963328I$	$0.46127+2.38551I$	$-3.21466-4.74336I$
$u=\ \ 0.492169+0.550529I$ $a=\ \ 0.21342-1.51071I$ $b=\ \ 1.059490+0.201611I$	$0.46127+2.38551I$	$-3.21466-4.74336I$
$u=\ \ 0.492169-0.550529I$ $a=-0.551572+0.482028I$ $b=-0.441630-0.963328I$	$0.46127-2.38551I$	$-3.21466+4.74336I$
$u=\ \ 0.492169-0.550529I$ $a=\ \ 0.21342+1.51071I$ $b=\ \ 1.059490-0.201611I$	$0.46127-2.38551I$	$-3.21466+4.74336I$
$u=\ \ 0.701994+0.161879I$ $a=\ \ 0.909145+0.128046I$ $b=\ \ 0.535532-1.241620I$	$6.92768+5.83771I$	$-3.19956-4.02025I$
$u=\ \ 0.701994+0.161879I$ $a=-0.69186+3.27386I$ $b=-1.05481+0.97876I$	$6.92768+5.83771I$	$-3.19956-4.02025I$
$u=\ \ 0.701994-0.161879I$ $a=\ \ 0.909145-0.128046I$ $b=\ \ 0.535532+1.241620I$	$6.92768-5.83771I$	$-3.19956+4.02025I$
$u=\ \ 0.701994-0.161879I$ $a=-0.69186-3.27386I$ $b=-1.05481-0.97876I$	$6.92768-5.83771I$	$-3.19956+4.02025I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.107580 + 0.681302I$ $a = 1.231810 - 0.087905I$ $b = 0.462807 + 0.741726I$	$2.15078 - 8.00235I$	0
$u = 1.107580 + 0.681302I$ $a = -1.59815 + 0.44757I$ $b = -0.93885 - 1.23925I$	$2.15078 - 8.00235I$	0
$u = 1.107580 - 0.681302I$ $a = 1.231810 + 0.087905I$ $b = 0.462807 - 0.741726I$	$2.15078 + 8.00235I$	0
$u = 1.107580 - 0.681302I$ $a = -1.59815 - 0.44757I$ $b = -0.93885 + 1.23925I$	$2.15078 + 8.00235I$	0
$u = 1.132060 + 0.720348I$ $a = -1.108790 - 0.248661I$ $b = 0.025222 - 0.768787I$	$8.75682 - 8.84366I$	0
$u = 1.132060 + 0.720348I$ $a = 1.72312 - 0.46642I$ $b = 1.00221 + 1.68776I$	$8.75682 - 8.84366I$	0
$u = 1.132060 - 0.720348I$ $a = -1.108790 + 0.248661I$ $b = 0.025222 + 0.768787I$	$8.75682 + 8.84366I$	0
$u = 1.132060 - 0.720348I$ $a = 1.72312 + 0.46642I$ $b = 1.00221 - 1.68776I$	$8.75682 + 8.84366I$	0
$u = -1.34302$ $a = 0.664876 + 0.247933I$ $b = 0.989538 + 0.259051I$	3.52091	0
$u = -1.34302$ $a = 0.664876 - 0.247933I$ $b = 0.989538 - 0.259051I$	3.52091	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.498194 + 0.170122I$ $a = -0.858781 - 0.797275I$ $b = -0.354161 + 0.911233I$	$0.48998 + 2.27367I$	$-4.83140 - 3.81720I$
$u = 0.498194 + 0.170122I$ $a = 0.29069 - 2.85485I$ $b = 0.693739 - 0.139657I$	$0.48998 + 2.27367I$	$-4.83140 - 3.81720I$
$u = 0.498194 - 0.170122I$ $a = -0.858781 + 0.797275I$ $b = -0.354161 - 0.911233I$	$0.48998 - 2.27367I$	$-4.83140 + 3.81720I$
$u = 0.498194 - 0.170122I$ $a = 0.29069 + 2.85485I$ $b = 0.693739 + 0.139657I$	$0.48998 - 2.27367I$	$-4.83140 + 3.81720I$

III. $\boldsymbol{I^u_3 =}$
