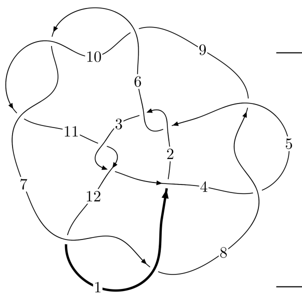
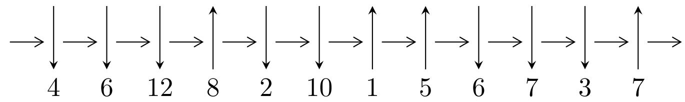
$12n_{0831}$ ($K12n_{0831}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -396999u^{17} - 586653u^{16} + \cdots + 343642b - 1550584, \\
&\quad - 523933u^{17} - 696379u^{16} + \cdots + 343642a - 2066672,\ u^{18} + u^{17} + \cdots + 6u - 1\rangle \\
I_2^u &= \langle -3.98523 \times 10^{90}u^{43} + 1.45733 \times 10^{90}u^{42} + \cdots + 3.76570 \times 10^{90}b + 3.66878 \times 10^{91}, \\
&\quad 3.76232 \times 10^{91}u^{43} - 6.44638 \times 10^{90}u^{42} + \cdots + 5.27198 \times 10^{90}a - 6.67170 \times 10^{92}, \\
&\quad 2u^{44} - 29u^{42} + \cdots - 88u - 7\rangle \\
I_3^u &= \langle -u^5 + u^4 + 2u^3 - 3u^2 + 2b - 4u + 4,\ -u^5 + 2u^4 + u^3 - 3u^2 + 2a - 3u + 6, \\
&\quad u^6 - 2u^5 - u^4 + 4u^3 + 2u^2 - 6u + 1\rangle \\
I_4^u &= \langle b - 1,\ a + 4u - 6,\ 2u^2 - 4u + 1\rangle \\
I_5^u &= \langle b - 1,\ a^2 - 2,\ u + 1\rangle \\
I_6^u &= \langle b - a + 2,\ 2a^2 - 4a + 1,\ u + 1\rangle \\
I_7^u &= \langle b - 1,\ a,\ u - 1\rangle
\end{aligned}$$

