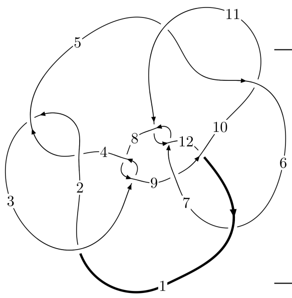
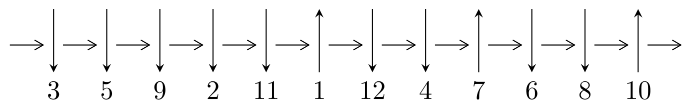
$12a_{0163}$ ($K12a_{0163}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & 2.70227 \times 10^{92} u^{46} - 1.37672 \times 10^{93} u^{45} + \cdots + 1.44449 \times 10^{95} b + 1.08193 \times 10^{96},\\
& 7.39204 \times 10^{93} u^{46} - 4.58246 \times 10^{94} u^{45} + \cdots + 1.15559 \times 10^{96} a - 1.33533 \times 10^{96},\\
& u^{47} - 7u^{46} + \cdots - 3840u + 1024\rangle\\
I^u_2 = \langle & 5222u^6a^5 - 8511u^6a^4 + \cdots + 2180a + 5110,\ 4u^6a^5 + 36u^6a^4 + \cdots - 226a + 143,\\
& u^7 + 3u^6 + 6u^5 + 7u^4 + 5u^3 + u^2 - 2u - 2\rangle\\
I^u_3 = \langle & -17789137958u^{23} + 33220776343u^{22} + \cdots + 123456179965b + 41044745272,\\
& 252494650879u^{23} + 77492790641u^{22} + \cdots + 123456179965a + 1483502755409,\\
& u^{24} + 6u^{22} + \cdots + 3u + 1\rangle\\
I^u_4 = \langle & -1.70628 \times 10^{51} a^{11} u^4 - 5.47351 \times 10^{51} a^{10} u^4 + \cdots + 1.45842 \times 10^{53} a - 6.78636 \times 10^{52},\\
& -2a^{11}u^4 - 3a^{10}u^4 + \cdots - 130a + 65,\ u^5 - u^4 + 2u^3 - u^2 + u - 1\rangle
\end{aligned}$$

