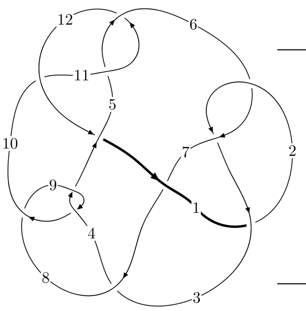
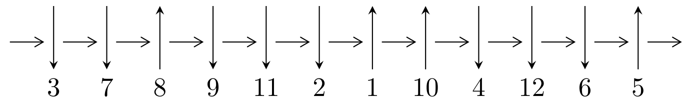
$12a_{0516}$ $(K12a_{0516})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle -3u^{26} + 19u^{25} + \cdots + 4b + 2,\ 11u^{26} - 57u^{25} + \cdots + 8a - 62,\ u^{27} - 5u^{26} + \cdots - 12u + 4 \rangle \\
I_2^u &= \langle 153018u^{43}a + 172574u^{43} + \cdots + 267932a + 346978,\ -5u^{43}a - 8u^{42}a + \cdots - 7a - 8, \\
&\quad\ u^{44} + 2u^{43} + \cdots + 2u + 1 \rangle \\
I_3^u &= \langle -au + b + a,\ a^2 - a + 1,\ u^2 + 1 \rangle \\
I_4^u &= \langle au + b + a - u,\ a^2 - a + 1,\ u^2 + 1 \rangle
\end{aligned}
$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 123 representations.

---

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $\boldsymbol{I_1^u = \langle -3u^{26} + 19u^{25} + \cdots + 4b + 2,\ 11u^{26} - 57u^{25} + \cdots + 8a - 62,\ u^{27} - 5u^{26} + \cdots - 12u + 4\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -1.37500u^{26} + 7.12500u^{25} + \cdots - 19.8750u + 7.75000 \\ \frac{3}{4}u^{26} - \frac{19}{4}u^{25} + \cdots + \frac{33}{4}u - \frac{1}{2} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{3}{8}u^{26} + \frac{13}{8}u^{25} + \cdots - \frac{35}{8}u + \frac{5}{4} \\ \frac{1}{4}u^{26} - \frac{5}{4}u^{25} + \cdots + \frac{11}{4}u - \frac{1}{2} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{8}u^{26} + \frac{1}{8}u^{25} + \cdots - \frac{67}{8}u + \frac{27}{4} \\ -\frac{1}{4}u^{26} + \frac{1}{4}u^{25} + \cdots + \frac{35}{4}u - \frac{11}{2} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1.62500u^{26} + 8.37500u^{25} + \cdots - 20.1250u + 8.25000 \\ \frac{7}{4}u^{26} - \frac{29}{4}u^{25} + \cdots + \frac{37}{4}u - \frac{1}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{8}u^{26} + \frac{3}{8}u^{25} + \cdots - \frac{1}{8}u - \frac{1}{4} \\ -\frac{1}{4}u^{26} + \frac{5}{4}u^{25} + \cdots - \frac{9}{4}u + \frac{3}{2} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{8}u^{26} - \frac{23}{8}u^{25} + \cdots + \frac{129}{8}u - \frac{25}{4} \\ \frac{3}{4}u^{26} - \frac{1}{4}u^{25} + \cdots - \frac{7}{4}u - \frac{5}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -3u^{25} + 11u^{24} - 41u^{23} + 94u^{22} - 201u^{21} + 350u^{20} - 555u^{19} + 811u^{18} - 1060u^{17} + 1348u^{16} - 1524u^{15} + 1683u^{14} - 1695u^{13} + 1624u^{12} - 1489u^{11} + 1249u^{10} - 1017u^9 + 745u^8 - 495u^7 + 304u^6 - 145u^5 + 54u^4 - 7u^3 - 21u^2 + 20u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^{27} + 14u^{26} + \cdots + 4u + 1$
c_2, c_5, c_6 c_{11}	$u^{27} - 7u^{25} + \cdots - 2u^2 + 1$
c_3	$u^{27} + 5u^{26} + \cdots - 320u^2 + 64$
