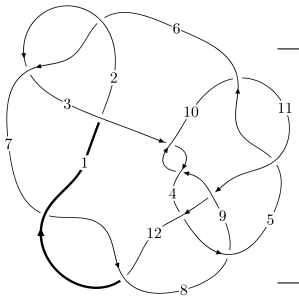
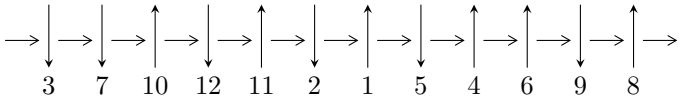
$12a_{0663}$ $(K12a_{0663})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -6.53926 \times 10^{31} u^{38} - 4.08337 \times 10^{30} u^{37} + \cdots + 6.57846 \times 10^{31} b + 8.43133 \times 10^{30}, \\
&\quad - 1.38800 \times 10^{31} u^{38} - 2.23113 \times 10^{31} u^{37} + \cdots + 6.57846 \times 10^{31} a - 3.08771 \times 10^{32},\ u^{39} + u^{38} + \cdots + 7u^2 + \\
I_2^u &= \langle -6.98995 \times 10^{294} u^{71} - 1.49499 \times 10^{295} u^{70} + \cdots + 1.56256 \times 10^{295} b - 1.00003 \times 10^{298}, \\
&\quad - 4.22283 \times 10^{228} u^{71} - 9.43208 \times 10^{228} u^{70} + \cdots + 1.97531 \times 10^{229} a - 7.72233 \times 10^{231}, \\
&\quad u^{72} + 3u^{71} + \cdots - 300u + 1393 \rangle \\
I_3^u &= \langle -227849189 u^{23} - 908034262 u^{22} + \cdots + 2211913739 b - 16196133, \\
&\quad 18343895 u^{23} - 2147762 u^{22} + \cdots + 2211913739 a + 1387418052,\ u^{24} - u^{23} + \cdots - 2u + 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 135 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.

$$\boldsymbol{I_1^u = \langle -6.54\times 10^{31}u^{38} - 4.08\times 10^{30}u^{37} + \cdots + 6.58\times 10^{31}b + 8.43\times 10^{30},\ -1.39\times 10^{31}u^{38} - 2.23\times 10^{31}u^{37} + \cdots + 6.58\times 10^{31}a - 3.09\times 10^{32},\ u^{39} + u^{38} + \cdots + 7u^2 + 1\rangle}$$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} 0.210991u^{38} + 0.339157u^{37} + \cdots - 4.36758u + 4.69367 \\ 0.994042u^{38} + 0.0620718u^{37} + \cdots + 0.789009u - 0.128166 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.20503u^{38} + 0.401229u^{37} + \cdots - 3.57857u + 4.56550 \\ 0.994042u^{38} + 0.0620718u^{37} + \cdots + 0.789009u - 0.128166 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 5.20733u^{38} + 1.32756u^{37} + \cdots - 1.16737u + 6.24635 \\ 1.20174u^{38} - 0.260291u^{37} + \cdots - 4.13375u + 1.42369 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.210991u^{38} + 0.339157u^{37} + \cdots - 3.36758u + 4.69367 \\ 0.994042u^{38} + 0.0620718u^{37} + \cdots + 0.789009u - 0.128166 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -2.04556u^{38} - 0.0320806u^{37} + \cdots + 6.93865u - 1.98362 \\ -0.970929u^{38} - 0.311046u^{37} + \cdots + 2.83457u - 2.14165 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.03526u^{38} + 0.698475u^{37} + \cdots + 0.632919u + 5.82032 \\ -0.0773108u^{38} - 0.183940u^{37} + \cdots + 1.79931u - 1.80486 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.410708u^{38} + 0.579404u^{37} + \cdots + 4.25907u + 3.42658 \\ -1.55656u^{38} - 0.282778u^{37} + \cdots + 2.55983u - 2.67790 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -4.03365u^{38} - 