* 7 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 75 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.
$I^u_1 = \langle -3.97\times10^5u^{17} - 5.87\times10^5u^{16} + \cdots + 3.44\times10^5b - 1.55\times10^6,\ -5.24\times10^5u^{17} - 6.96\times10^5u^{16} + \cdots + 3.44\times10^5a - 2.07\times10^6,\ u^{18} + u^{17} + \cdots + 6u - 1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1.52465u^{17} + 2.02647u^{16} + \cdots - 13.8141u + 6.01403 \\ 1.15527u^{17} + 1.70716u^{16} + \cdots - 12.3278u + 4.51221 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.325219u^{17} + 0.133368u^{16} + \cdots - 5.76386u + 3.29663 \\ -1.39846u^{17} - 1.87149u^{16} + \cdots + 11.1270u - 3.17599 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.52465u^{17} + 2.02647u^{16} + \cdots - 13.8141u + 6.01403 \\ 1.15527u^{17} + 1.70716u^{16} + \cdots - 12.3278u + 4.51221 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2.67992u^{17} + 3.73363u^{16} + \cdots - 26.1419u + 10.5262 \\ 1.15527u^{17} + 1.70716u^{16} + \cdots - 12.3278u + 4.51221 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1.29270u^{17} + 1.81223u^{16} + \cdots - 10.6425u + 2.91863 \\ 1.04950u^{17} + 1.64790u^{16} + \cdots - 11.8434u + 3.25485 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1.29270u^{17} + 1.81223u^{16} + \cdots - 10.6425u + 2.91863 \\ 0.901071u^{17} + 1.31644u^{16} + \cdots - 10.0189u + 2.73532 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1.44262u^{17} - 1.82416u^{16} + \cdots + 15.3771u - 4.47443 \\ -1.41888u^{17} - 1.96720u^{16} + \cdots + 13.3296u - 3.75667 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.501819u^{17} - 0.871197u^{16} + \cdots + 2.13386u - 1.52465 \\ -0.551894u^{17} - 0.465700u^{16} + \cdots + 1.41941u - 1.15527 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{2646884}{171821}u^{17} - \frac{7468939}{343642}u^{16} + \cdots + \frac{54604739}{343642}u - \frac{10027319}{171821}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} - 11u^{17} + \cdots + 160u - 32$
c_2, c_3, c_5 c_{11}	$u^{18} - u^{17} + \cdots - 3u^3 + 1$
c_4, c_7, c_8 c_{12}	$u^{18} - u^{17} + \cdots - 6u - 1$
c_6, c_9, c_{10}	$u^{18} + 10u^{17} + \cdots - 16u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} - 7y^{17} + \cdots + 3584y + 1024$