$$\begin{aligned}
I^v_1 &= \langle a,\ 8v^3 + 12v^2 + b + 10v + 3,\ 8v^4 + 12v^3 + 12v^2 + 5v + 1\rangle\\
I^v_2 &= \langle a,\ b^6 + b^5 + 2b^4 + 2b^3 + 2b^2 + 2b + 1,\ v - 1\rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 183 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. $\boldsymbol{I_1^u =}$
$\boldsymbol{\langle 2.70\times10^{92}u^{46}-1.38\times10^{93}u^{45}+\cdots+1.44\times10^{95}b+1.08\times10^{96},\ 7.39\times10^{93}u^{46}-4.58\times10^{94}u^{45}+\cdots+1.16\times10^{96}a-1.34\times10^{96},\ u^{47}-7u^{46}+\cdots-3840u+1024\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.00639675u^{46} + 0.0396546u^{45} + \cdots - 14.8799u + 1.15554 \\ -0.00187074u^{46} + 0.00953085u^{45} + \cdots + 22.6210u - 7.49001 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.0000443720u^{46} - 0.00293863u^{45} + \cdots + 8.66522u - 3.07371 \\ 0.00506215u^{46} - 0.0334217u^{45} + \cdots + 15.5213u - 0.178246 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.00734661u^{46} + 0.0494083u^{45} + \cdots - 26.6084u + 6.57684 \\ -0.00878269u^{46} + 0.0635338u^{45} + \cdots - 64.5424u + 16.8381 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.00512383u^{46} + 0.0323413u^{45} + \cdots - 19.6023u + 5.34126 \\ -0.00609386u^{46} + 0.0454792u^{45} + \cdots - 47.5840u + 16.4994 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.00947552u^{46} + 0.0616360u^{45} + \cdots - 36.3597u + 9.72772 \\ -0.00791514u^{46} + 0.0611719u^{45} + \cdots - 64.3672u + 22.0811 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.000300958u^{46} - 0.00639035u^{45} + \cdots + 19.6905u - 7.54804 \\ 0.00542479u^{46} - 0.0387317u^{45} + \cdots + 39.2928u - 12.8893 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.00471682u^{46} + 0.0299700u^{45} + \cdots - 4.49600u - 3.29609 \\ 0.000362637u^{46} - 0.00530999u^{45} + \cdots + 23.7715u - 12.7111 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.00826750u^{46} + 0.0491855u^{45} + \cdots + 7.74105u - 6.33447 \\ -0.00187074u^{46} + 0.00953085u^{45} + \cdots + 22.6210u - 7.49001 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.00835732u^{46} - 0.0282602u^{45} + \cdots - 74.8752u + 42.3285$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{47} + 23u^{46} + \cdots - 6912u + 4096$
c_2, c_4	$u^{47} - 3u^{46} + \cdots - 240u + 64$
c_3, c_8	$u^{47} - 7u^{46} + \cdots - 3840u + 1024$
c_5, c_7, c_{10} c_{11}	$u^{47} + 17u^{45} + \cdots - 2u + 1$
c_6, c_9	$u^{47} + u^{46} + \cdots + 5u + 1$
c_{12}	$u^{47} + 42u^{46} + \cdots + 3997696u + 131072$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{47}+5y^{46}+\cdots+1065680896y-16777216$
c_2, c_4	$y^{47}-23y^{46}+\cdots-6912y-4096$
c_3, c_8	$y^{47}+21y^{46}+\cdots-11206656y-1048576$
c_5, c_7, c_{10} c_{11}	$y^{47}+34y^{46}+\cdots+22y-1$
c_6, c_9	$y^{47}+5y^{46}+\cdots-15y-1$
c_{12}	$y^{47}-14y^{46}+\cdots+571230650368y-17179869184$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.844803 + 0.585454I$ $a = 0.382028 - 0.284959I$ $b = 0.689635 + 0.097512I$	$-3.73817 + 2.80492I$	$-12.41752 - 2.95382I$
$u = 0.844803 - 0.585454I$ $a = 0.382028 + 0.284959I$ $b = 0.689635 - 0.097512I$	$-3.73817 - 2.80492I$	$-12.41752 + 2.95382I$
$u = -0.116889 + 1.045570I$ $a = 0.478482 - 0.129287I$ $b = -0.463355 + 0.003045I$	$2.60054 + 2.28168I$	$-2.56476 - 2.68089I$
$u = -0.116889 - 1.045570I$ $a = 0.478482 + 0.129287I$ $b = -0.463355 - 0.003045I$	$2.60054 - 2.28168I$	$-2.56476 + 2.68089I$
$u = 0.591706 + 0.725415I$ $a = 0.318073 + 1.144250I$ $b = -0.683715 + 0.183509I$	$-4.06475 - 0.35498I$	$-12.38504 + 2.03288I$
$u = 0.591706 - 0.725415I$ $a = 0.318073 - 1.144250I$ $b = -0.683715 - 0.183509I$	$-4.06475 + 0.35498I$	$-12.38504 - 2.03288I$
$u = 0.522530 + 0.927802I$ $a = 0.377878 - 0.342484I$ $b = 0.879419 + 0.351776I$	$-3.41339 - 4.10815I$	$-9.71270 + 5.53020I$
$u = 0.522530 - 0.927802I$ $a = 0.377878 + 0.342484I$ $b = 0.879419 - 0.351776I$	$-3.41339 + 4.10815I$	$-9.71270 - 5.53020I$
$u = -0.528718 + 0.973805I$ $a = 0.234475 - 0.625940I$ $b = -0.651818 - 0.000458I$	$0.27510 + 3.56602I$	$-7.20697 - 3.60380I$
$u = -0.528718 - 0.973805I$ $a = 0.234475 + 0.625940I$ $b = -0.651818 + 0.000458I$	$0.27510 - 3.56602I$	$-7.20697 + 3.60380I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.378274+1.041930I$ $a=\ 0.55552+1.57805I$ $b=-0.164802-0.759470I$	$-1.01111-1.34745I$	$-8.38291-3.53586I$
$u=-0.378274-1.041930I$ $a=\ 0.55552-1.57805I$ $b=-0.164802+0.759470I$	$-1.01111+1.34745I$	$-8.38291+3.53586I$
$u=\ 0.806009+0.772506I$ $a=-0.251056+0.347370I$ $b=-0.286940-0.929982I$	$-0.81815-8.32208I$	$-3.76133+11.43016I$
$u=\ 0.806009-0.772506I$ $a=-0.251056-0.347370I$ $b=-0.286940+0.929982I$	$-0.81815+8.32208I$	$-3.76133-11.43016I$
$u=\ 0.364619+1.136610I$ $a=\ 0.68230-2.35146I$ $b=\ 0.50792+1.37152I$	$3.40359-9.98566I$	$-2.62320+6.71929I$
$u=\ 0.364619-1.136610I$ $a=\ 0.68230+2.35146I$ $b=\ 0.50792-1.37152I$	$3.40359+9.98566I$	$-2.62320-6.71929I$
$u=-1.203240+0.185614I$ $a=-0.141165+0.382761I$ $b=-0.43658-1.36501I$	$5.86998-7.58123I$	$-1.27065+3.88153I$
$u=-1.203240-0.185614I$ $a=-0.141165-0.382761I$ $b=-0.43658+1.36501I$	$5.86998+7.58123I$	$-1.27065-3.88153I$
$u=\ 0.658190+1.049420I$ $a=\ 0.023470+0.617425I$ $b=-0.763224-0.063672I$	$-2.27485-8.39804I$	$-10.61831+8.01791I$
$u=\ 0.658190-1.049420I$ $a=\ 0.023470-0.617425I$ $b=-0.763224+0.063672I$	$-2.27485+8.39804I$	$-10.61831-8.01791I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.117325 + 0.702557I$ $a = 0.366852 + 0.421918I$ $b = 0.708072 - 0.641224I$	$-1.83722 + 0.84307I$	$-4.20177 + 0.72689I$
$u = 0.117325 - 0.702557I$ $a = 0.366852 - 0.421918I$ $b = 0.708072 + 0.641224I$	$-1.83722 - 0.84307I$	$-4.20177 - 0.72689I$
$u = 1.194080 + 0.493935I$ $a = -0.138037 - 0.364269I$ $b = -0.54468 + 1.40917I$	$4.46440 + 12.91220I$	$-3.19580 - 7.97672I$
$u = 1.194080 - 0.493935I$ $a = -0.138037 + 0.364269I$ $b = -0.54468 - 1.40917I$	$4.46440 - 12.91220I$	$-3.19580 + 7.97672I$
$u = -0.529603 + 0.452776I$ $a = 0.463480 + 0.338892I$ $b = 0.572558 - 0.322699I$	$-1.134430 + 0.669866I$	$-7.99633 - 3.35670I$
$u = -0.529603 - 0.452776I$ $a = 0.463480 - 0.338892I$ $b = 0.572558 + 0.322699I$	$-1.134430 - 0.669866I$	$-7.99633 + 3.35670I$
$u = -0.593581$ $a = 0.650414$ $b = 0.304199$	-1.03435	-10.4580
$u = 0.230767 + 0.543413I$ $a = -0.171169 - 0.354083I$ $b = -0.618665 + 1.130340I$	$1.16202 + 7.20671I$	$1.21848 + 2.56039I$
$u = 0.230767 - 0.543413I$ $a = -0.171169 + 0.354083I$ $b = -0.618665 - 1.130340I$	$1.16202 - 7.20671I$	$1.21848 - 2.56039I$
$u = 1.41557 + 0.19018I$ $a = 0.238371 + 0.686766I$ $b = 0.267051 - 0.946782I$	$1.14395 + 4.11529I$	$0. - 15.1609I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41557 - 0.19018I$ $a = 0.238371 - 0.686766I$ $b = 0.267051 + 0.946782I$	$1.14395 - 4.11529I$	$0. + 15.1609I$
$u = -1.22540 + 0.75189I$ $a = -0.246090 - 0.506658I$ $b = -0.113298 + 1.119510I$	$3.81471 + 4.15254I$	0
$u = -1.22540 - 0.75189I$ $a = -0.246090 + 0.506658I$ $b = -0.113298 - 1.119510I$	$3.81471 - 4.15254I$	0
$u = -0.60695 + 1.32433I$ $a = 0.83079 + 1.66964I$ $b = 0.56919 - 1.47090I$	$9.5566 + 13.8984I$	0
$u = -0.60695 - 1.32433I$ $a = 0.83079 - 1.66964I$ $b = 0.56919 + 1.47090I$	$9.5566 - 13.8984I$	0
$u = 0.75973 + 1.26376I$ $a = 1.05216 - 1.49784I$ $b = 0.63326 + 1.46597I$	$6.9588 - 19.8841I$	0
$u = 0.75973 - 1.26376I$ $a = 1.05216 + 1.49784I$ $b = 0.63326 - 1.46597I$	$6.9588 + 19.8841I$	0
$u = 0.99117 + 1.12526I$ $a = -0.548310 + 0.653114I$ $b = 0.034489 - 1.053340I$	$0.02289 + 1.75896I$	0
$u = 0.99117 - 1.12526I$ $a = -0.548310 - 0.653114I$ $b = 0.034489 + 1.053340I$	$0.02289 - 1.75896I$	0
$u = -0.00707 + 1.54573I$ $a = -0.12787 + 1.62424I$ $b = 0.30210 - 1.45757I$	$12.5387 + 8.5475I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.00707 - 1.54573I$ $a = -0.12787 - 1.62424I$ $b = 0.30210 + 1.45757I$	$12.5387 - 8.5475I$	0
$u = 0.75783 + 1.35531I$ $a = -0.77762 + 1.33679I$ $b = -0.448938 - 1.118610I$	$4.59247 - 11.54410I$	0
$u = 0.75783 - 1.35531I$ $a = -0.77762 - 1.33679I$ $b = -0.448938 + 1.118610I$	$4.59247 + 11.54410I$	0
$u = -0.25517 + 1.56898I$ $a = -0.38203 - 1.44288I$ $b = 0.18549 + 1.40391I$	$12.10480 - 1.94711I$	0
$u = -0.25517 - 1.56898I$ $a = -0.38203 + 1.44288I$ $b = 0.18549 - 1.40391I$	$12.10480 + 1.94711I$	0
$u = -0.60622 + 1.51689I$ $a = -0.54574 - 1.36308I$ $b = -0.325270 + 1.113800I$	$7.05094 + 5.09408I$	0
$u = -0.60622 - 1.51689I$ $a = -0.54574 + 1.36308I$ $b = -0.325270 - 1.113800I$	$7.05094 - 5.09408I$	0