0.156224u^{37} + \cdots + 7.36063u - 1.72729 \\ -2.41774u^{38} - 0.284021u^{37} + \cdots + 4.82266u - 4.00559 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 3.57384u^{38} + 0.937443u^{37} + \cdots - 8.23572u + 5.85575 \\ 1.32991u^{38} + 0.861916u^{37} + \cdots + 0.559915u + 1.21270 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 9.50767u^{38} + 2.94061u^{37} + \cdots - 7.93931u - 0.143921$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39}+21u^{38}+\cdots+16u+64$
c_2, c_6	$u^{39}-7u^{38}+\cdots-68u+8$
c_3, c_5, c_9 c_{10}	$u^{39}+20u^{37}+\cdots-u+1$
c_4, c_8	$u^{39}+u^{38}+\cdots+7u^2+1$
c_7, c_{12}	$u^{39}-21u^{38}+\cdots-10052u+1192$
c_{11}	$u^{39}-36u^{38}+\cdots+90112u-4096$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} - 5y^{38} + \cdots - 2816y - 4096$
c_2, c_6	$y^{39} - 21y^{38} + \cdots + 16y - 64$
c_3, c_5, c_9 c_{10}	$y^{39} + 40y^{38} + \cdots + 19y - 1$
c_4, c_8	$y^{39} - 15y^{38} + \cdots - 14y - 1$
c_7, c_{12}	$y^{39} + 31y^{38} + \cdots + 64653328y - 1420864$
c_{11}	$y^{39} - 10y^{38} + \cdots + 125829120y - 16777216$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.567111+0.787760I$ $a=\ \ 0.697115+0.159087I$ $b=-0.633371+0.117333I$	$1.32490+3.31400I$	$4.45912-5.74087I$
$u=-0.567111-0.787760I$ $a=\ \ 0.697115-0.159087I$ $b=-0.633371-0.117333I$	$1.32490-3.31400I$	$4.45912+5.74087I$
$u=-0.765136+0.571280I$ $a=\ \ 2.16539+0.12213I$ $b=-0.097378-1.290100I$	$-4.07768+4.05588I$	$-5.30316-7.20111I$
$u=-0.765136-0.571280I$ $a=\ \ 2.16539-0.12213I$ $b=-0.097378+1.290100I$	$-4.07768-4.05588I$	$-5.30316+7.20111I$
$u=-0.943048+0.012408I$ $a=\ \ 1.34635-1.58586I$ $b=\ \ 0.21700-1.42922I$	$-15.0496+1.0975I$	$-12.20549-0.94590I$
$u=-0.943048-0.012408I$ $a=\ \ 1.34635+1.58586I$ $b=\ \ 0.21700+1.42922I$	$-15.0496-1.0975I$	$-12.20549+0.94590I$
$u=-0.852570+0.138373I$ $a=\ \ 0.96600+2.04699I$ $b=\ \ 0.314074+1.359160I$	$-13.8330+8.7861I$	$-10.86252-6.43696I$
$u=-0.852570-0.138373I$ $a=\ \ 0.96600-2.04699I$ $b=\ \ 0.314074-1.359160I$	$-13.8330-8.7861I$	$-10.86252+6.43696I$
$u=\ \ 0.837375+0.048442I$ $a=-1.32421+2.02490I$ $b=-0.252328+1.356110I$	$-10.43840-3.43951I$	$-9.01036+2.72933I$
$u=\ \ 0.837375-0.048442I$ $a=-1.32421-2.02490I$ $b=-0.252328-1.356110I$	$-10.43840+3.43951I$	$-9.01036-2.72933I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.695786 + 0.401836I$ $a = -2.78898 - 0.37450I$ $b = \ 0.005349 - 1.278550I$	$-4.95357 + 1.37371I$	$-9.10851 + 2.59492I$
$u = \ 0.695786 - 0.401836I$ $a = -2.78898 + 0.37450I$ $b = \ 0.005349 + 1.278550I$	$-4.95357 - 1.37371I$	$-9.10851 - 2.59492I$
$u = \ 0.351727 + 0.722046I$ $a = -0.822254 + 0.137329I$ $b = \ 0.608935 + 0.249794I$	$1.85851 + 0.64123I$	$6.33062 - 2.65229I$