c_4, c_9	$u^{27} - 5u^{26} + \cdots - 12u + 4$
c_7, c_{12}	$u^{27} + 5u^{25} + \cdots - 2u + 3$
c_8	$u^{27} - 15u^{26} + \cdots + 56u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{27} + 2y^{26} + \cdots + 8y - 1$
c_2, c_5, c_6 c_{11}	$y^{27} - 14y^{26} + \cdots + 4y - 1$
c_3	$y^{27} - 13y^{26} + \cdots + 40960y - 4096$
c_4, c_9	$y^{27} + 15y^{26} + \cdots + 56y - 16$
c_7, c_{12}	$y^{27} + 10y^{26} + \cdots - 20y - 9$
c_8	$y^{27} - 5y^{26} + \cdots + 8480y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.730663 + 0.630842I$ $a = -1.15948 + 1.36199I$ $b = 1.380630 + 0.132263I$	$-6.78998 - 5.25258I$	$-11.87823 + 4.55008I$
$u = -0.730663 - 0.630842I$ $a = -1.15948 - 1.36199I$ $b = 1.380630 - 0.132263I$	$-6.78998 + 5.25258I$	$-11.87823 - 4.55008I$
$u = -0.496338 + 0.799160I$ $a = 0.491347 - 1.120530I$ $b = -0.828650 + 0.873109I$	$-0.34967 + 2.03126I$	$-2.38031 - 3.61940I$
$u = -0.496338 - 0.799160I$ $a = 0.491347 + 1.120530I$ $b = -0.828650 - 0.873109I$	$-0.34967 - 2.03126I$	$-2.38031 + 3.61940I$
$u = 0.893419 + 0.201765I$ $a = 0.47034 + 1.60999I$ $b = -1.108620 - 0.003316I$	$-1.56275 + 12.48900I$	$-7.13823 - 8.79182I$
$u = 0.893419 - 0.201765I$ $a = 0.47034 - 1.60999I$ $b = -1.108620 + 0.003316I$	$-1.56275 - 12.48900I$	$-7.13823 + 8.79182I$
$u = -0.178235 + 1.084250I$ $a = -0.213163 - 0.502908I$ $b = 0.659574 + 0.702653I$	$1.94164 + 2.20192I$	$-0.56198 - 2.41318I$
$u = -0.178235 - 1.084250I$ $a = -0.213163 + 0.502908I$ $b = 0.659574 - 0.702653I$	$1.94164 - 2.20192I$	$-0.56198 + 2.41318I$
$u = -0.664783 + 0.914963I$ $a = -0.39003 + 1.65011I$ $b = 1.72361 - 1.44912I$	$-5.96942 + 10.50660I$	$-9.69062 - 10.08606I$
$u = -0.664783 - 0.914963I$ $a = -0.39003 - 1.65011I$ $b = 1.72361 + 1.44912I$	$-5.96942 - 10.50660I$	$-9.69062 + 10.08606I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.728836 + 0.456068I$ $a = -0.664583 + 0.952860I$ $b = -0.840437 - 0.847346I$	$-5.99030 - 2.50292I$	$-13.30644 + 3.87606I$
$u = 0.728836 - 0.456068I$ $a = -0.664583 - 0.952860I$ $b = -0.840437 + 0.847346I$	$-5.99030 + 2.50292I$	$-13.30644 - 3.87606I$
$u = 0.799916 + 0.147492I$ $a = -0.553123 - 0.901764I$ $b = 0.879493 + 0.088034I$	$2.62362 + 2.33182I$	$-0.926585 - 0.602280I$
$u = 0.799916 - 0.147492I$ $a = -0.553123 + 0.901764I$ $b = 0.879493 - 0.088034I$	$2.62362 - 2.33182I$	$-0.926585 + 0.602280I$
$u = 0.563387 + 1.046610I$ $a = 1.253280 + 0.526603I$ $b = -1.42614 + 0.54904I$	$-4.25210 - 2.40888I$	$-10.75070 + 1.81073I$
$u = 0.563387 - 1.046610I$ $a = 1.253280 - 0.526603I$ $b = -1.42614 - 0.54904I$	$-4.25210 + 2.40888I$	$-10.75070 - 1.81073I$