$\boldsymbol{\langle -3u^{15}+11u^{14}+\cdots+b+6,\ -4u^{15}+13u^{14}+\cdots+a+6,\ u^{16}-4u^{15}+\cdots-3u+1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 4u^{15} - 13u^{14} + \cdots + 12u - 6 \\ 3u^{15} - 11u^{14} + \cdots + 9u - 6 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{15} + 4u^{14} + \cdots - 5u + 1 \\ -u^{15} + 3u^{14} + \cdots + u^2 - 3u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{15} - 2u^{14} + \cdots - 4u^2 + 3u \\ 3u^{15} - 11u^{14} + \cdots + 9u - 6 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -4u^{15} + 12u^{14} + \cdots - 9u + 2 \\ -5u^{15} + 19u^{14} + \cdots - 17u + 9 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 4u^{15} - 12u^{14} + \cdots + 9u - 2 \\ 4u^{15} - 13u^{14} + \cdots + 11u - 4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 4u^{15} - 16u^{14} + \cdots + 16u - 8 \\ -u^{15} + 2u^{14} + \cdots - u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -5u^{15} + 18u^{14} + \cdots - 15u + 6 \\ -3u^{15} + 12u^{14} + \cdots - 11u + 6 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u^{15} + 28u^{14} - 24u^{13} - 45u^{12} + 121u^{11} - 111u^{10} + 38u^9 + 23u^8 - 93u^7 + 175u^6 - 180u^5 + 94u^4 - 19u^3 + 15u^2 - 25u + 18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16} - 6u^{15} + \cdots - 3u + 1$
c_2	$u^{16} + 4u^{15} + \cdots + 3u + 1$
c_3, c_{10}	$u^{16} + u^{14} + \cdots - 2u^2 - 1$
c_4, c_{12}	$u^{16} - 7u^{14} + \cdots + 2u + 1$
c_5	$u^{16} - 4u^{15} + \cdots - 3u + 1$
c_6, c_9	$u^{16} + 2u^{15} + \cdots - 2u - 1$
c_7, c_8	$u^{16} - 5u^{15} + \cdots - 8u - 3$
c_{11}	$u^{16} + 5u^{15} + \cdots + 8u - 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16}+2y^{15}+\cdots+29y+1$
c_2, c_5	$y^{16}-6y^{15}+\cdots-3y+1$
c_3, c_{10}	$y^{16}+2y^{15}+\cdots+4y+1$
c_4, c_{12}	$y^{16}-14y^{15}+\cdots-20y^2+1$
c_6, c_9	$y^{16}+4y^{15}+\cdots+2y+1$
c_7, c_8, c_{11}	$y^{16}-21y^{15}+\cdots-160y+9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.338226 + 0.958950I$ $a = 0.339958 - 0.513177I$ $b = -0.595812 + 0.801019I$	$8.81727 + 5.86240I$	$4.01341 - 1.30618I$
$u = -0.338226 - 0.958950I$ $a = 0.339958 + 0.513177I$ $b = -0.595812 - 0.801019I$	$8.81727 - 5.86240I$	$4.01341 + 1.30618I$
$u = 0.609808 + 0.708721I$ $a = 0.463208 - 0.215804I$ $b = 0.608740 - 0.753121I$	$2.29985 + 2.15456I$	$2.96608 - 3.00274I$
$u = 0.609808 - 0.708721I$ $a = 0.463208 + 0.215804I$ $b = 0.608740 + 0.753121I$	$2.29985 - 2.15456I$	$2.96608 + 3.00274I$
$u = 1.052940 + 0.654544I$ $a = -1.54648 + 0.44104I$ $b = -0.822876 - 0.751021I$	$0.93264 - 7.46106I$	$-1.96489 + 6.60058I$
$u = 1.052940 - 0.654544I$ $a = -1.54648 - 0.44104I$ $b = -0.822876 + 0.751021I$	$0.93264 + 7.46106I$	$-1.96489 - 6.60058I$