c_2, c_3, c_5 c_{11}	$y^{18} - 3y^{17} + \cdots - 14y^2 + 1$
c_4, c_7, c_8 c_{12}	$y^{18} - 17y^{17} + \cdots - 28y + 1$
c_6, c_9, c_{10}	$y^{18} - 8y^{17} + \cdots - 10880y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.191738 + 1.076920I$ $a = 0.164769 - 0.216172I$ $b = -0.739470 - 0.526977I$	$-2.66808 - 4.00314I$	$-9.75217 + 7.89932I$
$u = 0.191738 - 1.076920I$ $a = 0.164769 + 0.216172I$ $b = -0.739470 + 0.526977I$	$-2.66808 + 4.00314I$	$-9.75217 - 7.89932I$
$u = 0.856890$ $a = 1.85099$ $b = -0.508119$	-3.70252	0.540670
$u = -1.268520 + 0.068652I$ $a = -0.20738 + 1.47520I$ $b = -1.13159 - 0.92777I$	$6.81521 - 6.56774I$	$-2.02682 + 4.35412I$
$u = -1.268520 - 0.068652I$ $a = -0.20738 - 1.47520I$ $b = -1.13159 + 0.92777I$	$6.81521 + 6.56774I$	$-2.02682 - 4.35412I$
$u = 0.099241 + 0.636465I$ $a = 0.938741 + 0.442143I$ $b = 0.365623 + 0.498306I$	$-0.56691 - 1.59781I$	$-4.88738 + 2.87220I$
$u = 0.099241 - 0.636465I$ $a = 0.938741 - 0.442143I$ $b = 0.365623 - 0.498306I$	$-0.56691 + 1.59781I$	$-4.88738 - 2.87220I$
$u = 1.384510 + 0.061181I$ $a = -0.025694 + 1.290750I$ $b = -0.757872 - 1.174240I$	$9.74101 + 0.20067I$	$0.876554 + 0.056243I$
$u = 1.384510 - 0.061181I$ $a = -0.025694 - 1.290750I$ $b = -0.757872 + 1.174240I$	$9.74101 - 0.20067I$	$0.876554 - 0.056243I$
$u = -0.598117$ $a = 2.91842$ $b = 0.874375$	-6.04349	-17.8030

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.36280 + 0.56912I$ $a = 0.123467 - 0.674233I$ $b = -0.019982 + 0.551107I$	$2.28034 - 2.61810I$	$-1.94443 - 3.90509I$
$u = -1.36280 - 0.56912I$ $a = 0.123467 + 0.674233I$ $b = -0.019982 - 0.551107I$	$2.28034 + 2.61810I$	$-1.94443 + 3.90509I$
$u = -1.53449 + 0.53389I$ $a = -0.200699 - 1.249540I$ $b = 1.26204 + 1.00770I$	$6.5797 - 16.1278I$	$-3.35911 + 8.29974I$
$u = -1.53449 - 0.53389I$ $a = -0.200699 + 1.249540I$ $b = 1.26204 - 1.00770I$	$6.5797 + 16.1278I$	$-3.35911 - 8.29974I$
$u = 1.56750 + 0.44100I$ $a = -0.207302 + 1.123790I$ $b = 0.815416 - 1.132280I$	$9.08495 + 8.48084I$	$-0.38289 - 5.34256I$
$u = 1.56750 - 0.44100I$ $a = -0.207302 - 1.123790I$ $b = 0.815416 + 1.132280I$	$9.08495 - 8.48084I$	$-0.38289 + 5.34256I$
$u = 0.348681$ $a = -0.719922$ $b = -1.63240$	-10.4921	19.6160
$u = 0.238190$ $a = 1.77872$ $b = 0.677803$	-1.17090	-9.40150