$u = 0.021698 + 1.237970I$ $a = 0.353870 + 0.098440I$ $b = -0.986014 + 0.581923I$	$-0.30811 - 4.23523I$	$-8.52197 + 5.94232I$
$u = 0.021698 - 1.237970I$ $a = 0.353870 - 0.098440I$ $b = -0.986014 - 0.581923I$	$-0.30811 + 4.23523I$	$-8.52197 - 5.94232I$
$u = 0.371922 + 1.216990I$ $a = -0.047378 - 0.727973I$ $b = -0.420071 + 0.350884I$	$6.71645 - 1.62939I$	$3.63674 + 2.67627I$
$u = 0.371922 - 1.216990I$ $a = -0.047378 + 0.727973I$ $b = -0.420071 - 0.350884I$	$6.71645 + 1.62939I$	$3.63674 - 2.67627I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.517374 + 1.188310I$ $a = -0.98424 - 1.30505I$ $b = 1.59567 + 1.17935I$	$5.67800 - 7.17879I$	$1.95902 + 3.78339I$
$u = 0.517374 - 1.188310I$ $a = -0.98424 + 1.30505I$ $b = 1.59567 - 1.17935I$	$5.67800 + 7.17879I$	$1.95902 - 3.78339I$
$u = 0.322363 + 1.283180I$ $a = -0.258472 + 0.363453I$ $b = 1.027060 + 0.465180I$	$3.19039 + 8.39996I$	$-2.59631 - 7.43442I$
$u = 0.322363 - 1.283180I$ $a = -0.258472 - 0.363453I$ $b = 1.027060 - 0.465180I$	$3.19039 - 8.39996I$	$-2.59631 + 7.43442I$
$u = 0.559888 + 1.210030I$ $a = 1.36303 + 1.45255I$ $b = -2.57082 - 1.28259I$	$1.4727 - 17.7774I$	$-3.91820 + 11.76326I$
$u = 0.559888 - 1.210030I$ $a = 1.36303 - 1.45255I$ $b = -2.57082 + 1.28259I$	$1.4727 + 17.7774I$	$-3.91820 - 11.76326I$
$u = -0.417568$ $a = 1.17723$ $b = -0.170545$	-1.02561	-9.85230

II. $\boldsymbol{I_2^u = \langle 1.53 \times 10^5 au^{43} + 1.73 \times 10^5 u^{43} + \cdots + 2.68 \times 10^5 a + 3.47 \times 10^5,\ -5u^{43}a - 8u^{42}a + \cdots - 7a - 8,\ u^{44} + 2u^{43} + \cdots + 2u + 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_{12} = \begin{pmatrix} a \\ -0.671774au^{43} - 0.757628u^{43} + \cdots - 1.17627a - 1.52329 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0879130au^{43} - 1.35545u^{43} + \cdots + 1.75763a - 1.80612 \\ -0.0707343au^{43} - 1.51109u^{43} + \cdots - 0.630357a - 1.70508 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1.17627au^{43} + 1.52329u^{43} + \cdots + 1.06336a + 1.87686 \\ -au \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.671774au^{43} - 0.757628u^{43} + \cdots - 0.176265a - 1.52329 \\ -0.887094au^{43} + 0.646425u^{43} + \cdots - 1.55887a - 1.11120 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.757628au^{43} - 1.80612u^{43} + \cdots + 1.52329a - 3.62675 \\ -1.40405au^{43} + 0.130050u^{43} + \cdots - 0.412087a - 1.35545 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.337208au^{43} - 1.77370u^{43} + \cdots + 0.402077a - 0.183860 \\ -0.671774au^{43} + 1.74237u^{43} + \cdots - 1.17627a - 1.02329 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^{42} - 14u^{41} + \cdots - 10u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^{88} + 39u^{87} + \cdots + 18u + 1$
