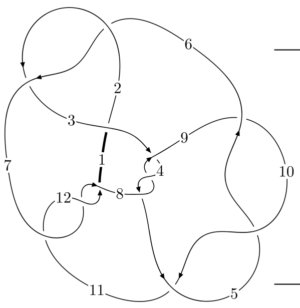
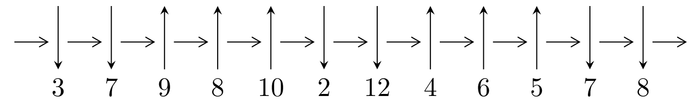
$12n_{0602}$ ($K12n_{0602}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -u^9 - 3u^8 - 7u^7 - 10u^6 - 9u^5 + 2u^4 + 5u^3 + 11u^2 + 8b - 6u - 2, \\
&\quad u^8 + 5u^6 - u^5 + 6u^4 - 2u^3 + u^2 + 4a + 2u - 2,\ u^{10} + 6u^8 - 3u^7 + 11u^6 - 13u^5 + 9u^4 - 12u^3 + 7u^2 + 2\rangle \\
I_2^u &= \langle -937u^{13} - 2472u^{12} + \cdots + 1987b - 6836,\ 12531u^{13} + 27338u^{12} + \cdots + 19870a + 85927, \\
&\quad u^{14} + 3u^{13} + \cdots + 22u + 5\rangle \\
I_3^u &= \langle -u^4a - u^2a - u^3 - au + b + a - u - 1, \\
&\quad -2u^5a - 2u^4a + u^5 - 6u^3a + u^4 - 6u^2a + 2u^3 + 2a^2 - 6au + 3u^2 - 6a + u + 3, \\
&\quad u^6 + 3u^4 + u^3 + 2u^2 + 2u - 1\rangle \\
I_4^u &= \langle 2u^9a + 10u^9 + \cdots + 7a + 1,\ -2u^9 + 3u^8 + \cdots + a^2 - 4,\ u^{10} - u^9 + 4u^8 - 4u^7 + 6u^6 - 6u^5 + 3u^4 - 3u^3 + 1 \\
I_5^u &= \langle b - 1,\ 6a - u - 3,\ u^2 + 3\rangle \\
I_6^u &= \langle b - u,\ 2a + u + 1,\ u^2 + 1\rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b - 1,\ v + 1\rangle$$

* 7 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 61 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. $I_1^u = \langle -u^9 - 3u^8 + \cdots + 8b - 2,\ u^8 + 5u^6 - u^5 + 6u^4 - 2u^3 + u^2 + 4a + 2u - 2,\ u^{10} + 6u^8 + \cdots + 7u^2 + 2\rangle$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{4}u^8 - \frac{5}{4}u^6 + \cdots - \frac{1}{2}u + \frac{1}{2} \\ \frac{1}{8}u^9 + \frac{3}{8}u^8 + \cdots + \frac{3}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{4}u^8 - \frac{5}{4}u^6 + \cdots - \frac{1}{2}u + \frac{1}{2} \\ -\frac{3}{8}u^9 + \frac{3}{8}u^8 + \cdots - \frac{5}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{3}{8}u^9 + \frac{1}{8}u^8 + \cdots - \frac{7}{4}u + \frac{3}{4} \\ -\frac{3}{8}u^9 + \frac{3}{8}u^8 + \cdots - \frac{5}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ \frac{1}{2}u^9 + \frac{1}{2}u^8 + \cdots + u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ \frac{1}{2}u^9 - \frac{1}{2}u^8 + \cdots + 2u - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{4}u^8 + \frac{5}{4}u^6 + \cdots - \frac{3}{2}u + \frac{1}{2} \\ -\frac{1}{8}u^9 + \frac{1}{8}u^8 + \cdots - \frac{3}{4}u + \frac{3}{4} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^3 - 2u \\ -\frac{1}{2}u^9 + \frac{1}{2}u^8 + \cdots - 2u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{3}{2}u^9 - \frac{1}{2}u^8 + \frac{17}{2}u^7 - 8u^6 + \frac{25}{2}u^5 - 25u^4 + \frac{17}{2}u^3 - \frac{27}{2}u^2 + 13u + 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10} + u^9 + 2u^8 - 3u^7 + 12u^6 + 24u^5 + 46u^4 + 37u^3 + 7u^2 - 3u + 4$
c_2, c_6, c_7 c_{11}, c_{12}	$u^{10} - 3u^9 + 4u^8 - u^7 - 4u^6 + 6u^5 - 3u^3 + u^2 + u + 2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u^{10} + 6u^8 + 3u^7 + 11u^6 + 13u^5 + 9u^4 + 12u^3 + 7u^2 + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} + 3y^9 + \cdots + 47y + 16$