$u = \ 0.351727 - 0.722046I$ $a = -0.822254 - 0.137329I$ $b = \ 0.608935 - 0.249794I$	$1.85851 - 0.64123I$	$6.33062 + 2.65229I$
$u = -0.967742 + 0.763288I$ $a = \ 0.568572 + 0.141085I$ $b = -0.558086 - 0.026749I$	$-1.51812 + 3.17788I$	$2.76285 - 2.10152I$
$u = -0.967742 - 0.763288I$ $a = \ 0.568572 - 0.141085I$ $b = -0.558086 + 0.026749I$	$-1.51812 - 3.17788I$	$2.76285 + 2.10152I$
$u = \ 1.082180 + 0.592049I$ $a = -1.46368 - 0.22780I$ $b = \ 0.17300 - 1.47046I$	$-10.66960 - 5.07856I$	$-10.53992 + 4.00671I$
$u = \ 1.082180 - 0.592049I$ $a = -1.46368 + 0.22780I$ $b = \ 0.17300 + 1.47046I$	$-10.66960 + 5.07856I$	$-10.53992 - 4.00671I$
$u = -0.764518$ $a = \ 0.569386$ $b = -0.431719$	-1.66339	-4.64910
$u = \ 1.093730 + 0.671358I$ $a = -0.540699 + 0.117342I$ $b = \ 0.518302 - 0.035214I$	$-5.30148 + 0.79401I$	$-2.08945 - 2.40704I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.093730 - 0.671358I$ $a = -0.540699 - 0.117342I$ $b = 0.518302 + 0.035214I$	$-5.30148 - 0.79401I$	$-2.08945 + 2.40704I$
$u = -0.993018 + 0.816568I$ $a = 1.369400 + 0.161395I$ $b = -0.294026 - 1.352700I$	$-4.89712 + 7.00444I$	$-3.44470 - 5.09853I$
$u = -0.993018 - 0.816568I$ $a = 1.369400 - 0.161395I$ $b = -0.294026 + 1.352700I$	$-4.89712 - 7.00444I$	$-3.44470 + 5.09853I$
$u = 1.027790 + 0.860017I$ $a = -0.550444 + 0.162872I$ $b = 0.565522 - 0.061491I$	$-4.63847 - 7.81620I$	$0. + 5.15619I$
$u = 1.027790 - 0.860017I$ $a = -0.550444 - 0.162872I$ $b = 0.565522 + 0.061491I$	$-4.63847 + 7.81620I$	$0. - 5.15619I$
$u = 0.075508 + 0.610308I$ $a = 1.53525 + 0.35499I$ $b = -0.520301 + 0.621604I$	$-1.47213 - 5.06690I$	$-0.37269 + 8.17616I$
$u = 0.075508 - 0.610308I$ $a = 1.53525 - 0.35499I$ $b = -0.520301 - 0.621604I$	$-1.47213 + 5.06690I$	$-0.37269 - 8.17616I$
$u = 1.082800 + 0.904573I$ $a = -1.192250 + 0.140890I$ $b = 0.38451 - 1.38106I$	$-6.47260 - 12.07610I$	0
$u = 1.082800 - 0.904573I$ $a = -1.192250 - 0.140890I$ $b = 0.38451 + 1.38106I$	$-6.47260 + 12.07610I$	0
$u = 0.093806 + 0.574754I$ $a = -1.190660 - 0.013225I$ $b = 0.478079 + 0.450617I$	$0.88043 + 1.10691I$	$4.57256 - 4.10450I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.093806 - 0.574754I$ $a = -1.190660 + 0.013225I$ $b = 0.478079 - 0.450617I$	$0.88043 - 1.10691I$	$4.57256 + 4.10450I$
$u = 0.032561 + 0.358979I$ $a = 1.98747 - 1.70278I$ $b = -0.181643 + 0.623066I$	$-1.79359 + 1.44290I$	$-3.00301 - 2.32178I$
$u = 0.032561 - 0.358979I$ $a = 1.98747 + 1.70278I$ $b = -0.181643 - 0.623066I$	$-1.79359 - 1.44290I$	$-3.00301 + 2.32178I$
$u = -1.37493 + 0.89777I$ $a = 0.985563 - 0.068694I$ $b = -0.47573 - 1.60982I$	$-16.4040 + 8.0432I$	0
$u = -1.37493 - 0.89777I$ $a = 0.985563 + 0.068694I$ $b = -0.47573 + 1.60982I$	$-16.4040 - 8.0432I$	0
$u = 1.34788 + 0.94806I$ $a = -0.977771 - 0.023278I$ $b = 0.50981 - 1.57225I$	$-12.0675 - 12.5408I$	0