$u = 1.119080 + 0.559931I$ $a = 1.68298 - 0.10916I$ $b = 1.16510 + 1.02586I$	$5.80052 - 9.99229I$	$2.77316 + 8.71840I$
$u = 1.119080 - 0.559931I$ $a = 1.68298 + 0.10916I$ $b = 1.16510 - 1.02586I$	$5.80052 + 9.99229I$	$2.77316 - 8.71840I$
$u = -1.26436$ $a = -0.833629$ $b = -0.714806$	-2.84996	-18.1780
$u = 0.918460 + 0.873721I$ $a = 0.432552 - 0.953680I$ $b = 0.014082 + 0.732499I$	$8.91391 - 3.23142I$	$13.51728 - 3.34906I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.918460 - 0.873721I$ $a = 0.432552 + 0.953680I$ $b = 0.014082 - 0.732499I$	$8.91391 + 3.23142I$	$13.51728 + 3.34906I$
$u = 0.514771 + 0.399698I$ $a = -0.23756 + 1.59385I$ $b = -0.79153 + 1.18241I$	$7.96457 + 5.69063I$	$6.42996 - 3.10822I$
$u = 0.514771 - 0.399698I$ $a = -0.23756 - 1.59385I$ $b = -0.79153 - 1.18241I$	$7.96457 - 5.69063I$	$6.42996 + 3.10822I$
$u = -0.450537 + 0.363850I$ $a = -0.48222 + 1.74678I$ $b = 0.325465 - 0.633246I$	$1.22774 + 2.85777I$	$3.22918 - 10.63144I$
$u = -0.450537 - 0.363850I$ $a = -0.48222 - 1.74678I$ $b = 0.325465 + 0.633246I$	$1.22774 - 2.85777I$	$3.22918 + 10.63144I$
$u = -1.58823$ $a = 0.528750$ $b = 0.908470$	3.31408	−27.7500

IV. $I_4^u = \langle -u^3a - u^2a + u^3 + au + 2b + 1,\ u^2a + 3u^3 + a^2 + au + 2u^2 - a - 3u - 2,\ u^4 - u^2 + 1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ \frac{1}{2}u^3a - \frac{1}{2}u^3 + \cdots - \frac{1}{2}au - \frac{1}{2} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u^3a + u^3 + \cdots - \frac{1}{2}a - \frac{3}{2} \\ -u^3 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{2}u^3a + \frac{1}{2}u^3 + \cdots + a + \frac{1}{2} \\ \frac{1}{2}u^3a - \frac{1}{2}u^3 + \cdots - \frac{1}{2}au - \frac{1}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{2}u^2a + \frac{3}{2}u^3 + \cdots + \frac{1}{2}a - 1 \\ \frac{1}{2}u^3a - \frac{3}{2}u^3 + \cdots - \frac{1}{2}au - \frac{1}{2} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{2}u^3a + \frac{3}{2}u^2 + \cdots + \frac{1}{2}a + \frac{1}{2} \\ -1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^3a + \frac{1}{2}u^3 + \cdots + a + \frac{1}{2} \\ \frac{1}{2}u^3a - \frac{1}{2}u^3 + \cdots - \frac{1}{2}au - \frac{1}{2} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{1}{2}u^3a - u^3 + \cdots + \frac{1}{2}a + \frac{3}{2} \\ u^3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^2 - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^2 - u + 1)^4$
c_2, c_5	$(u^4 - u^2 + 1)^2$
c_3, c_{10}	$u^8 + 6u^6 + 2u^5 + 10u^4 + 6u^3 + 7u^2 + 4u + 1$
c_4, c_{12}	$(u^2 + 1)^4$