c_2, c_6, c_7 c_{11}, c_{12}	$y^{10} - y^9 + 2y^8 + 3y^7 + 12y^6 - 24y^5 + 46y^4 - 37y^3 + 7y^2 + 3y + 4$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y^{10} + 12y^9 + \cdots + 28y + 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.849669 + 0.278925I$ $a = 0.126908 - 1.402190I$ $b = -0.935978 + 0.707374I$	$2.59736 + 5.48528I$	$0.63906 - 6.67204I$
$u = 0.849669 - 0.278925I$ $a = 0.126908 + 1.402190I$ $b = -0.935978 - 0.707374I$	$2.59736 - 5.48528I$	$0.63906 + 6.67204I$
$u = -0.179655 + 1.191160I$ $a = 0.250838 - 0.636140I$ $b = -0.46356 + 1.36046I$	$-2.21767 - 1.59735I$	$-7.51312 + 4.64580I$
$u = -0.179655 - 1.191160I$ $a = 0.250838 + 0.636140I$ $b = -0.46356 - 1.36046I$	$-2.21767 + 1.59735I$	$-7.51312 - 4.64580I$
$u = -0.44148 + 1.44610I$ $a = -0.552527 + 1.275850I$ $b = -1.28583 - 0.66001I$	$-8.2686 - 15.1646I$	$-7.51854 + 8.25672I$
$u = -0.44148 - 1.44610I$ $a = -0.552527 - 1.275850I$ $b = -1.28583 + 0.66001I$	$-8.2686 + 15.1646I$	$-7.51854 - 8.25672I$
$u = -0.171957 + 0.454648I$ $a = 0.655512 - 0.286314I$ $b = 0.281118 + 0.559566I$	$0.087563 - 1.088810I$	$1.48967 + 6.22992I$
$u = -0.171957 - 0.454648I$ $a = 0.655512 + 0.286314I$ $b = 0.281118 - 0.559566I$	$0.087563 + 1.088810I$	$1.48967 - 6.22992I$
$u = -0.05658 + 1.78531I$ $a = 0.519269 + 0.055233I$ $b = 0.904241 - 0.202548I$	$-16.0502 + 0.8822I$	$-5.09706 - 8.51458I$
$u = -0.05658 - 1.78531I$ $a = 0.519269 - 0.055233I$ $b = 0.904241 + 0.202548I$	$-16.0502 - 0.8822I$	$-5.09706 + 8.51458I$

II. $\boldsymbol{I_2^u = \langle -937u^{13} - 2472u^{12} + \cdots + 1987b - 6836,\ 12531u^{13} + 27338u^{12} + \cdots + 19870a + 85927,\ u^{14} + 3u^{13} + \cdots + 22u + 5\rangle}$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.630649u^{13} - 1.37584u^{12} + \cdots - 15.3917u - 4.32446 \\ 0.471565u^{13} + 1.24409u^{12} + \cdots + 9.17765u + 3.44036 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.253296u^{13} + 0.379668u^{12} + \cdots + 0.855511u + 0.00558631 \\ -0.425264u^{13} - 0.827378u^{12} + \cdots - 8.90941u - 2.81228 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.171968u^{13} - 0.447710u^{12} + \cdots - 8.05390u - 2.80669 \\ -0.425264u^{13} - 0.827378u^{12} + \cdots - 8.90941u - 2.81228 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.693105u^{13} - 1.63795u^{12} + \cdots - 20.3068u - 6.28908 \\ 0.351787u^{13} + 1.16608u^{12} + \cdots + 6.24459u + 3.20684 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.241369u^{13} - 0.372320u^{12} + \cdots - 0.359235u + 0.934474 \\ 0.330649u^{13} + 0.975843u^{12} + \cdots + 16.4917u + 5.22446 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.342577u^{13} - 0.983191u^{12} + \cdots - 14.9880u - 5.16452 \\ -0.112733u^{13} - 