$u = 1.34788 - 0.94806I$ $a = -0.977771 + 0.023278I$ $b = 0.50981 + 1.57225I$	$-12.0675 + 12.5408I$	0
$u = -1.37533 + 0.98042I$ $a = 0.945129 - 0.018463I$ $b = -0.54586 - 1.58560I$	$-15.4829 + 17.6772I$	0
$u = -1.37533 - 0.98042I$ $a = 0.945129 + 0.018463I$ $b = -0.54586 + 1.58560I$	$-15.4829 - 17.6772I$	0

II. $I_2^u = \langle -6.99 \times 10^{294} u^{71} - 1.49 \times 10^{295} u^{70} + \cdots + 1.56 \times 10^{295} b - 1.00 \times 10^{298},\ -4.22 \times 10^{228} u^{71} - 9.43 \times 10^{228} u^{70} + \cdots + 1.98 \times 10^{229} a - 7.72 \times 10^{231},\ u^{72} + 3u^{71} + \cdots - 300u + 1393 \rangle$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} 0.213781u^{71} + 0.477499u^{70} + \cdots - 559.380u + 390.943 \\ 0.447340u^{71} + 0.956757u^{70} + \cdots - 863.774u + 639.995 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.661121u^{71} + 1.43426u^{70} + \cdots - 1423.15u + 1030.94 \\ 0.447340u^{71} + 0.956757u^{70} + \cdots - 863.774u + 639.995 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.326580u^{71} - 0.679236u^{70} + \cdots + 636.636u - 521.167 \\ -0.652852u^{71} - 1.39754u^{70} + \cdots + 1534.59u - 1128.73 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.547431u^{71} + 1.17282u^{70} + \cdots - 1076.20u + 802.706 \\ 0.756568u^{71} + 1.61079u^{70} + \cdots - 1420.24u + 1065.74 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.321622u^{71} + 0.694407u^{70} + \cdots - 667.373u + 482.233 \\ 0.838420u^{71} + 1.84757u^{70} + \cdots - 2017.81u + 1381.44 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.712040u^{71} - 1.48815u^{70} + \cdots + 1236.05u - 996.432 \\ -0.302736u^{71} - 0.544396u^{70} + \cdots - 34.3875u - 183.143 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.12512u^{71} - 2.32951u^{70} + \cdots + 1885.56u - 1615.02 \\ -0.379009u^{71} - 0.633666u^{70} + \cdots - 279.657u - 203.153 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0534466u^{71} + 0.0989686u^{70} + \cdots + 24.9761u + 17.5353 \\ -0.260512u^{71} - 0.587739u^{70} + \cdots + 705.445u - 454.496 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.269362u^{71} - 0.561548u^{70} + \cdots + 542.389u - 431.908 \\ 0.102472u^{71} + 0.265357u^{70} + \cdots - 421.508u + 224.345 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 1.32211u^{71} + 2.68881u^{70} + \cdots - 2261.71u + 1971.25$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{12}+7u^{11}+\cdots+2u+1)^6$
c_2, c_6	$(u^{12}+u^{11}+\cdots+2u+1)^6$
c_3, c_5, c_9 c_{10}	$u^{72}+u^{71}+\cdots+83070u+21519$
c_4, c_8	$u^{72}+3u^{71}+\cdots-300u+1393$
c_7, c_{12}	$(u^{12}+3u^{11}+\cdots+2u+1)^6$
c_{11}	$(u^3+u^2-1)^{24}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{12} - 3y^{11} + \cdots + 6y + 1)^6$