II. $\boldsymbol{I_2^u = \langle -3.99 \times 10^{90}u^{43} + 1.46 \times 10^{90}u^{42} + \cdots + 3.77 \times 10^{90}b + 3.67 \times 10^{91},\ 3.76 \times 10^{91}u^{43} - 6.45 \times 10^{90}u^{42} + \cdots + 5.27 \times 10^{90}a - 6.67 \times 10^{92},\ 2u^{44} - 29u^{42} + \cdots - 88u - 7\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -7.13643u^{43} + 1.22276u^{42} + \cdots + 1065.91u + 126.550 \\ 1.05830u^{43} - 0.387000u^{42} + \cdots - 112.988u - 9.74262 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.806957u^{43} - 0.114485u^{42} + \cdots - 142.855u - 24.2057 \\ -0.107399u^{43} - 0.0284322u^{42} + \cdots + 28.3132u + 2.84251 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -6.86544u^{43} + 1.11246u^{42} + \cdots + 1029.07u + 121.406 \\ 1.23457u^{43} - 0.400196u^{42} + \cdots - 145.917u - 14.5004 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -6.07814u^{43} + 0.835762u^{42} + \cdots + 952.920u + 116.808 \\ 1.05830u^{43} - 0.387000u^{42} + \cdots - 112.988u - 9.74262 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.21508u^{43} + 0.317864u^{42} + \cdots + 169.292u + 27.9292 \\ 0.208421u^{43} - 0.0153784u^{42} + \cdots - 37.9937u - 4.00886 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1.21508u^{43} + 0.317864u^{42} + \cdots + 169.292u + 27.9292 \\ 0.326622u^{43} - 0.0913778u^{42} + \cdots - 47.7269u - 5.12139 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.738865u^{43} - 0.0945014u^{42} + \cdots - 100.491u - 22.2900 \\ -0.0713589u^{43} - 0.0325985u^{42} + \cdots + 7.91982u + 0.387737 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.57557u^{43} + 0.540452u^{42} + \cdots + 85.6799u + 8.24586 \\ 0.457009u^{43} - 0.0873987u^{42} + \cdots - 54.0595u - 7.38741 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.66800u^{43} + 0.434075u^{42} + \cdots + 217.610u + 37.4599$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{22} + 7u^{21} + \cdots - 6u - 2)^2$
c_2, c_3, c_5 c_{11}	$2(2u^{44} - u^{42} + \cdots - 24u + 1)$
c_4, c_7, c_8 c_{12}	$2(2u^{44} - 29u^{42} + \cdots + 88u - 7)$
c_6, c_9, c_{10}	$(u^{22} - 4u^{21} + \cdots + 2u - 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{22} + y^{21} + \cdots + 48y + 4)^2$
c_2, c_3, c_5 c_{11}	$4(4y^{44} - 4y^{43} + \cdots - 214y + 1)$
c_4, c_7, c_8 c_{12}	$4(4y^{44} - 116y^{43} + \cdots - 4454y + 49)$
c_6, c_9, c_{10}	$(y^{22} - 8y^{21} + \cdots - 40y + 4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00768$ $a = 0.540189$ $b = 1.30858$	-3.29588	-2.01200
$u = -0.959621 + 0.038327I$ $a = 0.51386 + 2.68354I$ $b = -0.56442 - 2.02765I$	$0.186770 + 0.086750I$	$-6.26765 + 6.36021I$
$u = -0.959621 - 0.038327I$ $a = 0.51386 - 2.68354I$ $b = -0.56442 + 2.02765I$	$0.186770 - 0.086750I$	$-6.26765 - 6.36021I$
$u = 0.188755 + 0.896184I$ $a = 0.385957 - 0.105829I$ $b = 0.738143 + 0.476023I$	$-1.36349 - 1.79115I$	$-8.68124 + 6.28577I$
$u = 0.188755 - 0.896184I$ $a = 0.385957 + 0.105829I$ $b = 0.738143 - 0.476023I$	$-1.36349 + 1.79115I$	$-8.68124 - 6.28577I$
$u = 1.091200 + 0.395456I$ $a = 0.347759 + 0.568798I$ $b = 0.993160 - 0.453337I$	$-0.580514 + 1.104780I$	$-4.00000 - 5.65044I$
$u = 1.091200 - 0.395456I$ $a = 0.347759 - 0.568798I$ $b = 0.993160 + 0.453337I$	$-0.580514 - 1.104780I$	$-4.00000 + 5.65044I$
$u = -1.065490 + 0.625029I$ $a = -0.376962 + 1.132670I$ $b = -0.503539 - 0.055689I$	$2.05974 - 7.04859I$	0