c_2, c_5, c_6 c_{11}	$u^{88} - u^{87} + \cdots - 6u + 1$
c_3	$(u^{44} - 2u^{43} + \cdots - 16u + 4)^2$
c_4, c_9	$(u^{44} + 2u^{43} + \cdots + 2u + 1)^2$
c_7, c_{12}	$u^{88} - 3u^{87} + \cdots - 138u + 33$
c_8	$(u^{44} - 24u^{43} + \cdots - 4u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{88} + 21y^{87} + \cdots + 238y + 1$
c_2, c_5, c_6 c_{11}	$y^{88} - 39y^{87} + \cdots - 18y + 1$
c_3	$(y^{44} - 26y^{43} + \cdots - 232y + 16)^2$
c_4, c_9	$(y^{44} + 24y^{43} + \cdots + 4y + 1)^2$
c_7, c_{12}	$y^{88} - 3y^{87} + \cdots + 50850y + 1089$
c_8	$(y^{44} - 4y^{43} + \cdots - 24y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.312877 + 0.963899I$ $a = -0.027282 + 0.403408I$ $b = 0.952689 + 0.414115I$	$0.80202 + 2.36066I$	$-5.22306 - 1.04915I$
$u = 0.312877 + 0.963899I$ $a = 2.00737 - 0.22584I$ $b = -1.84409 + 1.07166I$	$0.80202 + 2.36066I$	$-5.22306 - 1.04915I$
$u = 0.312877 - 0.963899I$ $a = -0.027282 - 0.403408I$ $b = 0.952689 - 0.414115I$	$0.80202 - 2.36066I$	$-5.22306 + 1.04915I$
$u = 0.312877 - 0.963899I$ $a = 2.00737 + 0.22584I$ $b = -1.84409 - 1.07166I$	$0.80202 - 2.36066I$	$-5.22306 + 1.04915I$
$u = -0.137606 + 0.955862I$ $a = -0.094806 - 1.142040I$ $b = 0.023143 + 1.183290I$	$1.78035 + 2.09885I$	$0.44851 - 4.43063I$
$u = -0.137606 + 0.955862I$ $a = 0.106234 - 0.261688I$ $b = 0.767571 + 0.488152I$	$1.78035 + 2.09885I$	$0.44851 - 4.43063I$
$u = -0.137606 - 0.955862I$ $a = -0.094806 + 1.142040I$ $b = 0.023143 - 1.183290I$	$1.78035 - 2.09885I$	$0.44851 + 4.43063I$
$u = -0.137606 - 0.955862I$ $a = 0.106234 + 0.261688I$ $b = 0.767571 - 0.488152I$	$1.78035 - 2.09885I$	$0.44851 + 4.43063I$
$u = -0.684571 + 0.780204I$ $a = 0.01313 + 1.55377I$ $b = 1.38055 - 1.35627I$	$-6.79265 + 2.59501I$	$-11.85224 - 3.15453I$
$u = -0.684571 + 0.780204I$ $a = -1.29051 + 1.09598I$ $b = 1.44905 + 0.25653I$	$-6.79265 + 2.59501I$	$-11.85224 - 3.15453I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.684571 - 0.780204I$ $a = 0.01313 - 1.55377I$ $b = 1.38055 + 1.35627I$	$-6.79265 - 2.59501I$	$-11.85224 + 3.15453I$
$u = -0.684571 - 0.780204I$ $a = -1.29051 - 1.09598I$ $b = 1.44905 - 0.25653I$	$-6.79265 - 2.59501I$	$-11.85224 + 3.15453I$
$u = 0.603047 + 0.858448I$ $a = -0.604320 - 1.107190I$ $b = 1.027440 + 0.829602I$	$-3.07660 - 6.10396I$	$-6.28400 + 6.94365I$
$u = 0.603047 + 0.858448I$ $a = 0.20059 + 1.86245I$ $b = -1.55420 - 1.62720I$	$-3.07660 - 6.10396I$	$-6.28400 + 6.94365I$
$u = 0.603047 - 0.858448I$ $a = -0.604320 + 1.107190I$ $b = 1.027440 - 0.829602I$	$-3.07660 + 6.10396I$	$-6.28400 - 6.94365I$