c_2, c_6	$(y^{12} - 7y^{11} + \cdots - 2y + 1)^6$
c_3, c_5, c_9 c_{10}	$y^{72} + 63y^{71} + \cdots + 7005211128y + 463067361$
c_4, c_8	$y^{72} - 21y^{71} + \cdots - 73762984y + 1940449$
c_7, c_{12}	$(y^{12} + 13y^{11} + \cdots + 6y + 1)^6$
c_{11}	$(y^3 - y^2 + 2y - 1)^{24}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.938864 + 0.351889I$ $a = 1.080190 + 0.388507I$ $b = -0.577650 + 1.026610I$	$-3.65041 - 3.54405I$	0
$u = 0.938864 - 0.351889I$ $a = 1.080190 - 0.388507I$ $b = -0.577650 - 1.026610I$	$-3.65041 + 3.54405I$	0
$u = -0.695969 + 0.703547I$ $a = -1.158640 - 0.101005I$ $b = 0.419002 + 0.949358I$	$-0.47337 + 2.47502I$	0
$u = -0.695969 - 0.703547I$ $a = -1.158640 + 0.101005I$ $b = 0.419002 - 0.949358I$	$-0.47337 - 2.47502I$	0
$u = -0.896798 + 0.544160I$ $a = 0.615230 + 0.373310I$ $b = -0.345138 - 1.320250I$	$-4.61095 + 0.35310I$	0
$u = -0.896798 - 0.544160I$ $a = 0.615230 - 0.373310I$ $b = -0.345138 + 1.320250I$	$-4.61095 - 0.35310I$	0
$u = 0.895151 + 0.285594I$ $a = -0.765387 + 0.244193I$ $b = 0.55798 - 1.40222I$	$-5.97151 - 4.24921I$	0
$u = 0.895151 - 0.285594I$ $a = -0.765387 - 0.244193I$ $b = 0.55798 + 1.40222I$	$-5.97151 + 4.24921I$	0
$u = -0.950167 + 0.477676I$ $a = -1.051750 + 0.255184I$ $b = 0.893429 + 0.652076I$	$-3.65041 + 2.11219I$	0
$u = -0.950167 - 0.477676I$ $a = -1.051750 - 0.255184I$ $b = 0.893429 - 0.652076I$	$-3.65041 - 2.11219I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.683356+0.629564I$ $a=-1.237700-0.050269I$ $b=\ \ 1.079820+0.047803I$	$-1.83393+7.07733I$	0
$u=-0.683356-0.629564I$ $a=-1.237700+0.050269I$ $b=\ \ 1.079820-0.047803I$	$-1.83393-7.07733I$	0
$u=-0.875823+0.032748I$ $a=-0.968691-0.886691I$ $b=\ \ 0.28771-1.42938I$	$-9.82586-4.31046I$	0
$u=-0.875823-0.032748I$ $a=-0.968691+0.886691I$ $b=\ \ 0.28771+1.42938I$	$-9.82586+4.31046I$	0
$u=-1.139340+0.018524I$ $a=-0.759301-0.666112I$ $b=-0.074632-0.480507I$	$-3.65041-3.54405I$	0
$u=-1.139340-0.018524I$ $a=-0.759301+0.666112I$ $b=-0.074632+0.480507I$	$-3.65041+3.54405I$	0
$u=-0.902629+0.771402I$ $a=-0.969350-0.003209I$ $b=\ \ 1.43937+0.34561I$	$-5.95086+5.84119I$	0
$u=-0.902629-0.771402I$ $a=-0.969350+0.003209I$ $b=\ \ 1.43937-0.34561I$	$-5.95086-5.84119I$	0
$u=-0.800373+0.084657I$ $a=\ \ 0.932723+0.098656I$ $b=-0.83388+1.77828I$	$-13.6064-7.8013I$	0
$u=-0.800373-0.084657I$ $a=\ \ 0.932723-0.098656I$ $b=-0.83388-1.77828I$	$-13.6064+7.8013I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.795207+0.114501I$ $a=-0.94886-1.07332I$ $b=\ \ 0.15311-1.42762I$	$-9.46883+4.97322I$	0
$u=-0.795207-0.114501I$ $a=-0.94886+1.07332I$ $b=\ \ 0.15311+1.42762I$	$-9.46883-4.97322I$	0
$u=\ \ 0.798362+0.043303I$ $a=\ \ 1.04537-0.98969I$ $b=-0.215067-1.374770I$	$-5.95086-0.18495I$	0