$u = -1.065490 - 0.625029I$ $a = -0.376962 - 1.132670I$ $b = -0.503539 + 0.055689I$	$2.05974 + 7.04859I$	0
$u = -1.262810 + 0.021566I$ $a = -0.086610 + 1.327570I$ $b = 1.26751 - 0.99085I$	$7.73724 - 0.72368I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.262810 - 0.021566I$ $a = -0.086610 - 1.327570I$ $b = 1.26751 + 0.99085I$	$7.73724 + 0.72368I$	0
$u = 0.693940 + 0.232041I$ $a = 0.33396 - 1.93120I$ $b = -0.287053 + 0.030616I$	$-1.36349 + 1.79115I$	$-8.68124 - 6.28577I$
$u = 0.693940 - 0.232041I$ $a = 0.33396 + 1.93120I$ $b = -0.287053 - 0.030616I$	$-1.36349 - 1.79115I$	$-8.68124 + 6.28577I$
$u = -1.32704$ $a = 1.09776$ $b = -0.0760743$	-3.29588	0
$u = 1.221150 + 0.530023I$ $a = 0.017428 + 1.394390I$ $b = 1.08731 - 1.10905I$	$0.55910 + 9.58499I$	0
$u = 1.221150 - 0.530023I$ $a = 0.017428 - 1.394390I$ $b = 1.08731 + 1.10905I$	$0.55910 - 9.58499I$	0
$u = -1.212660 + 0.590602I$ $a = 0.240876 - 0.883836I$ $b = 0.312263 + 0.853014I$	$1.85821 - 2.76391I$	0
$u = -1.212660 - 0.590602I$ $a = 0.240876 + 0.883836I$ $b = 0.312263 - 0.853014I$	$1.85821 + 2.76391I$	0
$u = 1.343550 + 0.163045I$ $a = -0.18872 - 1.40724I$ $b = 0.75925 + 1.39471I$	$8.21251 + 7.73197I$	0
$u = 1.343550 - 0.163045I$ $a = -0.18872 + 1.40724I$ $b = 0.75925 - 1.39471I$	$8.21251 - 7.73197I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.884535 + 1.031500I$ $a = \ \ 0.227336 - 0.088919I$ $b = -0.457268 - 0.093641I$	$1.85821 - 2.76391I$	0
$u = -0.884535 - 1.031500I$ $a = \ \ 0.227336 + 0.088919I$ $b = -0.457268 + 0.093641I$	$1.85821 + 2.76391I$	0
$u = \ \ 1.271690 + 0.520977I$ $a = -0.16546 - 1.41673I$ $b = -0.930159 + 0.836061I$	$2.05974 + 7.04859I$	0
$u = \ \ 1.271690 - 0.520977I$ $a = -0.16546 + 1.41673I$ $b = -0.930159 - 0.836061I$	$2.05974 - 7.04859I$	0
$u = -0.613961 + 0.057476I$ $a = -0.959684 + 0.038453I$ $b = \ \ 1.217830 - 0.517219I$	$-0.580514 - 1.104780I$	$-5.89293 + 5.65044I$
$u = -0.613961 - 0.057476I$ $a = -0.959684 - 0.038453I$ $b = \ \ 1.217830 + 0.517219I$	$-0.580514 + 1.104780I$	$-5.89293 - 5.65044I$
$u = \ \ 1.346020 + 0.430624I$ $a = -0.093856 - 1.127210I$ $b = -1.105420 + 0.843659I$	$3.25581 + 6.25880I$	0
$u = \ \ 1.346020 - 0.430624I$ $a = -0.093856 + 1.127210I$ $b = -1.105420 - 0.843659I$	$3.25581 - 6.25880I$	0
$u = \ \ 0.45146 + 1.34717I$ $a = -0.0697853 - 0.0952976I$ $b = -0.924940 + 0.532455I$	$0.55910 + 9.58499I$	0
$u = \ \ 0.45146 - 1.34717I$ $a = -0.0697853 + 0.0952976I$ $b = -0.924940 - 0.532455I$	$0.55910 - 9.58499I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.42044+0.15034I$ $a=\ \ 0.185356+0.976083I$ $b=-0.751350-0.962354I$	$4.35834-0.41728I$	0
$u=-1.42044-0.15034I$ $a=\ \ 0.185356-0.976083I$ $b=-0.751350+0.962354I$	$4.35834+0.41728I$	0
$u=\ \ 1.46909$ $a=-0.934519$ $b=\ \ 0.929346$	-6.50325	0
$u=\ \ 1.62269+0.27689I$ $a=\ \ 0.443344-1.014190I$ $b=-0.843009+1.064050I$	$7.73724+0.72368I$	0
$u=\ \ 1.62269-0.27689I$ $a=\ \ 0.443344+1.014190I$ $b=-0.843009-1.064050I$	$7.73724-0.72368I$	0
$u=-1.61575+0.49113I$ $a=\ \ 0.250844+1.051830I$ $b=-1.22355-0.90329I$	$8.21251-7.73197I$	0
$u=-1.61575-0.49113I$ $a=\ \ 0.250844-1.051830I$ $b=-1.22355+0.90329I$	$8.21251+7.73197I$	0
$u=-0.223680+0.077265I$ $a=\ \ 5.50128+1.65439I$ $b=-0.264264-0.788553I$	$4.35834+0.41728I$	$1.220508+0.567857I$
$u=-0.223680-0.077265I$ $a=\ \ 5.50128-1.65439I$ $b=-0.264264+0.788553I$	$4.35834-0.41728I$	$1.220508-0.567857I$
$u=\ \ 0.224841$ $a=\ \ 5.44634$ $b=-1.36290$	-6.50325	-14.7860