c_6, c_9	$u^8 + 4u^7 + 2u^6 - 8u^5 - 6u^4 + 6u^3 + 3u^2 - 2u + 1$
c_7, c_8	$(u + 1)^8$
c_{11}	$(u - 1)^8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^2 + y + 1)^4$
c_2, c_5	$(y^2 - y + 1)^4$
c_3, c_{10}	$y^8 + 12y^7 + 56y^6 + 130y^5 + 162y^4 + 100y^3 + 21y^2 - 2y + 1$
c_4, c_{12}	$(y + 1)^8$
c_6, c_9	$y^8 - 12y^7 + 56y^6 - 130y^5 + 162y^4 - 100y^3 + 21y^2 + 2y + 1$
c_7, c_8, c_{11}	$(y - 1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -2.12127 + 0.08625I$ $b = -0.17069 - 1.96464I$	$-2.02988I$	$-2.00000 + 3.46410I$
$u = 0.866025 + 0.500000I$ $a = 1.75524 - 1.45227I$ $b = 0.170691 + 0.964637I$	$-2.02988I$	$-2.00000 + 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -2.12127 - 0.08625I$ $b = -0.17069 + 1.96464I$	$2.02988I$	$-2.00000 - 3.46410I$
$u = 0.866025 - 0.500000I$ $a = 1.75524 + 1.45227I$ $b = 0.170691 - 0.964637I$	$2.02988I$	$-2.00000 - 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 0.464166 - 0.918331I$ $b = -0.351035 - 1.212180I$	$2.02988I$	$-2.00000 - 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 0.90186 + 1.28436I$ $b = 0.351035 + 0.212180I$	$2.02988I$	$-2.00000 - 3.46410I$
$u = -0.866025 - 0.500000I$ $a = 0.464166 + 0.918331I$ $b = -0.351035 + 1.212180I$	$-2.02988I$	$-2.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = 0.90186 - 1.28436I$ $b = 0.351035 - 0.212180I$	$-2.02988I$	$-2.00000 + 3.46410I$

V. $I_5^u = \langle b - a - 1,\ a^2 + 3a + 3,\ u + 1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ a+1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a+1 \\ a+2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1 \\ a+1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a+1 \\ a+2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0 \\ a+1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a+1 \\ a+2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1 \\ a+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.50000 + 0.86603I$ $b = -0.500000 + 0.866025I$	-3.28987	-6.00000
$u = -1.00000$ $a = -1.50000 - 0.86603I$ $b = -0.500000 - 0.866025I$	-3.28987	-6.00000

VI. $I_6^u = \langle b - a + 1,\ a^4 - 6a^3 + 15a^2 - 18a + 7,\ u + 1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ a-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -a+1 \\ -a+2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ a-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a^2-4a+4 \\ a^3-4a^2+5a-1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} a^2-3a+3 \\ a^2-4a+4 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a-1 \\ a-2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a^3-4a^2+6a-4 \\ a^3-5a^2+8a-5 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=\quad 0.685007$ $b=-0.314993$	1.64493	−4.00000