II. $\boldsymbol{I_2^u = \langle 5222u^6a^5 - 8511u^6a^4 + \cdots + 2180a + 5110,\ 4u^6a^5 + 36u^6a^4 + \cdots - 226a + 143,\ u^7 + 3u^6 + 6u^5 + 7u^4 + 5u^3 + u^2 - 2u - 2\rangle}$

(i) Arc colorings

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

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

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} a \\ -1.16329a^5u^6 + 1.89597a^4u^6 + \cdots - 0.485632a - 1.13834 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.14881a^5u^6 - 2.32880a^4u^6 + \cdots - 0.264647a - 2.56315 \\ 1.40031a^5u^6 - 1.46536a^4u^6 + \cdots + 5.84495a - 0.453553 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.28403a^4u^6 - 0.761194a^3u^6 + \cdots + 0.298507a + 3.07062 \\ 0.806416a^4u^6 + 0.432836a^3u^6 + \cdots - 4.20896a - 0.630875 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{3}{2}u^5 + \cdots - \frac{1}{2}u^2 + \frac{1}{2}u \\ u^6 + 2u^5 + 3u^4 + 2u^3 - u - 1 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{3}{2}u^5 + \cdots + \frac{1}{2}u + 1 \\ -u^4 - u^3 - u^2 + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1.55358a^5u^6 - 3.01359a^4u^6 + \cdots + 1.79394a - 1.80307 \\ 0.747160a^5u^6 - 2.29762a^4u^6 + \cdots + 1.12631a + 0.230786 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.16329a^5u^6 + 1.89597a^4u^6 + \cdots + 0.514368a - 1.13834 \\ -1.16329a^5u^6 + 1.89597a^4u^6 + \cdots - 0.485632a - 1.13834 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{20628}{4489}u^6a^4 + \frac{280}{67}u^6a^3 + \cdots - \frac{320}{67}a - \frac{18564}{4489}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^7+3u^6+7u^5+8u^4+9u^3+6u^2+5u+1)^6$
c_2, c_4	$(u^7-u^6-u^5+2u^4+u^3-2u^2+u+1)^6$
c_3, c_8	$(u^7+3u^6+6u^5+7u^4+5u^3+u^2-2u-2)^6$
c_5, c_7, c_{10} c_{11}	$u^{42}+u^{41}+\cdots-1560u+347$
c_6, c_9	$u^{42}+3u^{41}+\cdots+130u+53$
c_{12}	$(u^3-u^2+1)^{14}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^7+5y^6+19y^5+36y^4+49y^3+38y^2+13y-1)^6$
c_2, c_4	$(y^7-3y^6+7y^5-8y^4+9y^3-6y^2+5y-1)^6$
c_3, c_8	$(y^7+3y^6+4y^5+y^4-y^3+7y^2+8y-4)^6$
c_5, c_7, c_{10} c_{11}	$y^{42}+33y^{41}+\cdots+486752y+120409$
c_6, c_9	$y^{42}-11y^{41}+\cdots-87496y+2809$
c_{12}	$(y^3-y^2+2y-1)^{14}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.984140 + 0.426152I$ $a = 0.737720 + 0.711168I$ $b = 0.418947 - 0.385328I$	$-0.184741 - 1.102580I$	$-5.76916 + 1.89286I$
$u = -0.984140 + 0.426152I$ $a = -0.793584 - 0.796489I$ $b = -1.239540 - 0.061605I$	$-0.18474 - 6.75882I$	$-5.76916 + 7.85175I$
$u = -0.984140 + 0.426152I$ $a = 0.841475 + 0.111964I$ $b = 0.130488 + 1.167740I$	$3.95284 - 3.93070I$	$0.76010 + 4.87230I$
$u = -0.984140 + 0.426152I$ $a = 0.116149 - 0.835603I$ $b = 0.365594 + 1.240650I$	$-0.18474 - 6.75882I$	$-5.76916 + 7.85175I$
$u = -0.984140 + 0.426152I$ $a = 0.426938 + 0.617821I$ $b = 0.031150 - 1.011580I$	$-0.184741 - 1.102580I$	$-5.76916 + 1.89286I$
$u = -0.984140 + 0.426152I$ $a = -0.196042 - 0.513489I$ $b = -0.69197 - 1.45635I$	$3.95284 - 3.93070I$	$0.76010 + 4.87230I$
$u = -0.984140 - 0.426152I$ $a = 0.737720 - 0.711168I$ $b = 0.418947 + 0.385328I$	$-0.184741 + 1.102580I$	$-5.76916 - 1.89286I$
$u = -0.984140 - 0.426152I$ $a = -0.793584 + 0.796489I$ $b = -1.239540 + 0.061605I$	$-0.18474 + 6.75882I$	$-5.76916 - 7.85175I$
$u = -0.984140 - 0.426152I$ $a = 0.841475 - 0.111964I$ $b = 0.130488 - 1.167740I$	$3.95284 + 3.93070I$	$0.76010 - 4.87230I$
$u = -0.984140 - 0.426152I$ $a = 0.116149 + 0.835603I$ $b = 0.365594 - 1.240650I$	$-0.18474 + 6.75882I$	$-5.76916 - 7.85175I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.984140 - 0.426152I$ $a = 0.426938 - 0.617821I$ $b = 0.031150 + 1.011580I$	$-0.184741 + 1.102580I$	$-5.76916 - 1.89286I$
$u = -0.984140 - 0.426152I$ $a = -0.196042 + 0.513489I$ $b = -0.69197 + 1.45635I$	$3.95284 + 3.93070I$	$0.76010 - 4.87230I$
$u = -0.167785 + 1.218780I$ $a = -0.788443 - 0.203769I$ $b = -0.405655 - 0.307642I$	$5.76303 + 1.87273I$	$1.179538 - 0.608619I$
$u = -0.167785 + 1.218780I$ $a = -0.363766 + 0.081288I$ $b = 1.218000 + 0.569803I$	$5.76303 - 3.78352I$	$1.17954 + 5.35027I$
$u = -0.167785 + 1.218780I$ $a = -0.52032 - 1.78091I$ $b = 0.47547 + 1.85744I$	$9.90062 - 0.95540I$	$7.70880 + 2.37083I$
$u = -0.167785 + 1.218780I$ $a = -0.38206 - 1.99236I$ $b = -0.477401 + 1.254840I$	$5.76303 + 1.87273I$	$1.179538 - 0.608619I$
$u = -0.167785 + 1.218780I$ $a = -0.49358 + 2.12435I$ $b = -0.13510 - 1.41647I$	$9.90062 - 0.95540I$	$7.70880 + 2.37083I$
$u = -0.167785 + 1.218780I$ $a = 0.76890 + 2.37410I$ $b = -0.078011 - 1.184130I$	$5.76303 - 3.78352I$	$1.17954 + 5.35027I$
$u = -0.167785 - 1.218780I$ $a = -0.788443 + 0.203769I$ $b = -0.405655 + 0.307642I$	$5.76303 - 1.87273I$	$1.179538 + 0.608619I$
$u = -0.167785 - 1.218780I$ $a = -0.363766 - 0.081288I$ $b = 1.218000 - 0.569803I$	$5.76303 + 3.78352I$	$1.17954 - 5.35027I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.167785 - 1.218780I$ $a = -0.52032 + 1.78091I$ $b = 0.47547 - 1.85744I$	$9.90062 + 0.95540I$	$7.70880 - 2.37083I$
$u = -0.167785 - 1.218780I$ $a = -0.38206 + 1.99236I$ $b = -0.477401 - 1.254840I$	$5.76303 - 1.87273I$	$1.179538 + 0.608619I$
$u = -0.167785 - 1.218780I$ $a = -0.49358 - 2.12435I$ $b = -0.13510 + 1.41647I$	$9.90062 + 0.95540I$	$7.70880 - 2.37083I$
$u = -0.167785 - 1.218780I$ $a = 0.76890 - 2.37410I$ $b = -0.078011 + 1.184130I$	$5.76303 + 3.78352I$	$1.17954 - 5.35027I$
$u = -0.654547 + 1.202470I$ $a = -0.141241 + 0.714180I$ $b = 1.46294 - 0.00954I$	$2.27436 + 12.75880I$	$-3.97003 - 10.31609I$
$u = -0.654547 + 1.202470I$ $a = 0.76606 + 1.40096I$ $b = 0.152871 - 1.268940I$	$2.27436 + 7.10253I$	$-3.97003 - 4.35720I$
$u = -0.654547 + 1.202470I$ $a = 1.00141 + 1.33815I$ $b = 0.91938 - 1.48492I$	$6.41195 + 9.93065I$	$2.55923 - 7.33664I$
$u = -0.654547 + 1.202470I$ $a = -1.57657 - 0.89969I$ $b = -0.270073 + 1.125830I$	$6.41195 + 9.93065I$	$2.55923 - 7.33664I$
$u = -0.654547 + 1.202470I$ $a = 0.0226124 + 0.0838717I$ $b = -0.731518 - 0.356031I$	$2.27436 + 7.10253I$	$-3.97003 - 4.35720I$
$u = -0.654547 + 1.202470I$ $a = -1.08160 - 1.86803I$ $b = -0.39415 + 1.36343I$	$2.27436 + 12.75880I$	$-3.97003 - 10.31609I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.654547 - 1.202470I$ $a = -0.141241 - 0.714180I$ $b = 1.46294 + 0.00954I$	$2.27436 - 12.75880I$	$-3.97003 + 10.31609I$
$u = -0.654547 - 1.202470I$ $a = 0.76606 - 1.40096I$ $b = 0.152871 + 1.268940I$	$2.27436 - 7.10253I$	$-3.97003 + 4.35720I$
$u = -0.654547 - 1.202470I$ $a = 1.00141 - 1.33815I$ $b = 0.91938 + 1.48492I$	$6.41195 - 9.93065I$	$2.55923 + 7.33664I$
$u = -0.654547 - 1.202470I$ $a = -1.57657 + 0.89969I$ $b = -0.270073 - 1.125830I$	$6.41195 - 9.93065I$	$2.55923 + 7.33664I$
$u = -0.654547 - 1.202470I$ $a = 0.0226124 - 0.0838717I$ $b = -0.731518 + 0.356031I$	$2.27436 - 7.10253I$	$-3.97003 + 4.35720I$
$u = -0.654547 - 1.202470I$ $a = -1.08160 + 1.86803I$ $b = -0.39415 - 1.36343I$	$2.27436 - 12.75880I$	$-3.97003 + 10.31609I$
$u = 0.612945$ $a = 0.92534 + 1.35436I$ $b = 0.376065 - 0.940931I$	$0.95928 + 2.82812I$	$-5.44897 - 2.97945I$
$u = 0.612945$ $a = 0.92534 - 1.35436I$ $b = 0.376065 + 0.940931I$	$0.95928 - 2.82812I$	$-5.44897 + 2.97945I$
$u = 0.612945$ $a = 0.94362 + 1.89521I$ $b = -0.14327 + 1.43225I$	5.09686	$-61.080296 + 0.10I$
$u = 0.612945$ $a = 0.94362 - 1.89521I$ $b = -0.14327 - 1.43225I$	5.09686	$-61.080296 + 0.10I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.612945$ $a = -0.21302 + 2.97475I$ $b = -0.484219 + 0.283629I$	$0.95928 + 2.82812I$	$-5.44897 - 2.97945I$
$u = 0.612945$ $a = -0.21302 - 2.97475I$ $b = -0.484219 - 0.283629I$	$0.95928 - 2.82812I$	$-5.44897 + 2.97945I$