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.179416+0.100194I$ $a=-6.69182-0.26567I$ $b=\ \ 0.206450+0.863665I$	$3.25581-6.25880I$	$-1.71216+4.44144I$
$u=-0.179416-0.100194I$ $a=-6.69182+0.26567I$ $b=\ \ 0.206450-0.863665I$	$3.25581+6.25880I$	$-1.71216-4.44144I$
$u=-0.47940+2.17394I$ $a=\ \ 0.181439+0.022852I$ $b=\ \ 0.873580+0.079126I$	$0.186770-0.086750I$	0
$u=-0.47940-2.17394I$ $a=\ \ 0.181439-0.022852I$ $b=\ \ 0.873580-0.079126I$	$0.186770+0.086750I$	0

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

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{2}u^5 - u^4 + \cdots + \frac{3}{2}u - 3 \\ \frac{1}{2}u^5 - \frac{1}{2}u^4 - u^3 + \frac{3}{2}u^2 + 2u - 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^5 + 2u^4 + u^3 - 4u^2 - 2u + 6 \\ -\frac{1}{2}u^5 + u^4 + \cdots - \frac{3}{2}u + 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{2}u^5 - u^4 + \cdots + \frac{3}{2}u - 3 \\ \frac{1}{2}u^5 - \frac{3}{2}u^4 - u^3 + \frac{5}{2}u^2 + 2u - 2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^5 - \frac{3}{2}u^4 - \frac{3}{2}u^3 + 3u^2 + \frac{7}{2}u - 5 \\ \frac{1}{2}u^5 - \frac{1}{2}u^4 - u^3 + \frac{3}{2}u^2 + 2u - 2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^5 - 2u^4 - \frac{3}{2}u^3 + \frac{9}{2}u^2 + 3u - \frac{13}{2} \\ -\frac{1}{2}u^4 + \frac{3}{2}u^2 - \frac{1}{2}u - \frac{5}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^5 - 2u^4 - \frac{3}{2}u^3 + \frac{9}{2}u^2 + 3u - \frac{13}{2} \\ \frac{1}{2}u^5 - u^4 - u^3 + 2u^2 + \frac{1}{2}u - \frac{5}{2} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{3}{2}u^5 + \frac{5}{2}u^4 + 2u^3 - \frac{9}{2}u^2 - 4u + 7 \\ -\frac{1}{2}u^3 - \frac{1}{2}u^2 + u + \frac{5}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}u^3 - \frac{1}{2}u^2 + u + \frac{1}{2} \\ \frac{1}{2}u^5 + \frac{1}{2}u^4 - \frac{3}{2}u^3 - u^2 + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{17}{2}u^5 - 16u^4 - 12u^3 + 27u^2 + \frac{55}{2}u - \frac{81}{2}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^6 - y^5 - 4y^4 - 3y^3 + y^2 - 6y + 1$
c_2, c_3, c_5 c_{11}	$y^6 - 4y^5 + 4y^4 - 3y^3 + 4y^2 + 4y + 1$
c_4, c_7, c_8 c_{12}	$y^6 - 6y^5 + 21y^4 - 42y^3 + 50y^2 - 32y + 1$
c_6, c_9, c_{10}	$y^6 - 3y^5 + 11y^4 - 20y^3 + 23y^2 - 14y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.123340+0.626153I$ $a=-0.656989+1.205750I$ $b=-0.781728-0.767267I$	$2.95967-8.51727I$	$-2.49626+9.75541I$
$u=-1.123340-0.626153I$ $a=-0.656989-1.205750I$ $b=-0.781728+0.767267I$	$2.95967+8.51727I$	$-2.49626-9.75541I$
$u=\ 1.31922$ $a=-0.589573$ $b=\ 1.43649$	-0.237758	0.719370
$u=\ 1.37304+0.80106I$ $a=-0.206939-0.540853I$ $b=-0.139351+0.586947I$	$2.47933+2.98689I$	$8.4923-12.8795I$
$u=\ 1.37304-0.80106I$ $a=-0.206939+0.540853I$ $b=-0.139351-0.586947I$	$2.47933-2.98689I$	$8.4923+12.8795I$
$u=\ 0.181369$ $a=-2.68257$ $b=-1.59433$	-10.6403	-34.7110

IV. $I_4^u = \langle b-1,\ a+4u-6,\ 2u^2-4u+1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -2u+\frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -4u+6 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -4u+9 \\ -4u+\frac{5}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ -\frac{5}{2}u+1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -5u+6 \\ \frac{5}{2}u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -4u+7 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 4u-6 \\ -1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 4u-6 \\ -2u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -4u+8 \\ -3u+2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -4u+6 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.292893$ $a = 4.82843$ $b = 1.00000$	-4.93480	-8.00000
$u = 1.70711$ $a = -0.828427$ $b = 1.00000$	-4.93480	-8.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^2 - 6y + 1$
c_2, c_3, c_4 c_5, c_7, c_8 c_{11}, c_{12}	$(y-1)^2$
c_6, c_9, c_{10}	$(y-2)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 1.41421$ $b = 1.00000$	-4.93480	-8.00000
$u = -1.00000$ $a = -1.41421$ $b = 1.00000$	-4.93480	-8.00000