0.0145949u^{12} + \cdots - 3.34877u - 0.572723 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0892803u^{13} - 0.603523u^{12} + \cdots - 14.1325u - 6.15893 \\ -0.537997u^{13} - 0.841973u^{12} + \cdots - 12.2582u - 3.38500 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{2058}{1987}u^{13} + \frac{6600}{1987}u^{12} + \cdots + \frac{37538}{1987}u + \frac{12194}{1987}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^7 + 3u^6 + 7u^5 + 8u^4 + 9u^3 + 6u^2 + 5u + 1)^2$
c_2, c_6, c_7 c_{11}, c_{12}	$(u^7 + u^6 - u^5 - 2u^4 + u^3 + 2u^2 + u - 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u^{14} - 3u^{13} + \cdots - 22u + 5$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^7 + 5y^6 + 19y^5 + 36y^4 + 49y^3 + 38y^2 + 13y - 1)^2$
c_2, c_6, c_7 c_{11}, c_{12}	$(y^7 - 3y^6 + 7y^5 - 8y^4 + 9y^3 - 6y^2 + 5y - 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y^{14} + 11y^{13} + \cdots - 4y + 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.370785 + 0.946704I$ $a = -0.209881 - 0.303567I$ $b = 0.597306 + 0.773845I$	$0.562491 - 0.955395I$	$0.68929 + 2.37083I$
$u = 0.370785 - 0.946704I$ $a = -0.209881 + 0.303567I$ $b = 0.597306 - 0.773845I$	$0.562491 + 0.955395I$	$0.68929 - 2.37083I$
$u = -1.022710 + 0.247588I$ $a = -0.520411 - 1.220230I$ $b = 1.139460 + 0.630170I$	$-2.92618 - 9.93065I$	$-4.46028 + 7.33664I$
$u = -1.022710 - 0.247588I$ $a = -0.520411 + 1.220230I$ $b = 1.139460 - 0.630170I$	$-2.92618 + 9.93065I$	$-4.46028 - 7.33664I$
$u = 0.306472 + 1.132160I$ $a = -0.482637 - 0.675154I$ $b = -0.502855$	-4.24127	$-5.93921 + 0.I$
$u = 0.306472 - 1.132160I$ $a = -0.482637 + 0.675154I$ $b = -0.502855$	-4.24127	$-5.93921 + 0.I$
$u = -0.736932 + 1.071510I$ $a = 0.318588 - 0.053278I$ $b = -0.985336 + 0.506466I$	$-5.38528 + 3.93070I$	$-6.25941 - 4.87230I$
$u = -0.736932 - 1.071510I$ $a = 0.318588 + 0.053278I$ $b = -0.985336 - 0.506466I$	$-5.38528 - 3.93070I$	$-6.25941 + 4.87230I$
$u = -0.538570 + 0.272073I$ $a = 0.71818 - 1.43908I$ $b = 0.597306 + 0.773845I$	$0.562491 - 0.955395I$	$0.68929 + 2.37083I$
$u = -0.538570 - 0.272073I$ $a = 0.71818 + 1.43908I$ $b = 0.597306 - 0.773845I$	$0.562491 + 0.955395I$	$0.68929 - 2.37083I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.36817 + 1.45006I$ $a = 0.797752 + 1.077130I$ $b = 1.139460 - 0.630170I$	$-2.92618 + 9.93065I$	$-4.46028 - 7.33664I$
$u = 0.36817 - 1.45006I$ $a = 0.797752 - 1.077130I$ $b = 1.139460 + 0.630170I$	$-2.92618 - 9.93065I$	$-4.46028 + 7.33664I$
$u = -0.24721 + 1.49766I$ $a = -0.921588 + 0.632363I$ $b = -0.985336 - 0.506466I$	$-5.38528 - 3.93070I$	$-6.25941 + 4.87230I$
$u = -0.24721 - 1.49766I$ $a = -0.921588 - 0.632363I$ $b = -0.985336 + 0.506466I$	$-5.38528 + 3.93070I$	$-6.25941 - 4.87230I$