III.

$\boldsymbol{I_3^u = \langle -1.78\times10^{10}u^{23}+3.32\times10^{10}u^{22}+\cdots+1.23\times10^{11}b+4.10\times10^{10},\ 2.52\times10^{11}u^{23}+7.75\times10^{10}u^{22}+\cdots+1.23\times10^{11}a+1.48\times10^{12},\ u^{24}+6u^{22}+\cdots+3u+1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2.04522u^{23}-0.627695u^{22}+\cdots-0.358592u-12.0164 \\ 0.144093u^{23}-0.269090u^{22}+\cdots+0.758652u-0.332464 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 2.81971u^{23}-2.21363u^{22}+\cdots+17.5956u+1.17885 \\ 0.135846u^{23}-0.0946331u^{22}+\cdots+1.96665u+0.813872 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2.91642u^{23}-1.86706u^{22}+\cdots+15.5197u-1.44082 \\ 0.518872u^{23}-0.183670u^{22}+\cdots+1.36538u+0.385584 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1.15388u^{23}+0.396430u^{22}+\cdots-3.81616u-2.21358 \\ -0.123678u^{23}-0.0283571u^{22}+\cdots+0.0809646u-0.0612439 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1.29882u^{23}+0.303702u^{22}+\cdots-3.72961u-2.53129 \\ -0.208641u^{23}-0.0459699u^{22}+\cdots+0.590643u-0.286228 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.03969u^{23}-0.317712u^{22}+\cdots+3.93254u+2.54876 \\ -0.114188u^{23}+0.0787179u^{22}+\cdots+0.116374u+0.335186 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 3.99525u^{23}-2.62597u^{22}+\cdots+23.4948u+3.54148 \\ 0.0216583u^{23}-0.0159152u^{22}+\cdots+2.08303u+1.14906 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1.90112u^{23}-0.896784u^{22}+\cdots+0.400060u-12.3489 \\ 0.144093u^{23}-0.269090u^{22}+\cdots+0.758652u-0.332464 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$$= -\frac{1639350892343}{123456179965}u^{23}+\frac{374737028393}{123456179965}u^{22}+\cdots-\frac{7741933690621}{123456179965}u-\frac{4197302002443}{123456179965}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} - 12u^{23} + \cdots - u + 1$
c_2	$u^{24} + 4u^{23} + \cdots + 3u + 1$
c_3	$u^{24} + 6u^{22} + \cdots - 3u + 1$
c_4	$u^{24} - 4u^{23} + \cdots - 3u + 1$
c_5, c_{11}	$u^{24} + 12u^{22} + \cdots + 3u + 1$
c_6, c_9	$u^{24} - 3u^{23} + \cdots - 5u^3 + 1$
c_7, c_{10}	$u^{24} + 12u^{22} + \cdots - 3u + 1$
c_8	$u^{24} + 6u^{22} + \cdots + 3u + 1$
c_{12}	$u^{24} - 12u^{23} + \cdots - 6u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} + 4y^{23} + \cdots - 21y + 1$
c_2, c_4	$y^{24} - 12y^{23} + \cdots - y + 1$
c_3, c_8	$y^{24} + 12y^{23} + \cdots - y + 1$
c_5, c_7, c_{10} c_{11}	$y^{24} + 24y^{23} + \cdots + 19y + 1$
c_6, c_9	$y^{24} - 5y^{23} + \cdots - 6y^2 + 1$
c_{12}	$y^{24} - 12y^{23} + \cdots - 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.385812 + 0.959765I$ $a = 0.214252 + 0.609777I$ $b = 0.595502 + 0.631954I$	$1.95079 + 0.48887I$	$-4.75553 + 0.58923I$
$u = -0.385812 - 0.959765I$ $a = 0.214252 - 0.609777I$ $b = 0.595502 - 0.631954I$	$1.95079 - 0.48887I$	$-4.75553 - 0.58923I$
$u = -1.077360 + 0.108391I$ $a = 0.760516 - 0.736995I$ $b = 0.334692 + 0.897697I$	$1.59930 - 3.87913I$	$1.55003 + 6.90819I$
$u = -1.077360 - 0.108391I$ $a = 0.760516 + 0.736995I$ $b = 0.334692 - 0.897697I$	$1.59930 + 3.87913I$	$1.55003 - 6.90819I$
$u = 0.008495 + 0.868868I$ $a = -0.529585 - 0.609146I$ $b = 0.461312 - 0.571784I$	$2.95906 + 3.49000I$	$0.13816 - 7.20591I$
$u = 0.008495 - 0.868868I$ $a = -0.529585 + 0.609146I$ $b = 0.461312 + 0.571784I$	$2.95906 - 3.49000I$	$0.13816 + 7.20591I$
$u = 0.743321 + 0.919032I$ $a = -0.072413 - 0.523633I$ $b = 0.161396 + 0.548115I$	$-1.30077 - 7.57890I$	$-7.21370 + 4.06185I$
$u = 0.743321 - 0.919032I$ $a = -0.072413 + 0.523633I$ $b = 0.161396 - 0.548115I$	$-1.30077 + 7.57890I$	$-7.21370 - 4.06185I$
$u = -0.122647 + 1.176190I$ $a = -0.12178 + 1.86194I$ $b = -0.21101 - 1.58776I$	$8.95699 - 0.57004I$	$-1.42659 - 1.30232I$
$u = -0.122647 - 1.176190I$ $a = -0.12178 - 1.86194I$ $b = -0.21101 + 1.58776I$	$8.95699 + 0.57004I$	$-1.42659 + 1.30232I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.569181 + 0.581107I$ $a = -0.602978 + 1.183210I$ $b = 0.284741 - 0.656736I$	$1.91394 + 3.51457I$	$0.81290 - 6.37218I$
$u = -0.569181 - 0.581107I$ $a = -0.602978 - 1.183210I$ $b = 0.284741 + 0.656736I$	$1.91394 - 3.51457I$	$0.81290 + 6.37218I$
$u = 0.449036 + 1.170250I$ $a = 0.45643 - 1.62999I$ $b = -0.16034 + 1.69292I$	$7.75271 - 4.61755I$	$-5.14908 + 6.28860I$
$u = 0.449036 - 1.170250I$ $a = 0.45643 + 1.62999I$ $b = -0.16034 - 1.69292I$	$7.75271 + 4.61755I$	$-5.14908 - 6.28860I$
$u = 0.615552 + 0.171616I$ $a = 3.30797 + 1.75043I$ $b = 0.05347 + 1.55815I$	$4.79284 + 0.47371I$	$-13.5113 - 10.2243I$
$u = 0.615552 - 0.171616I$ $a = 3.30797 - 1.75043I$ $b = 0.05347 - 1.55815I$	$4.79284 - 0.47371I$	$-13.5113 + 10.2243I$
$u = 0.464020 + 1.310710I$ $a = -0.83858 + 1.39561I$ $b = -0.434102 - 1.121700I$	$6.91981 - 4.17688I$	$0.37708 + 1.71503I$
$u = 0.464020 - 1.310710I$ $a = -0.83858 - 1.39561I$ $b = -0.434102 + 1.121700I$	$6.91981 + 4.17688I$	$0.37708 - 1.71503I$
$u = -0.639779 + 1.245700I$ $a = -1.08711 - 1.18859I$ $b = -0.580023 + 1.066030I$	$4.79955 + 9.96183I$	$-2.92626 - 7.27946I$
$u = -0.639779 - 1.245700I$ $a = -1.08711 + 1.18859I$ $b = -0.580023 - 1.066030I$	$4.79955 - 9.96183I$	$-2.92626 + 7.27946I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.847108 + 1.119260I$ $a = 0.505190 - 1.089610I$ $b = -0.074936 + 0.774321I$	$-1.14238 + 1.71576I$	$-18.9155 - 13.5239I$
$u = 0.847108 - 1.119260I$ $a = 0.505190 + 1.089610I$ $b = -0.074936 - 0.774321I$	$-1.14238 - 1.71576I$	$-18.9155 + 13.5239I$
$u = -0.332750 + 0.244285I$ $a = -11.99190 + 1.92092I$ $b = -0.430698 + 0.709042I$	$0.27656 + 2.64864I$	$-18.9803 - 22.4027I$
$u = -0.332750 - 0.244285I$ $a = -11.99190 - 1.92092I$ $b = -0.430698 - 0.709042I$	$0.27656 - 2.64864I$	$-18.9803 + 22.4027I$

IV. $\boldsymbol{I^u_4 = \langle -1.71\times10^{51}a^{11}u^4 - 5.47\times10^{51}a^{10}u^4 + \cdots + 1.46\times10^{53}a - 6.79\times10^{52},\ -2a^{11}u^4 - 3a^{10}u^4 + \cdots - 130a + 65,\ u^5 - u^4 + 2u^3 - u^2 + u - 1\rangle}$