$u=\ \ 0.798362-0.043303I$ $a=\ \ 1.04537+0.98969I$ $b=-0.215067+1.374770I$	$-5.95086+0.18495I$	0
$u=\ \ 0.897012+0.814806I$ $a=\ \ 0.949236-0.031863I$ $b=-1.50801+0.30673I$	$-9.4688-10.6295I$	0
$u=\ \ 0.897012-0.814806I$ $a=\ \ 0.949236+0.031863I$ $b=-1.50801-0.30673I$	$-9.4688+10.6295I$	0
$u=\ \ 0.626598+0.460862I$ $a=\ \ 1.47612+0.10306I$ $b=-0.787136-0.000822I$	$-0.47337-3.18123I$	0
$u=\ \ 0.626598-0.460862I$ $a=\ \ 1.47612-0.10306I$ $b=-0.787136+0.000822I$	$-0.47337+3.18123I$	0
$u=\ \ 0.952137+0.766731I$ $a=\ \ 0.941188+0.024391I$ $b=-1.46635+0.43270I$	$-9.82586-1.34579I$	0
$u=\ \ 0.952137-0.766731I$ $a=\ \ 0.941188-0.024391I$ $b=-1.46635-0.43270I$	$-9.82586+1.34579I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.755114 + 0.049866I$ $a = -0.995346 + 0.065731I$ $b = 0.75652 + 1.78049I$	$-10.08840 + 3.01307I$	$-10.38776 - 2.63251I$
$u = 0.755114 - 0.049866I$ $a = -0.995346 - 0.065731I$ $b = 0.75652 - 1.78049I$	$-10.08840 - 3.01307I$	$-10.38776 + 2.63251I$
$u = -0.947835 + 0.818100I$ $a = -0.141799 - 0.908246I$ $b = -0.642677 - 0.031476I$	$-5.95086 + 0.18495I$	0
$u = -0.947835 - 0.818100I$ $a = -0.141799 + 0.908246I$ $b = -0.642677 + 0.031476I$	$-5.95086 - 0.18495I$	0
$u = -0.704713 + 0.094468I$ $a = 1.052280 + 0.141059I$ $b = -0.73862 + 1.86694I$	$-13.96340 + 1.48234I$	$-14.1721 + 0.I$
$u = -0.704713 - 0.094468I$ $a = 1.052280 - 0.141059I$ $b = -0.73862 - 1.86694I$	$-13.96340 - 1.48234I$	$-14.1721 + 0.I$
$u = -0.993660 + 0.871930I$ $a = -0.870522 - 0.014263I$ $b = 0.404190 + 1.044340I$	$-0.47337 + 3.18123I$	0
$u = -0.993660 - 0.871930I$ $a = -0.870522 + 0.014263I$ $b = 0.404190 - 1.044340I$	$-0.47337 - 3.18123I$	0
$u = 0.936142 + 0.935766I$ $a = 0.070999 - 0.866642I$ $b = 0.723217 + 0.009280I$	$-9.46883 - 4.97322I$	0
$u = 0.936142 - 0.935766I$ $a = 0.070999 + 0.866642I$ $b = 0.723217 - 0.009280I$	$-9.46883 + 4.97322I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.080580 + 0.805746I$ $a = 0.191523 - 0.832126I$ $b = 0.672492 - 0.130639I$	$-9.82586 + 4.31046I$	0
$u = 1.080580 - 0.805746I$ $a = 0.191523 + 0.832126I$ $b = 0.672492 + 0.130639I$	$-9.82586 - 4.31046I$	0
$u = -1.022110 + 0.909480I$ $a = 0.412193 + 0.366771I$ $b = -0.125230 - 1.230710I$	$-4.61095 - 0.35310I$	0
$u = -1.022110 - 0.909480I$ $a = 0.412193 - 0.366771I$ $b = -0.125230 + 1.230710I$	$-4.61095 + 0.35310I$	0
$u = 0.357941 + 0.426085I$ $a = 2.03909 - 0.34633I$ $b = -0.269982 + 0.860169I$	$-1.83393 + 1.42109I$	$-2.31375 - 4.00366I$
$u = 0.357941 - 0.426085I$ $a = 2.03909 + 0.34633I$ $b = -0.269982 - 0.860169I$	$-1.83393 - 1.42109I$	$-2.31375 + 4.00366I$
$u = 1.37134 + 0.47480I$ $a = 0.739279 + 0.287203I$ $b = -0.100560 + 0.960389I$	$-3.65041 - 2.11219I$	0
$u = 1.37134 - 0.47480I$ $a = 0.739279 - 0.287203I$ $b = -0.100560 - 0.960389I$	$-3.65041 + 2.11219I$	0