III. $I^u_3 = \langle -u^4a - u^2a - u^3 - au + b + a - u - 1,\ -2u^5a + u^5 + \cdots - 6a + 3,\ u^6 + 3u^4 + u^3 + 2u^2 + 2u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^5 + 4u^4 + 8u^3 + 12u^2 + 4u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} + 7u^{11} + \cdots + 438u + 169$
c_2, c_6, c_7 c_{11}, c_{12}	$u^{12} - 3u^{11} + \cdots + 42u - 13$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(u^6 + 3u^4 - u^3 + 2u^2 - 2u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 3y^{11} + \cdots - 59686y + 28561$
c_2, c_6, c_7 c_{11}, c_{12}	$y^{12} - 7y^{11} + \cdots - 438y + 169$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y^6 + 6y^5 + 13y^4 + 9y^3 - 6y^2 - 8y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.841864$ $a=\quad 0.445035+1.177780I$ $b=-0.719261-0.742974I$	3.23778	2.68180
$u=-0.841864$ $a=\quad 0.445035-1.177780I$ $b=-0.719261+0.742974I$	3.23778	2.68180
$u=-0.126468+1.352400I$ $a=-0.034921+1.148040I$ $b=-1.026470-0.870245I$	$-11.65360-3.39374I$	$-10.36018+3.51762I$
$u=-0.126468+1.352400I$ $a=\quad 0.383840+0.027542I$ $b=\quad 1.59190-0.18598I$	$-11.65360-3.39374I$	$-10.36018+3.51762I$
$u=-0.126468-1.352400I$ $a=-0.034921-1.148040I$ $b=-1.026470+0.870245I$	$-11.65360+3.39374I$	$-10.36018-3.51762I$
$u=-0.126468-1.352400I$ $a=\quad 0.383840-0.027542I$ $b=\quad 1.59190+0.18598I$	$-11.65360+3.39374I$	$-10.36018-3.51762I$
$u=\quad 0.376468+1.319680I$ $a=-0.443330-1.186910I$ $b=-1.27617+0.73937I$	$-5.05799+8.77346I$	$-5.56216-5.90094I$
$u=\quad 0.376468+1.319680I$ $a=\quad 0.392175+0.613857I$ $b=-0.260915-1.156860I$	$-5.05799+8.77346I$	$-5.56216-5.90094I$
$u=\quad 0.376468-1.319680I$ $a=-0.443330+1.186910I$ $b=-1.27617-0.73937I$	$-5.05799-8.77346I$	$-5.56216+5.90094I$
$u=\quad 0.376468-1.319680I$ $a=\quad 0.392175-0.613857I$ $b=-0.260915+1.156860I$	$-5.05799-8.77346I$	$-5.56216+5.90094I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.341865$ $a = 0.468459$ $b = 1.13466$	-2.71328	5.16290
$u = 0.341865$ $a = 4.04594$ $b = -0.752839$	-2.71328	5.16290

IV.

$\boldsymbol{I^u_4 = \langle 2u^9a+10u^9+\cdots+7a+1,\ -2u^9+3u^8+\cdots+a^2-4,\ u^{10}-u^9+\cdots-3u^3+1\rangle}$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a \\ -0.117647au^9 - 0.588235u^9 + \cdots - 0.411765a - 0.0588235 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.588235au^9 + 0.0588235u^9 + \cdots - 0.0588235a + 2.70588 \\ 0.176471au^9 - 0.117647u^9 + \cdots + 0.117647a - 1.41176 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.411765au^9 - 0.0588235u^9 + \cdots + 0.0588235a + 1.29412 \\ 0.176471au^9 - 0.117647u^9 + \cdots + 0.117647a - 1.41176 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^9 - 4u^7 - 5u^5 + 3u \\ u^9 + 3u^7 + 3u^5 - u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^9 - u^8 + 8u^7 - 5u^6 + 12u^5 - 9u^4 + 6u^3 - 6u^2 - u - 1 \\ -2u^9 + u^8 - 8u^7 + 4u^6 - 12u^5 + 6u^4 - 5u^3 + 4u^2 + 3u + 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.588235au^9 + 0.0588235u^9 + \cdots - 0.0588235a + 0.705882 \\ -1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^6 + 3u^4 + 2u^2 - 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^9 - 12u^7 - 12u^5 + 4u^3 + 8u - 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10} - y^9 - 6y^7 + 22y^6 + 6y^5 + 45y^4 + 15y^3 + 22y^2 + 4y + 1)^2$