(i) Arc colorings

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

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

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} a \\ 0.0732427a^{11}u^4 + 0.234953a^{10}u^4 + \cdots - 6.26032a + 2.91308 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.00160005a^{11}u^4 - 0.0571426a^{10}u^4 + \cdots + 2.90814a + 1.14145 \\ -0.0583572a^{11}u^4 - 0.220679a^{10}u^4 + \cdots + 14.4659a - 0.113031 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0334129a^{11}u^4 + 0.219589a^{10}u^4 + \cdots - 15.3234a - 2.96658 \\ 0.0888781a^{11}u^4 + 0.194926a^{10}u^4 + \cdots - 7.20124a + 2.18044 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0973345a^{11}u^4 - 0.360963a^{10}u^4 + \cdots + 19.8860a + 0.469840 \\ 0.0240891a^{11}u^4 + 0.191688a^{10}u^4 + \cdots - 13.8093a - 2.09320 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0498218a^{11}u^4 + 0.0533522a^{10}u^4 + \cdots + 1.09982a + 1.13373 \\ 0.0206355a^{11}u^4 - 0.0879363a^{10}u^4 + \cdots + 10.5617a + 2.04394 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0722419a^{11}u^4 - 0.137729a^{10}u^4 + \cdots + 2.20329a - 2.38563 \\ 0.0250926a^{11}u^4 + 0.223234a^{10}u^4 + \cdots - 17.6827a - 2.85547 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0716813a^{11}u^4 - 0.327262a^{10}u^4 + \cdots + 16.0376a + 1.19081 \\ 0.0283710a^{11}u^4 + 0.0243660a^{10}u^4 + \cdots - 1.23422a + 1.16463 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0732427a^{11}u^4 + 0.234953a^{10}u^4 + \cdots - 5.26032a + 2.91308 \\ 0.0732427a^{11}u^4 + 0.234953a^{10}u^4 + \cdots - 6.26032a + 2.91308 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0406867a^{11}u^4 + 0.0916623a^{10}u^4 + \cdots - 16.2544a + 5.52616$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{10}+5u^9+\cdots+4u+1)^6$
c_2, c_4	$(u^{10}-u^9-2u^8+4u^7-4u^5+3u^4+u^3-2u^2+1)^6$
c_3, c_8	$(u^5-u^4+2u^3-u^2+u-1)^{12}$
c_5, c_7, c_{10} c_{11}	$u^{60}+u^{59}+\cdots-840u+61$
c_6, c_9	$u^{60}+3u^{59}+\cdots+184u+23$
c_{12}	$(u^3-u^2+1)^{20}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10} - y^9 - 6y^7 + 22y^6 + 6y^5 + 45y^4 + 15y^3 + 22y^2 + 4y + 1)^6$
c_2, c_4	$(y^{10} - 5y^9 + \cdots - 4y + 1)^6$
c_3, c_8	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^{12}$
c_5, c_7, c_{10} c_{11}	$y^{60} + 45y^{59} + \cdots + 132540y + 3721$
c_6, c_9	$y^{60} - 15y^{59} + \cdots - 14076y + 529$
c_{12}	$(y^3 - y^2 + 2y - 1)^{20}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.339110+0.822375I$ $a=-0.308460-0.829537I$ $b=-1.079350+0.448931I$	$-1.05009-1.29754I$	$-4.99464-1.45120I$
$u=-0.339110+0.822375I$ $a=-0.005750+0.811726I$ $b=-0.733526-0.736114I$	$-1.05009+4.35870I$	$-4.99464-7.41010I$
$u=-0.339110+0.822375I$ $a=0.475699+0.651412I$ $b=0.672537-0.913276I$	$-1.05009+4.35870I$	$-4.99464-7.41010I$
$u=-0.339110+0.822375I$ $a=0.332091-0.707040I$ $b=0.608644+1.133040I$	$-1.05009-1.29754I$	$-4.99464-1.45120I$
$u=-0.339110+0.822375I$ $a=0.472163+0.240206I$ $b=-0.111510+0.825614I$	$3.08749+1.53058I$	$1.53463-4.43065I$
$u=-0.339110+0.822375I$ $a=-1.10658+1.03616I$ $b=1.092060-0.041395I$	$-1.05009+4.35870I$	$-4.99464-7.41010I$
$u=-0.339110+0.822375I$ $a=0.181691-0.337491I$ $b=-0.592837-0.914921I$	$3.08749+1.53058I$	$1.53463-4.43065I$
$u=-0.339110+0.822375I$ $a=0.31326+1.60794I$ $b=-0.060888-0.451565I$	$-1.05009-1.29754I$	$-4.99464-1.45120I$
$u=-0.339110+0.822375I$ $a=1.38965+1.74838I$ $b=-0.253872-0.843581I$	$-1.05009-1.29754I$	$-4.99464-1.45120I$
$u=-0.339110+0.822375I$ $a=1.58940+2.88329I$ $b=0.56963-1.39967I$	$3.08749+1.53058I$	$1.53463-4.43065I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.339110+0.822375I$ $a=-2.89507-1.92608I$ $b=-0.041883+1.175610I$	$3.08749+1.53058I$	$1.53463-4.43065I$
$u=-0.339110+0.822375I$ $a=-1.58194-3.66991I$ $b=-0.378916+1.167410I$	$-1.05009+4.35870I$	$-4.99464-7.41010I$
$u=-0.339110-0.822375I$ $a=-0.308460+0.829537I$ $b=-1.079350-0.448931I$	$-1.05009+1.29754I$	$-4.99464+1.45120I$
$u=-0.339110-0.822375I$ $a=-0.005750-0.811726I$ $b=-0.733526+0.736114I$	$-1.05009-4.35870I$	$-4.99464+7.41010I$
$u=-0.339110-0.822375I$ $a=0.475699-0.651412I$ $b=0.672537+0.913276I$	$-1.05009-4.35870I$	$-4.99464+7.41010I$
$u=-0.339110-0.822375I$ $a=0.332091+0.707040I$ $b=0.608644-1.133040I$	$-1.05009+1.29754I$	$-4.99464+1.45120I$
$u=-0.339110-0.822375I$ $a=0.472163-0.240206I$ $b=-0.111510-0.825614I$	$3.08749-1.53058I$	$1.53463+4.43065I$
$u=-0.339110-0.822375I$ $a=-1.10658-1.03616I$ $b=1.092060+0.041395I$	$-1.05009-4.35870I$	$-4.99464+7.41010I$
$u=-0.339110-0.822375I$ $a=0.181691+0.337491I$ $b=-0.592837+0.914921I$	$3.08749-1.53058I$	$1.53463+4.43065I$
$u=-0.339110-0.822375I$ $a=0.31326-1.60794I$ $b=-0.060888+0.451565I$	$-1.05009+1.29754I$	$-4.99464+1.45120I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.339110 - 0.822375I$ $a = 1.38965 - 1.74838I$ $b = -0.253872 + 0.843581I$	$-1.05009 + 1.29754I$	$-4.99464 + 1.45120I$