$u = 0.603047 - 0.858448I$ $a = 0.20059 - 1.86245I$ $b = -1.55420 + 1.62720I$	$-3.07660 + 6.10396I$	$-6.28400 - 6.94365I$
$u = 0.618739 + 0.681900I$ $a = -0.539910 - 0.998880I$ $b = 0.882079 + 0.626536I$	$-3.58269 + 1.33395I$	$-7.91617 - 0.65820I$
$u = 0.618739 + 0.681900I$ $a = 1.41810 + 1.31949I$ $b = -1.50309 + 0.14230I$	$-3.58269 + 1.33395I$	$-7.91617 - 0.65820I$
$u = 0.618739 - 0.681900I$ $a = -0.539910 + 0.998880I$ $b = 0.882079 - 0.626536I$	$-3.58269 - 1.33395I$	$-7.91617 + 0.65820I$
$u = 0.618739 - 0.681900I$ $a = 1.41810 - 1.31949I$ $b = -1.50309 - 0.14230I$	$-3.58269 - 1.33395I$	$-7.91617 + 0.65820I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.845401+0.185803I$ $a=\quad 0.552294-0.890537I$ $b=-0.913023+0.113662I$	$0.59532-7.36573I$	$-4.12046+4.87801I$
$u=-0.845401+0.185803I$ $a=-0.45725+1.68541I$ $b=\quad 1.113550-0.030175I$	$0.59532-7.36573I$	$-4.12046+4.87801I$
$u=-0.845401-0.185803I$ $a=\quad 0.552294+0.890537I$ $b=-0.913023-0.113662I$	$0.59532+7.36573I$	$-4.12046-4.87801I$
$u=-0.845401-0.185803I$ $a=-0.45725-1.68541I$ $b=\quad 1.113550+0.030175I$	$0.59532+7.36573I$	$-4.12046-4.87801I$
$u=-0.377246+1.071500I$ $a=-1.321220+0.020635I$ $b=\quad 1.41639+0.83546I$	$1.70903+2.55111I$	$-3.11914-3.94978I$
$u=-0.377246+1.071500I$ $a=\quad 0.108848-0.668784I$ $b=\quad 0.549372+0.372801I$	$1.70903+2.55111I$	$-3.11914-3.94978I$
$u=-0.377246-1.071500I$ $a=-1.321220-0.020635I$ $b=\quad 1.41639-0.83546I$	$1.70903-2.55111I$	$-3.11914+3.94978I$
$u=-0.377246-1.071500I$ $a=\quad 0.108848+0.668784I$ $b=\quad 0.549372-0.372801I$	$1.70903-2.55111I$	$-3.11914+3.94978I$
$u=\quad 0.805706+0.294033I$ $a=-0.681975+0.547340I$ $b=-0.808577-0.504319I$	$-4.21399+4.93430I$	$-10.72232-3.42025I$
$u=\quad 0.805706+0.294033I$ $a=\quad 0.64947+1.70247I$ $b=-1.179970-0.018130I$	$-4.21399+4.93430I$	$-10.72232-3.42025I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.805706 - 0.294033I$ $a = -0.681975 - 0.547340I$ $b = -0.808577 + 0.504319I$	$-4.21399 - 4.93430I$	$-10.72232 + 3.42025I$
$u = 0.805706 - 0.294033I$ $a = 0.64947 - 1.70247I$ $b = -1.179970 + 0.018130I$	$-4.21399 - 4.93430I$	$-10.72232 + 3.42025I$
$u = 0.336351 + 0.713930I$ $a = -0.549874 - 0.605883I$ $b = -0.764991 + 0.324297I$	$0.07018 - 5.32036I$	$-6.18214 + 9.40095I$
$u = 0.336351 + 0.713930I$ $a = -1.00871 + 2.88605I$ $b = -0.42659 - 2.41866I$	$0.07018 - 5.32036I$	$-6.18214 + 9.40095I$
$u = 0.336351 - 0.713930I$ $a = -0.549874 + 0.605883I$ $b = -0.764991 - 0.324297I$	$0.07018 + 5.32036I$	$-6.18214 - 9.40095I$
$u = 0.336351 - 0.713930I$ $a = -1.00871 - 2.88605I$ $b = -0.42659 + 2.41866I$	$0.07018 + 5.32036I$	$-6.18214 - 9.40095I$