c_2, c_6, c_7 c_{11}, c_{12}	$(y^{10} - 5y^9 + \cdots - 4y + 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y^{10} + 7y^9 + 20y^8 + 26y^7 + 6y^6 - 22y^5 - 19y^4 + 3y^3 + 6y^2 + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.839548 + 0.070481I$ $a = -0.900079 + 0.957609I$ $b = 1.018500 - 0.644891I$	$-0.70717 + 4.40083I$	$-1.25569 - 3.49859I$
$u = 0.839548 + 0.070481I$ $a = 0.01855 - 1.45994I$ $b = 0.400287 + 0.864056I$	$-0.70717 + 4.40083I$	$-1.25569 - 3.49859I$
$u = 0.839548 - 0.070481I$ $a = -0.900079 - 0.957609I$ $b = 1.018500 + 0.644891I$	$-0.70717 - 4.40083I$	$-1.25569 + 3.49859I$
$u = 0.839548 - 0.070481I$ $a = 0.01855 + 1.45994I$ $b = 0.400287 - 0.864056I$	$-0.70717 - 4.40083I$	$-1.25569 + 3.49859I$
$u = 0.090539 + 1.215350I$ $a = -1.57349 + 0.24896I$ $b = -1.236040 - 0.156723I$	$-6.25064 + 1.53058I$	$-5.48489 - 4.43065I$
$u = 0.090539 + 1.215350I$ $a = 0.23726 + 1.84586I$ $b = 0.926127 - 0.393188I$	$-6.25064 + 1.53058I$	$-5.48489 - 4.43065I$
$u = 0.090539 - 1.215350I$ $a = -1.57349 - 0.24896I$ $b = -1.236040 + 0.156723I$	$-6.25064 - 1.53058I$	$-5.48489 + 4.43065I$
$u = 0.090539 - 1.215350I$ $a = 0.23726 - 1.84586I$ $b = 0.926127 + 0.393188I$	$-6.25064 - 1.53058I$	$-5.48489 + 4.43065I$
$u = 0.383413 + 1.200420I$ $a = -0.734177 - 0.829669I$ $b = -0.608868 + 0.334904I$	-4.17865	$-4.51886 + 0.I$
$u = 0.383413 + 1.200420I$ $a = -0.073892 - 0.370754I$ $b = -0.608868 - 0.334904I$	-4.17865	$-4.51886 + 0.I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.383413 - 1.200420I$ $a = -0.734177 + 0.829669I$ $b = -0.608868 - 0.334904I$	-4.17865	$-4.51886 + 0.I$
$u = 0.383413 - 1.200420I$ $a = -0.073892 + 0.370754I$ $b = -0.608868 + 0.334904I$	-4.17865	$-4.51886 + 0.I$
$u = -0.383851 + 1.270630I$ $a = 0.614423 - 1.130320I$ $b = 1.018500 + 0.644891I$	$-0.70717 - 4.40083I$	$-1.25569 + 3.49859I$
$u = -0.383851 + 1.270630I$ $a = -0.272551 + 0.291529I$ $b = 0.400287 - 0.864056I$	$-0.70717 - 4.40083I$	$-1.25569 + 3.49859I$
$u = -0.383851 - 1.270630I$ $a = 0.614423 + 1.130320I$ $b = 1.018500 - 0.644891I$	$-0.70717 + 4.40083I$	$-1.25569 - 3.49859I$
$u = -0.383851 - 1.270630I$ $a = -0.272551 - 0.291529I$ $b = 0.400287 + 0.864056I$	$-0.70717 + 4.40083I$	$-1.25569 - 3.49859I$
$u = -0.429649 + 0.392970I$ $a = 1.58670 - 1.31909I$ $b = -1.236040 + 0.156723I$	$-6.25064 - 1.53058I$	$-5.48489 + 4.43065I$
$u = -0.429649 + 0.392970I$ $a = -2.40274 - 2.38405I$ $b = 0.926127 + 0.393188I$	$-6.25064 - 1.53058I$	$-5.48489 + 4.43065I$