$u = -0.339110 - 0.822375I$ $a = 1.58940 - 2.88329I$ $b = 0.56963 + 1.39967I$	$3.08749 - 1.53058I$	$1.53463 + 4.43065I$
$u = -0.339110 - 0.822375I$ $a = -2.89507 + 1.92608I$ $b = -0.041883 - 1.175610I$	$3.08749 - 1.53058I$	$1.53463 + 4.43065I$
$u = -0.339110 - 0.822375I$ $a = -1.58194 + 3.66991I$ $b = -0.378916 - 1.167410I$	$-1.05009 - 4.35870I$	$-4.99464 + 7.41010I$
$u = 0.766826$ $a = 0.886969 + 0.605378I$ $b = 0.411481 - 0.991149I$	$1.02189 + 2.82812I$	$-4.02861 - 2.97945I$
$u = 0.766826$ $a = 0.886969 - 0.605378I$ $b = 0.411481 + 0.991149I$	$1.02189 - 2.82812I$	$-4.02861 + 2.97945I$
$u = 0.766826$ $a = 0.142592 + 1.271050I$ $b = 0.283929 - 1.034350I$	$1.02189 + 2.82812I$	$-4.02861 - 2.97945I$
$u = 0.766826$ $a = 0.142592 - 1.271050I$ $b = 0.283929 + 1.034350I$	$1.02189 - 2.82812I$	$-4.02861 + 2.97945I$
$u = 0.766826$ $a = -0.372349 + 1.229280I$ $b = -0.32676 + 1.53371I$	5.15947	$2.50065 + 0.I$
$u = 0.766826$ $a = -0.372349 - 1.229280I$ $b = -0.32676 - 1.53371I$	5.15947	$2.50065 + 0.I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.766826$ $a = 1.46990 + 0.50951I$ $b = -0.020195 + 1.342860I$	5.15947	$2.50065 + 0.I$
$u = 0.766826$ $a = 1.46990 - 0.50951I$ $b = -0.020195 - 1.342860I$	5.15947	$2.50065 + 0.I$
$u = 0.766826$ $a = 1.17834 + 1.64060I$ $b = -0.104669 + 0.123242I$	$1.02189 + 2.82812I$	$-4.02861 - 2.97945I$
$u = 0.766826$ $a = 1.17834 - 1.64060I$ $b = -0.104669 - 0.123242I$	$1.02189 - 2.82812I$	$-4.02861 + 2.97945I$
$u = 0.766826$ $a = -1.37938 + 1.51827I$ $b = -0.852652 + 0.310507I$	$1.02189 + 2.82812I$	$-4.02861 - 2.97945I$
$u = 0.766826$ $a = -1.37938 - 1.51827I$ $b = -0.852652 - 0.310507I$	$1.02189 - 2.82812I$	$-4.02861 + 2.97945I$
$u = 0.455697 + 1.200150I$ $a = -0.867579 - 0.090126I$ $b = -0.386902 + 0.537495I$	$4.49337 - 7.22895I$	$-0.76544 + 6.47803I$
$u = 0.455697 + 1.200150I$ $a = -0.340253 - 0.607754I$ $b = 1.388470 + 0.128289I$	$4.49337 - 7.22895I$	$-0.76544 + 6.47803I$
$u = 0.455697 + 1.200150I$ $a = -0.91593 + 1.34753I$ $b = 0.32976 - 1.97974I$	$8.63095 - 4.40083I$	$5.76382 + 3.49859I$
$u = 0.455697 + 1.200150I$ $a = -0.068281 - 0.306353I$ $b = -0.607002 + 0.238854I$	$4.49337 - 1.57271I$	$-0.765442 + 0.519139I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.455697 + 1.200150I$ $a = 0.64148 - 1.61014I$ $b = -0.016904 + 1.231170I$	$4.49337 - 1.57271I$	$-0.765442 + 0.519139I$
$u = 0.455697 + 1.200150I$ $a = -0.126723 - 0.218957I$ $b = 1.163220 - 0.775553I$	$4.49337 - 1.57271I$	$-0.765442 + 0.519139I$
$u = 0.455697 + 1.200150I$ $a = 0.80691 - 1.66440I$ $b = 0.80322 + 1.56795I$	$8.63095 - 4.40083I$	$5.76382 + 3.49859I$
$u = 0.455697 + 1.200150I$ $a = -0.90892 + 1.71085I$ $b = -0.656448 - 1.246570I$	$4.49337 - 7.22895I$	$-0.76544 + 6.47803I$
$u = 0.455697 + 1.200150I$ $a = 0.10394 - 1.98838I$ $b = -0.10166 + 1.48737I$	$8.63095 - 4.40083I$	$5.76382 + 3.49859I$
$u = 0.455697 + 1.200150I$ $a = -1.58034 + 1.28725I$ $b = -0.222841 - 1.200460I$	$8.63095 - 4.40083I$	$5.76382 + 3.49859I$
$u = 0.455697 + 1.200150I$ $a = 1.29027 - 1.88553I$ $b = 0.052319 + 1.112940I$	$4.49337 - 1.57271I$	$-0.765442 + 0.519139I$
$u = 0.455697 + 1.200150I$ $a = -0.81679 + 2.23955I$ $b = -0.326450 - 1.320900I$	$4.49337 - 7.22895I$	$-0.76544 + 6.47803I$
$u = 0.455697 - 1.200150I$ $a = -0.867579 + 0.090126I$ $b = -0.386902 - 0.537495I$	$4.49337 + 7.22895I$	$-0.76544 - 6.47803I$
$u = 0.455697 - 1.200150I$ $a = -0.340253 + 0.607754I$ $b = 1.388470 - 0.128289I$	$4.49337 + 7.22895I$	$-0.76544 - 6.47803I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.455697 - 1.200150I$ $a = -0.91593 - 1.34753I$ $b = 0.32976 + 1.97974I$	$8.63095 + 4.40083I$	$5.76382 - 3.49859I$
$u = 0.455697 - 1.200150I$ $a = -0.068281 + 0.306353I$ $b = -0.607002 - 0.238854I$	$4.49337 + 1.57271I$	$-0.765442 - 0.519139I$
$u = 0.455697 - 1.200150I$ $a = 0.64148 + 1.61014I$ $b = -0.016904 - 1.231170I$	$4.49337 + 1.57271I$	$-0.765442 - 0.519139I$
$u = 0.455697 - 1.200150I$ $a = -0.126723 + 0.218957I$ $b = 1.163220 + 0.775553I$	$4.49337 + 1.57271I$	$-0.765442 - 0.519139I$
$u = 0.455697 - 1.200150I$ $a = 0.80691 + 1.66440I$ $b = 0.80322 - 1.56795I$	$8.63095 + 4.40083I$	$5.76382 - 3.49859I$
$u = 0.455697 - 1.200150I$ $a = -0.90892 - 1.71085I$ $b = -0.656448 + 1.246570I$	$4.49337 + 7.22895I$	$-0.76544 - 6.47803I$
$u = 0.455697 - 1.200150I$ $a = 0.10394 + 1.98838I$ $b = -0.10166 - 1.48737I$	$8.63095 + 4.40083I$	$5.76382 - 3.49859I$
$u = 0.455697 - 1.200150I$ $a = -1.58034 - 1.28725I$ $b = -0.222841 + 1.200460I$	$8.63095 + 4.40083I$	$5.76382 - 3.49859I$
$u = 0.455697 - 1.200150I$ $a = 1.29027 + 1.88553I$ $b = 0.052319 - 1.112940I$	$4.49337 + 1.57271I$	$-0.765442 - 0.519139I$
$u = 0.455697 - 1.200150I$ $a = -0.81679 - 2.23955I$ $b = -0.326450 + 1.320900I$	$4.49337 + 7.22895I$	$-0.76544 - 6.47803I$