$u=-1.00000$ $a=\quad 1.50000+1.47113I$ $b=\quad 0.50000+1.47113I$	1.64493	−4.00000
$u=-1.00000$ $a=\quad 1.50000-1.47113I$ $b=\quad 0.50000-1.47113I$	1.64493	−4.00000
$u=-1.00000$ $a=\quad 2.31499$ $b=\quad 1.31499$	1.64493	−4.00000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^2-u+1)^4(u^{16}-6u^{15}+\cdots-3u+1)$ $\cdot((u^{42}+18u^{41}+\cdots+139u+9)^2)(u^{52}+19u^{51}+\cdots+2465u+64)$
c_2	$((u-1)^6)(u^4-u^2+1)^2(u^{16}+4u^{15}+\cdots+3u+1)$ $\cdot((u^{42}-4u^{41}+\cdots-23u+3)^2)(u^{52}+11u^{51}+\cdots-105u-8)$
c_3, c_{10}	$(u^2-u+1)(u^4+2u^3+3u^2+2u-1)$ $\cdot(u^8+6u^6+\cdots+4u+1)(u^{16}+u^{14}+\cdots-2u^2-1)$ $\cdot(u^{52}+12u^{50}+\cdots-11u+1)(u^{84}-2u^{83}+\cdots+277053u-23701)$
c_4, c_{12}	$((u^2+1)^4)(u^2-u+1)(u^4-2u^3+\cdots-2u-1)(u^{16}-7u^{14}+\cdots+2u+1)$ $\cdot(u^{52}+4u^{51}+\cdots-11u+1)(u^{84}+10u^{83}+\cdots-117u+513)$
c_5	$((u+1)^6)(u^4-u^2+1)^2(u^{16}-4u^{15}+\cdots-3u+1)$ $\cdot((u^{42}-4u^{41}+\cdots-23u+3)^2)(u^{52}+11u^{51}+\cdots-105u-8)$
c_6, c_9	$(u-1)^2(u+1)^4(u^8+4u^7+2u^6-8u^5-6u^4+6u^3+3u^2-2u+1)$ $\cdot(u^{16}+2u^{15}+\cdots-2u-1)(u^{52}-4u^{51}+\cdots+u-1)$ $\cdot(u^{84}-u^{83}+\cdots+8u-1)$
c_7, c_8	$u^2(u+1)^8(u^2-2)^2(u^{16}-5u^{15}+\cdots-8u-3)$ $\cdot((u^{42}+5u^{41}+\cdots-8u-2)^2)(u^{52}-14u^{51}+\cdots-15u+2)$
c_{11}	$u^2(u-1)^8(u^2-2)^2(u^{16}+5u^{15}+\cdots+8u-3)$ $\cdot((u^{42}+5u^{41}+\cdots-8u-2)^2)(u^{52}-14u^{51}+\cdots-15u+2)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^2+y+1)^4(y^{16}+2y^{15}+\cdots+29y+1)$ $\cdot(y^{42}+18y^{41}+\cdots+317y+81)^2$ $\cdot(y^{52}+21y^{51}+\cdots-3151553y+4096)$
c_2, c_5	$((y-1)^6)(y^2-y+1)^4(y^{16}-6y^{15}+\cdots-3y+1)$ $\cdot((y^{42}-18y^{41}+\cdots-139y+9)^2)(y^{52}-19y^{51}+\cdots-2465y+64)$
c_3, c_{10}	$(y^2+y+1)(y^4+2y^3-y^2-10y+1)$ $\cdot(y^8+12y^7+56y^6+130y^5+162y^4+100y^3+21y^2-2y+1)$ $\cdot(y^{16}+2y^{15}+\cdots+4y+1)(y^{52}+24y^{51}+\cdots-43y+1)$ $\cdot(y^{84}+30y^{83}+\cdots-54716197799y+561737401)$
c_4, c_{12}	$(y+1)^8(y^2+y+1)(y^4+2y^3-y^2-10y+1)$ $\cdot(y^{16}-14y^{15}+\cdots-20y^2+1)(y^{52}+12y^{51}+\cdots-31y+1)$ $\cdot(y^{84}-34y^{83}+\cdots-6200469y+263169)$
c_6, c_9	$((y-1)^6)(y^8-12y^7+\cdots+2y+1)$ $\cdot(y^{16}+4y^{15}+\cdots+2y+1)(y^{52}-30y^{51}+\cdots-61y+1)$ $\cdot(y^{84}+17y^{83}+\cdots-72y+1)$
c_7, c_8, c_{11}	$y^2(y-2)^4(y-1)^8(y^{16}-21y^{15}+\cdots-160y+9)$ $\cdot((y^{42}-45y^{41}+\cdots-96y+4)^2)(y^{52}-58y^{51}+\cdots-137y+4)$