$u = 0.451669 + 1.130720I$ $a = -0.184575 + 0.446454I$ $b = 1.012320 + 0.416675I$	$3.33637 - 3.89932I$	$-2.16553 + 3.93444I$
$u = 0.451669 + 1.130720I$ $a = 1.55267 + 1.97505I$ $b = -2.74463 - 1.74556I$	$3.33637 - 3.89932I$	$-2.16553 + 3.93444I$
$u = 0.451669 - 1.130720I$ $a = -0.184575 - 0.446454I$ $b = 1.012320 - 0.416675I$	$3.33637 + 3.89932I$	$-2.16553 - 3.93444I$
$u = 0.451669 - 1.130720I$ $a = 1.55267 - 1.97505I$ $b = -2.74463 + 1.74556I$	$3.33637 + 3.89932I$	$-2.16553 - 3.93444I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.187726 + 1.204930I$ $a = 0.586324 - 0.078067I$ $b = -1.015170 + 0.721089I$	$0.63647 + 1.88253I$	$-5.88964 - 2.78829I$
$u = 0.187726 + 1.204930I$ $a = -0.222273 + 0.265114I$ $b = 0.990291 + 0.491707I$	$0.63647 + 1.88253I$	$-5.88964 - 2.78829I$
$u = 0.187726 - 1.204930I$ $a = 0.586324 + 0.078067I$ $b = -1.015170 - 0.721089I$	$0.63647 - 1.88253I$	$-5.88964 + 2.78829I$
$u = 0.187726 - 1.204930I$ $a = -0.222273 - 0.265114I$ $b = 0.990291 - 0.491707I$	$0.63647 - 1.88253I$	$-5.88964 + 2.78829I$
$u = -0.409396 + 1.159590I$ $a = 0.192660 + 0.417968I$ $b = -1.011500 + 0.429689I$	$5.11542 - 1.06835I$	0
$u = -0.409396 + 1.159590I$ $a = 0.97698 - 1.55522I$ $b = -1.56050 + 1.51219I$	$5.11542 - 1.06835I$	0
$u = -0.409396 - 1.159590I$ $a = 0.192660 - 0.417968I$ $b = -1.011500 - 0.429689I$	$5.11542 + 1.06835I$	0
$u = -0.409396 - 1.159590I$ $a = 0.97698 + 1.55522I$ $b = -1.56050 - 1.51219I$	$5.11542 + 1.06835I$	0
$u = -0.523577 + 1.128340I$ $a = -1.139810 + 0.393041I$ $b = 1.35919 + 0.61090I$	$0.51289 + 4.91293I$	$-4.00000 - 3.32925I$
$u = -0.523577 + 1.128340I$ $a = 0.88118 - 1.31204I$ $b = -1.45124 + 1.17483I$	$0.51289 + 4.91293I$	$-4.00000 - 3.32925I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.523577-1.128340I$ $a=-1.139810-0.393041I$ $b=1.35919-0.61090I$	$0.51289-4.91293I$	$-4.00000+3.32925I$
$u=-0.523577-1.128340I$ $a=0.88118+1.31204I$ $b=-1.45124-1.17483I$	$0.51289-4.91293I$	$-4.00000+3.32925I$
$u=-0.699549+0.280530I$ $a=0.567058-0.884436I$ $b=-0.805456+0.201612I$	$-1.95648-0.23544I$	$-7.71045-0.71060I$
$u=-0.699549+0.280530I$ $a=0.915779+0.590948I$ $b=0.609805-0.560083I$	$-1.95648-0.23544I$	$-7.71045-0.71060I$
$u=-0.699549-0.280530I$ $a=0.567058+0.884436I$ $b=-0.805456-0.201612I$	$-1.95648+0.23544I$	$-7.71045+0.71060I$
$u=-0.699549-0.280530I$ $a=0.915779-0.590948I$ $b=0.609805+0.560083I$	$-1.95648+0.23544I$	$-7.71045+0.71060I$
$u=0.446265+1.170890I$ $a=-0.083115-0.736096I$ $b=-0.476825+0.306143I$	$6.49035-4.18968I$	$0.+3.85017I$
$u=0.446265+1.170890I$ $a=-0.98672-1.45431I$ $b=1.58085+1.38043I$	$6.49035-4.18968I$	$0.+3.85017I$