V. $\boldsymbol{I_1^v = \langle a,\ 8v^3 + 12v^2 + b + 10v + 3,\ 8v^4 + 12v^3 + 12v^2 + 5v + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ -8v^3 - 12v^2 - 10v - 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -8v^3 - 8v^2 - 8v - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 8v^3 + 8v^2 + 8v + 2 \\ 16v^3 + 20v^2 + 18v + 5 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 8v^3 + 12v^2 + 12v + 4 \\ 8v^3 + 12v^2 + 12v + 5 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 8v^3 + 12v^2 + 13v + 4 \\ 8v^3 + 12v^2 + 12v + 5 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -8v^3 - 12v^2 - 12v - 4 \\ -8v^3 - 12v^2 - 12v - 5 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -4v^2 - 4v - 3 \\ -4v^2 - 4v - 4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -8v^3 - 12v^2 - 10v - 3 \\ -8v^3 - 12v^2 - 10v - 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 72v^3 + 101v^2 + 96v + 19$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -0.447562 + 0.776246I$ $a = 0$ $b = 0.547424 + 0.585652I$	$-2.62503 - 1.39709I$	$-12.79646 + 4.25046I$
$v = -0.447562 - 0.776246I$ $a = 0$ $b = 0.547424 - 0.585652I$	$-2.62503 + 1.39709I$	$-12.79646 - 4.25046I$
$v = -0.302438 + 0.253422I$ $a = 0$ $b = -0.547424 - 1.120870I$	$0.98010 - 7.64338I$	$-5.07854 + 12.68142I$
$v = -0.302438 - 0.253422I$ $a = 0$ $b = -0.547424 + 1.120870I$	$0.98010 + 7.64338I$	$-5.07854 - 12.68142I$