$u = -0.429649 - 0.392970I$ $a = 1.58670 + 1.31909I$ $b = -1.236040 - 0.156723I$	$-6.25064 + 1.53058I$	$-5.48489 - 4.43065I$
$u = -0.429649 - 0.392970I$ $a = -2.40274 + 2.38405I$ $b = 0.926127 - 0.393188I$	$-6.25064 + 1.53058I$	$-5.48489 - 4.43065I$

V. $I_5^u = \langle b-1,\ 6a-u-3,\ u^2+3\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{6}u + \frac{1}{2} \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{6}u + \frac{1}{2} \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{6}u - \frac{1}{2} \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -2u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2 \\ -3 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{7}{6}u - \frac{1}{2} \\ -2u - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -2u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$1.73205I$		
$a =$	$0.500000 + 0.288675I$	-16.4493	-12.0000
$b =$	1.00000		
$u =$	$-1.73205I$		
$a =$	$0.500000 - 0.288675I$	-16.4493	-12.0000
$b =$	1.00000		

VI. $I_6^u = \langle b - u,\ 2a + u + 1,\ u^2 + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.500000 - 0.500000I$ $b = 1.000000I$	-1.64493	-4.00000
$u = -1.000000I$ $a = -0.500000 + 0.500000I$ $b = -1.000000I$	-1.64493	-4.00000

VII. $\boldsymbol{I_1^v = \langle a,\ b-1,\ v+1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^3(u+1)^2(u^7+3u^6+7u^5+8u^4+9u^3+6u^2+5u+1)^2$ $\cdot(u^{10}+u^9+2u^8-3u^7+12u^6+24u^5+46u^4+37u^3+7u^2-3u+4)$ $\cdot((u^{10}+5u^9+\cdots+4u+1)^2)(u^{12}+7u^{11}+\cdots+438u+169)$
c_2, c_7	$(u-1)^3(u^2+1)(u^7+u^6-u^5-2u^4+u^3+2u^2+u-1)^2$ $\cdot(u^{10}-3u^9+4u^8-u^7-4u^6+6u^5-3u^3+u^2+u+2)$ $\cdot(u^{10}+u^9-2u^8-4u^7+4u^5+3u^4-u^3-2u^2+1)^2$ $\cdot(u^{12}-3u^{11}+\cdots+42u-13)$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u(u^2+1)(u^2+3)(u^6+3u^4-u^3+2u^2-2u-1)^2$ $\cdot(u^{10}+6u^8+3u^7+11u^6+13u^5+9u^4+12u^3+7u^2+2)$ $\cdot(u^{10}+u^9+4u^8+4u^7+6u^6+6u^5+3u^4+3u^3+1)^2$ $\cdot(u^{14}-3u^{13}+\cdots-22u+5)$
c_6, c_{11}, c_{12}	$(u+1)^3(u^2+1)(u^7+u^6-u^5-2u^4+u^3+2u^2+u-1)^2$ $\cdot(u^{10}-3u^9+4u^8-u^7-4u^6+6u^5-3u^3+u^2+u+2)$ $\cdot(u^{10}+u^9-2u^8-4u^7+4u^5+3u^4-u^3-2u^2+1)^2$ $\cdot(u^{12}-3u^{11}+\cdots+42u-13)$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^5(y^7+5y^6+19y^5+36y^4+49y^3+38y^2+13y-1)^2$ $\cdot(y^{10}-y^9-6y^7+22y^6+6y^5+45y^4+15y^3+22y^2+4y+1)^2$ $\cdot(y^{10}+3y^9+\cdots+47y+16)(y^{12}-3y^{11}+\cdots-59686y+28561)$
c_2, c_6, c_7 c_{11}, c_{12}	$(y-1)^3(y+1)^2(y^7-3y^6+7y^5-8y^4+9y^3-6y^2+5y-1)^2$ $\cdot(y^{10}-5y^9+\cdots-4y+1)^2$ $\cdot(y^{10}-y^9+2y^8+3y^7+12y^6-24y^5+46y^4-37y^3+7y^2+3y+4)$ $\cdot(y^{12}-7y^{11}+\cdots-438y+169)$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y(y+1)^2(y+3)^2(y^6+6y^5+13y^4+9y^3-6y^2-8y+1)^2$ $\cdot(y^{10}+7y^9+20y^8+26y^7+6y^6-22y^5-19y^4+3y^3+6y^2+1)^2$ $\cdot(y^{10}+12y^9+\cdots+28y+4)(y^{14}+11y^{13}+\cdots-4y+25)$