$u=0.446265-1.170890I$ $a=-0.083115+0.736096I$ $b=-0.476825-0.306143I$	$6.49035+4.18968I$	$0.-3.85017I$
$u=0.446265-1.170890I$ $a=-0.98672+1.45431I$ $b=1.58085-1.38043I$	$6.49035+4.18968I$	$0.-3.85017I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.480714+1.157280I$ $a=\ \ 0.095453-0.746494I$ $b=\ \ 0.492941+0.284502I$	$4.61322+9.27115I$	$0.-8.56343I$
$u=-0.480714+1.157280I$ $a=-1.51091+1.78770I$ $b=\ \ 2.70589-1.57781I$	$4.61322+9.27115I$	$0.-8.56343I$
$u=-0.480714-1.157280I$ $a=\ \ 0.095453+0.746494I$ $b=\ \ 0.492941-0.284502I$	$4.61322-9.27115I$	$0.+8.56343I$
$u=-0.480714-1.157280I$ $a=-1.51091-1.78770I$ $b=\ \ 2.70589+1.57781I$	$4.61322-9.27115I$	$0.+8.56343I$
$u=\ \ 0.560382+1.148160I$ $a=\ \ 1.090810+0.445231I$ $b=-1.33863+0.58110I$	$-1.67798-10.01170I$	$0.+7.22646I$
$u=\ \ 0.560382+1.148160I$ $a=\ \ 1.23542+1.62075I$ $b=-2.46031-1.43171I$	$-1.67798-10.01170I$	$0.+7.22646I$
$u=\ \ 0.560382-1.148160I$ $a=\ \ 1.090810-0.445231I$ $b=-1.33863-0.58110I$	$-1.67798+10.01170I$	$0.-7.22646I$
$u=\ \ 0.560382-1.148160I$ $a=\ \ 1.23542-1.62075I$ $b=-2.46031+1.43171I$	$-1.67798+10.01170I$	$0.-7.22646I$
$u=\ \ 0.711517$ $a=-0.542111+0.968090I$ $b=\ \ 0.832272+0.025706I$	3.18095	-0.237640
$u=\ \ 0.711517$ $a=-0.542111-0.968090I$ $b=\ \ 0.832272-0.025706I$	3.18095	-0.237640

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.340404+1.242800I$ $a=\ \ 0.032335-0.731892I$ $b=\ \ 0.385344+0.365827I$	$5.03718-3.41596I$	0
$u=-0.340404+1.242800I$ $a=\ \ 0.235290+0.372209I$ $b=-1.019910+0.456338I$	$5.03718-3.41596I$	0
$u=-0.340404-1.242800I$ $a=\ \ 0.032335+0.731892I$ $b=\ \ 0.385344-0.365827I$	$5.03718+3.41596I$	0
$u=-0.340404-1.242800I$ $a=\ \ 0.235290-0.372209I$ $b=-1.019910-0.456338I$	$5.03718+3.41596I$	0
$u=-0.686238+0.096964I$ $a=\ \ 0.491955+1.019840I$ $b=-0.841799+0.092164I$	$1.63501-4.89218I$	$-3.21822+5.35953I$
$u=-0.686238+0.096964I$ $a=-0.28294+1.99860I$ $b=\ \ 1.098800-0.134459I$	$1.63501-4.89218I$	$-3.21822+5.35953I$
$u=-0.686238-0.096964I$ $a=\ \ 0.491955-1.019840I$ $b=-0.841799-0.092164I$	$1.63501+4.89218I$	$-3.21822-5.35953I$
$u=-0.686238-0.096964I$ $a=-0.28294-1.99860I$ $b=\ \ 1.098800+0.134459I$	$1.63501+4.89218I$	$-3.21822-5.35953I$
$u=-0.541068+1.196610I$ $a=\ \ 0.98556-1.26327I$ $b=-1.60448+1.12233I$	$3.60464+12.44580I$	0
$u=-0.541068+1.196610I$ $a=-1.39332+1.52484I$ $b=\ \ 2.59851-1.34576I$	$3.60464+12.44580I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.541068-1.196610I$ $a=\quad 0.98556+1.26327I$ $b=-1.60448-1.12233I$	$3.60464-12.44580I$	0
$u=-0.541068-1.196610I$ $a=-1.39332-1.52484I$ $b=\quad 2.59851+1.34576I$	$3.60464-12.44580I$	0