VI. $\boldsymbol{I_2^v = \langle a,\ b^6 + b^5 + 2b^4 + 2b^3 + 2b^2 + 2b + 1,\ v - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = 0.498832 + 1.001300I$	$-1.37919 - 2.82812I$	$-7.50976 + 2.97945I$
$v = 1.00000$ $a = 0$ $b = 0.498832 - 1.001300I$	$-1.37919 + 2.82812I$	$-7.50976 - 2.97945I$
$v = 1.00000$ $a = 0$ $b = -0.284920 + 1.115140I$	2.75839	$-6 - 0.980489 + 0.10I$
$v = 1.00000$ $a = 0$ $b = -0.284920 - 1.115140I$	2.75839	$-6 - 0.980489 + 0.10I$
$v = 1.00000$ $a = 0$ $b = -0.713912 + 0.305839I$	$-1.37919 - 2.82812I$	$-7.50976 + 2.97945I$
$v = 1.00000$ $a = 0$ $b = -0.713912 - 0.305839I$	$-1.37919 + 2.82812I$	$-7.50976 - 2.97945I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^{10}(u^7+3u^6+7u^5+8u^4+9u^3+6u^2+5u+1)^6$ $\cdot((u^{10}+5u^9+\cdots+4u+1)^6)(u^{24}-12u^{23}+\cdots-u+1)$ $\cdot(u^{47}+23u^{46}+\cdots-6912u+4096)$
c_2	$(u-1)^{10}(u^7-u^6-u^5+2u^4+u^3-2u^2+u+1)^6$ $\cdot(u^{10}-u^9-2u^8+4u^7-4u^5+3u^4+u^3-2u^2+1)^6$ $\cdot(u^{24}+4u^{23}+\cdots+3u+1)(u^{47}-3u^{46}+\cdots-240u+64)$
c_3	$u^{10}(u^5-u^4+2u^3-u^2+u-1)^{12}$ $\cdot((u^7+3u^6+\cdots-2u-2)^6)(u^{24}+6u^{22}+\cdots-3u+1)$ $\cdot(u^{47}-7u^{46}+\cdots-3840u+1024)$
c_4	$(u+1)^{10}(u^7-u^6-u^5+2u^4+u^3-2u^2+u+1)^6$ $\cdot(u^{10}-u^9-2u^8+4u^7-4u^5+3u^4+u^3-2u^2+1)^6$ $\cdot(u^{24}-4u^{23}+\cdots-3u+1)(u^{47}-3u^{46}+\cdots-240u+64)$
c_5	$(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{24}+12u^{22}+\cdots+3u+1)(u^{42}+u^{41}+\cdots-1560u+347)$ $\cdot(u^{47}+17u^{45}+\cdots-2u+1)(u^{60}+u^{59}+\cdots-840u+61)$
c_6	$(u^4+2u^3+3u^2+u+1)(u^6+3u^5+4u^4+2u^3+1)$ $\cdot(u^{24}-3u^{23}+\cdots-5u^3+1)(u^{42}+3u^{41}+\cdots+130u+53)$ $\cdot(u^{47}+u^{46}+\cdots+5u+1)(u^{60}+3u^{59}+\cdots+184u+23)$
c_7	$(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{24}+12u^{22}+\cdots-3u+1)(u^{42}+u^{41}+\cdots-1560u+347)$ $\cdot(u^{47}+17u^{45}+\cdots-2u+1)(u^{60}+u^{59}+\cdots-840u+61)$
c_8	$u^{10}(u^5-u^4+2u^3-u^2+u-1)^{12}$ $\cdot((u^7+3u^6+\cdots-2u-2)^6)(u^{24}+6u^{22}+\cdots+3u+1)$ $\cdot(u^{47}-7u^{46}+\cdots-3840u+1024)$
c_9	$(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{24}-3u^{23}+\cdots-5u^3+1)(u^{42}+3u^{41}+\cdots+130u+53)$ $\cdot(u^{47}+u^{46}+\cdots+5u+1)(u^{60}+3u^{59}+\cdots+184u+23)$
c_{10}	$(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{24}+12u^{22}+\cdots-3u+1)(u^{42}+u^{41}+\cdots-1560u+347)$ $\cdot(u^{47}+17u^{45}+\cdots-2u+1)(u^{60}+u^{59}+\cdots-840u+61)$
c_{11}	$(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{24}+12u^{22}+\cdots+3u+1)(u^{42}+u^{41}+\cdots-1560u+347)$ $\cdot(u^{47}+17u^{45}+\cdots-2u+1)(u^{60}+u^{59}+\cdots-840u+61)$
c_{12}	$((u^3-u^2+1)^{36})(u^4+3u^3+\cdots+3u+2)(u^{24}-12u^{23}+\cdots-6u^2+1)$ $\cdot(u^{47}+42u^{46}+\cdots+3997696u+131072)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^{10}(y^7+5y^6+19y^5+36y^4+49y^3+38y^2+13y-1)^6$ $\cdot(y^{10}-y^9-6y^7+22y^6+6y^5+45y^4+15y^3+22y^2+4y+1)^6$ $\cdot(y^{24}+4y^{23}+\cdots-21y+1)$ $\cdot(y^{47}+5y^{46}+\cdots+1065680896y-16777216)$
c_2, c_4	$(y-1)^{10}(y^7-3y^6+7y^5-8y^4+9y^3-6y^2+5y-1)^6$ $\cdot((y^{10}-5y^9+\cdots-4y+1)^6)(y^{24}-12y^{23}+\cdots-y+1)$ $\cdot(y^{47}-23y^{46}+\cdots-6912y-4096)$
c_3, c_8	$y^{10}(y^5+3y^4+4y^3+y^2-y-1)^{12}$ $\cdot((y^7+3y^6+\cdots+8y-4)^6)(y^{24}+12y^{23}+\cdots-y+1)$ $\cdot(y^{47}+21y^{46}+\cdots-11206656y-1048576)$
c_5, c_7, c_{10} c_{11}	$(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{24}+24y^{23}+\cdots+19y+1)(y^{42}+33y^{41}+\cdots+486752y+120409)$ $\cdot(y^{47}+34y^{46}+\cdots+22y-1)(y^{60}+45y^{59}+\cdots+132540y+3721)$
c_6, c_9	$(y^4+2y^3+7y^2+5y+1)(y^6-y^5+4y^4-2y^3+8y^2+1)$ $\cdot(y^{24}-5y^{23}+\cdots-6y^2+1)(y^{42}-11y^{41}+\cdots-87496y+2809)$ $\cdot(y^{47}+5y^{46}+\cdots-15y-1)(y^{60}-15y^{59}+\cdots-14076y+529)$
c_{12}	$(y^3-y^2+2y-1)^{36}(y^4-y^3+2y^2+7y+4)$ $\cdot(y^{24}-12y^{23}+\cdots-12y+1)$ $\cdot(y^{47}-14y^{46}+\cdots+571230650368y-17179869184)$