$u = 0.505627 + 0.186361I$ $a = 2.00583 + 0.73385I$ $b = -0.391125 - 0.163404I$	$-0.47337 - 2.47502I$	$2.17667 + 2.34964I$
$u = 0.505627 - 0.186361I$ $a = 2.00583 - 0.73385I$ $b = -0.391125 + 0.163404I$	$-0.47337 + 2.47502I$	$2.17667 - 2.34964I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.21048 + 1.01361I$ $a = 0.728986 + 0.004921I$ $b = -0.376227 + 1.161460I$	$-1.83393 - 7.07733I$	0
$u = 1.21048 - 1.01361I$ $a = 0.728986 - 0.004921I$ $b = -0.376227 - 1.161460I$	$-1.83393 + 7.07733I$	0
$u = 0.310247 + 0.268232I$ $a = -1.39237 + 1.20381I$ $b = 0.21533 - 1.75580I$	$-7.78799 + 0.71593I$	$-14.9760 - 0.6487I$
$u = 0.310247 - 0.268232I$ $a = -1.39237 - 1.20381I$ $b = 0.21533 + 1.75580I$	$-7.78799 - 0.71593I$	$-14.9760 + 0.6487I$
$u = 0.44953 + 1.55332I$ $a = -0.129774 + 0.448422I$ $b = -0.02909 - 1.44080I$	$-7.78799 - 0.71593I$	0
$u = 0.44953 - 1.55332I$ $a = -0.129774 - 0.448422I$ $b = -0.02909 + 1.44080I$	$-7.78799 + 0.71593I$	0
$u = -0.266678 + 0.219690I$ $a = -0.58934 - 3.27861I$ $b = -0.039691 + 0.420211I$	$-1.83393 + 1.42109I$	$-2.31375 - 4.00366I$
$u = -0.266678 - 0.219690I$ $a = -0.58934 + 3.27861I$ $b = -0.039691 - 0.420211I$	$-1.83393 - 1.42109I$	$-2.31375 + 4.00366I$
$u = 1.23371 + 1.18663I$ $a = -0.317836 + 0.305705I$ $b = -0.036152 - 1.181350I$	$-5.97151 + 4.24921I$	0
$u = 1.23371 - 1.18663I$ $a = -0.317836 - 0.305705I$ $b = -0.036152 + 1.181350I$	$-5.97151 - 4.24921I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.65678 + 1.00359I$ $a = 0.586672 + 0.094210I$ $b = -0.196438 + 1.343260I$	$-5.95086 - 5.84119I$	0
$u = 1.65678 - 1.00359I$ $a = 0.586672 - 0.094210I$ $b = -0.196438 - 1.343260I$	$-5.95086 + 5.84119I$	0
$u = -1.73068 + 0.94927I$ $a = -0.571209 + 0.117082I$ $b = 0.140642 + 1.355310I$	$-9.82586 + 1.34579I$	0
$u = -1.73068 - 0.94927I$ $a = -0.571209 - 0.117082I$ $b = 0.140642 - 1.355310I$	$-9.82586 - 1.34579I$	0
$u = -1.68817 + 1.07636I$ $a = -0.569546 + 0.078087I$ $b = 0.217490 + 1.387090I$	$-9.4688 + 10.6295I$	0
$u = -1.68817 - 1.07636I$ $a = -0.569546 - 0.078087I$ $b = 0.217490 - 1.387090I$	$-9.4688 - 10.6295I$	0
$u = 1.32654 + 1.81813I$ $a = -0.197693 + 0.270954I$ $b = -0.246263 - 1.322600I$	$-10.08840 + 3.01307I$	0
$u = 1.32654 - 1.81813I$ $a = -0.197693 - 0.270954I$ $b = -0.246263 + 1.322600I$	$-10.08840 - 3.01307I$	0
$u = -1.27060 + 1.93825I$ $a = 0.178571 + 0.272404I$ $b = 0.254431 - 1.368670I$	$-13.96340 + 1.48234I$	0
$u = -1.27060 - 1.93825I$ $a = 0.178571 - 0.272404I$ $b = 0.254431 + 1.368670I$	$-13.96340 - 1.48234I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.43807+1.84219I$ $a=\quad 0.198760+0.254615I$ $b=\quad 0.285192-1.305970I$	$-13.6064-7.8013I$	0
$u=-1.43807-1.84219I$ $a=\quad 0.198760-0.254615I$ $b=\quad 0.285192+1.305970I$	$-13.6064+7.8013I$	0

III.