VI. $I_6^u = \langle b - a + 2,\ 2a^2 - 4a + 1,\ u + 1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} a \\ a-2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2a \\ -2a+2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 2a-2 \\ a-2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2a-2 \\ a-2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2a-2 \\ 2a-\frac{7}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2a-2 \\ -1.5 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -2 \\ 3a-4 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -2a+2 \\ -2a+\frac{7}{2} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.292893$ $b = -1.70711$	-4.93480	-8.00000
$u = -1.00000$ $a = \quad 1.70711$ $b = -0.292893$	-4.93480	-8.00000

VII. $I_7^u = \langle b-1,\ a,\ u-1 \rangle$

(i) Arc colorings

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

$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

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

$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

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

$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	1.00000		
$a=$	0	0	0
$b=$	1.00000		

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)(u^2-2)^2(u^2-2u-1)(u^6-u^5+3u^3-5u^2+4u-1)$ $\cdot(u^{18}-11u^{17}+\cdots+160u-32)(u^{22}+7u^{21}+\cdots-6u-2)^2$
c_2, c_{11}	$4(u-1)^5(2u^2+4u+1)(u^6+2u^5-3u^3-4u^2-2u-1)$ $\cdot(u^{18}-u^{17}+\cdots-3u^3+1)(2u^{44}-u^{42}+\cdots-24u+1)$
c_3, c_5	$4(u+1)^5(2u^2-4u+1)(u^6-2u^5+3u^3-4u^2+2u-1)$ $\cdot(u^{18}-u^{17}+\cdots-3u^3+1)(2u^{44}-u^{42}+\cdots-24u+1)$
c_4, c_7	$4(u-1)^4(u+1)(2u^2+4u+1)(u^6+2u^5+\cdots+6u+1)$ $\cdot(u^{18}-u^{17}+\cdots-6u-1)(2u^{44}-29u^{42}+\cdots+88u-7)$
c_6	$u(u^2-2)^3(u^6+3u^5+3u^4-2u^3-5u^2-2u+1)$ $\cdot(u^{18}+10u^{17}+\cdots-16u+16)(u^{22}-4u^{21}+\cdots+2u-2)^2$
c_8, c_{12}	$4(u-1)(u+1)^4(2u^2-4u+1)(u^6-2u^5+\cdots-6u+1)$ $\cdot(u^{18}-u^{17}+\cdots-6u-1)(2u^{44}-29u^{42}+\cdots+88u-7)$
c_9, c_{10}	$u(u^2-2)^3(u^6-3u^5+3u^4+2u^3-5u^2+2u+1)$ $\cdot(u^{18}+10u^{17}+\cdots-16u+16)(u^{22}-4u^{21}+\cdots+2u-2)^2$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-2)^4(y-1)(y^2-6y+1)(y^6-y^5-4y^4-3y^3+y^2-6y+1)$ $\cdot(y^{18}-7y^{17}+\cdots+3584y+1024)(y^{22}+y^{21}+\cdots+48y+4)^2$
c_2, c_3, c_5 c_{11}	$16(y-1)^5(4y^2-12y+1)(y^6-4y^5+4y^4-3y^3+4y^2+4y+1)$ $\cdot(y^{18}-3y^{17}+\cdots-14y^2+1)(4y^{44}-4y^{43}+\cdots-214y+1)$
c_4, c_7, c_8 c_{12}	$16(y-1)^5(4y^2-12y+1)(y^6-6y^5+\cdots-32y+1)$ $\cdot(y^{18}-17y^{17}+\cdots-28y+1)(4y^{44}-116y^{43}+\cdots-4454y+49)$
c_6, c_9, c_{10}	$y(y-2)^6(y^6-3y^5+11y^4-20y^3+23y^2-14y+1)$ $\cdot(y^{18}-8y^{17}+\cdots-10880y+256)(y^{22}-8y^{21}+\cdots-40y+4)^2$