$u=-0.224537+0.568559I$ $a=-0.490715+0.741336I$ $b=-0.871940+0.351164I$	$0.002055+0.400940I$	$-7.16201-2.06092I$
$u=-0.224537+0.568559I$ $a=\quad 2.13564+2.59121I$ $b=-0.47847-1.91301I$	$0.002055+0.400940I$	$-7.16201-2.06092I$
$u=-0.224537-0.568559I$ $a=-0.490715-0.741336I$ $b=-0.871940-0.351164I$	$0.002055-0.400940I$	$-7.16201+2.06092I$
$u=-0.224537-0.568559I$ $a=\quad 2.13564-2.59121I$ $b=-0.47847+1.91301I$	$0.002055-0.400940I$	$-7.16201+2.06092I$
$u=\quad 0.543576$ $a=-0.11878+2.32451I$ $b=-1.052670-0.226855I$	0.437519	-5.45100
$u=\quad 0.543576$ $a=-0.11878-2.32451I$ $b=-1.052670+0.226855I$	0.437519	-5.45100

III. $I_3^u = \langle -au+b+a,\ a^2-a+1,\ u^2+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8a-4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 0.500000 + 0.866025I$ $b = -1.36603 - 0.36603I$	$1.64493 - 4.05977I$	$0. + 6.92820I$
$u = 1.000000I$ $a = 0.500000 - 0.866025I$ $b = 0.36603 + 1.36603I$	$1.64493 + 4.05977I$	$0. - 6.92820I$
$u = -1.000000I$ $a = 0.500000 + 0.866025I$ $b = 0.36603 - 1.36603I$	$1.64493 - 4.05977I$	$0. + 6.92820I$
$u = -1.000000I$ $a = 0.500000 - 0.866025I$ $b = -1.36603 + 0.36603I$	$1.64493 + 4.05977I$	$0. - 6.92820I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 0.500000 + 0.866025I$ $b = 0.366025 - 0.366025I$	1.64493	0
$u = 1.000000I$ $a = 0.500000 - 0.866025I$ $b = -1.36603 + 1.36603I$	1.64493	0
$u = -1.000000I$ $a = 0.500000 + 0.866025I$ $b = -1.36603 - 1.36603I$	1.64493	0
$u = -1.000000I$ $a = 0.500000 - 0.866025I$ $b = 0.366025 + 0.366025I$	1.64493	0

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$((u^2-u+1)^4)(u^{27}+14u^{26}+\cdots+4u+1)(u^{88}+39u^{87}+\cdots+18u+1)$
c_2, c_5, c_6 c_{11}	$((u^4-u^2+1)^2)(u^{27}-7u^{25}+\cdots-2u^2+1)(u^{88}-u^{87}+\cdots-6u+1)$
c_3	$u^8(u^{27}+5u^{26}+\cdots-320u^2+64)(u^{44}-2u^{43}+\cdots-16u+4)^2$
c_4, c_9	$((u^2+1)^4)(u^{27}-5u^{26}+\cdots-12u+4)(u^{44}+2u^{43}+\cdots+2u+1)^2$
c_7, c_{12}	$((u^4-u^2+1)^2)(u^{27}+5u^{25}+\cdots-2u+3)(u^{88}-3u^{87}+\cdots-138u+33)$
c_8	$((u+1)^8)(u^{27}-15u^{26}+\cdots+56u+16)(u^{44}-24u^{43}+\cdots-4u+1)^2$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$((y^2+y+1)^4)(y^{27}+2y^{26}+\cdots+8y-1)(y^{88}+21y^{87}+\cdots+238y+1)$
c_2, c_5, c_6 c_{11}	$((y^2-y+1)^4)(y^{27}-14y^{26}+\cdots+4y-1)(y^{88}-39y^{87}+\cdots-18y+1)$
c_3	$y^8(y^{27}-13y^{26}+\cdots+40960y-4096)$ $\cdot(y^{44}-26y^{43}+\cdots-232y+16)^2$
c_4, c_9	$((y+1)^8)(y^{27}+15y^{26}+\cdots+56y-16)(y^{44}+24y^{43}+\cdots+4y+1)^2$
c_7, c_{12}	$((y^2-y+1)^4)(y^{27}+10y^{26}+\cdots-20y-9)$ $\cdot(y^{88}-3y^{87}+\cdots+50850y+1089)$
c_8	$((y-1)^8)(y^{27}-5y^{26}+\cdots+8480y-256)$ $\cdot(y^{44}-4y^{43}+\cdots-24y+1)^2$