$\boldsymbol{I_3^u = \langle -2.28\times 10^8 u^{23} - 9.08\times 10^8 u^{22} + \cdots + 2.21\times 10^9 b - 1.62\times 10^7,\ 1.83\times 10^7 u^{23} - 2.15\times 10^6 u^{22} + \cdots + 2.21\times 10^9 a + 1.39\times 10^9,\ u^{24} - u^{23} + \cdots - 2u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} -0.00829322u^{23} + 0.000970997u^{22} + \cdots + 3.13796u - 0.627248 \\ 0.103010u^{23} + 0.410520u^{22} + \cdots - 1.00635u + 0.00732223 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0947168u^{23} + 0.411491u^{22} + \cdots + 2.13161u - 0.619926 \\ 0.103010u^{23} + 0.410520u^{22} + \cdots - 1.00635u + 0.00732223 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1.48647u^{23} - 0.847060u^{22} + \cdots + 3.78666u - 0.896990 \\ -0.513530u^{23} + 0.152940u^{22} + \cdots - 0.213342u - 0.896990 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.00829322u^{23} + 0.000970997u^{22} + \cdots + 2.13796u - 0.627248 \\ 0.103010u^{23} + 0.410520u^{22} + \cdots - 1.00635u + 0.00732223 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.785687u^{23} + 0.179932u^{22} + \cdots - 0.849337u + 1.35811 \\ 0.278821u^{23} - 0.517601u^{22} + \cdots + 2.15190u - 0.972941 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.639618u^{23} - 0.463929u^{22} + \cdots + 4.65504u - 3.70638 \\ 0.412506u^{23} + 0.450938u^{22} + \cdots - 2.44014u + 0.797252 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1.22661u^{23} + 0.892452u^{22} + \cdots - 2.34404u + 2.86926 \\ 0.699270u^{23} - 0.972534u^{22} + \cdots + 4.68130u - 2.44294 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.991707u^{23} + 1.00097u^{22} + \cdots - 0.862039u + 1.37275 \\ u^{23} - u^{22} + \cdots + 4u - 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.627248u^{23} + 0.635541u^{22} + \cdots - 5.12240u - 0.883465 \\ 0.520852u^{23} - 0.263272u^{22} + \cdots + 0.857176u + 0.888697 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{5968239010}{2211913739}u^{23} - \frac{1305237733}{2211913739}u^{22} + \cdots - \frac{9063563809}{2211913739}u - \frac{14136299053}{2211913739}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} - 14u^{23} + \cdots - 6u + 1$
c_2	$u^{24} - 7u^{22} + \cdots - 3u^2 + 1$
c_3, c_{10}	$u^{24} + 12u^{22} + \cdots + u + 1$
c_4, c_8	$u^{24} - u^{23} + \cdots - 2u + 1$
c_5, c_9	$u^{24} + 12u^{22} + \cdots - u + 1$
c_6	$u^{24} - 7u^{22} + \cdots - 3u^2 + 1$
c_7	$u^{24} + 9u^{22} + \cdots - 3u^2 + 1$
c_{11}	$u^{24} + 7u^{23} + \cdots - 2u^2 + 1$
c_{12}	$u^{24} + 9u^{22} + \cdots - 3u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} - 2y^{23} + \cdots - 10y + 1$
c_2, c_6	$y^{24} - 14y^{23} + \cdots - 6y + 1$
c_3, c_5, c_9 c_{10}	$y^{24} + 24y^{23} + \cdots + 17y + 1$
c_4, c_8	$y^{24} - 7y^{23} + \cdots + 2y + 1$
c_7, c_{12}	$y^{24} + 18y^{23} + \cdots - 6y + 1$
c_{11}	$y^{24} - 9y^{23} + \cdots - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.997020 + 0.104625I$ $a = 0.704736 + 0.787573I$ $b = -0.468500 + 0.816667I$	$-3.55627 - 4.90016I$	$-6.21271 + 9.68873I$
$u = 0.997020 - 0.104625I$ $a = 0.704736 - 0.787573I$ $b = -0.468500 - 0.816667I$	$-3.55627 + 4.90016I$	$-6.21271 - 9.68873I$
$u = -0.703505 + 0.735651I$ $a = 0.632532 - 0.188269I$ $b = 0.47937 - 1.38166I$	$-12.2595 - 7.5343I$	$-6.02935 + 3.97375I$
$u = -0.703505 - 0.735651I$ $a = 0.632532 + 0.188269I$ $b = 0.47937 + 1.38166I$	$-12.2595 + 7.5343I$	$-6.02935 - 3.97375I$
$u = 0.103114 + 0.971310I$ $a = -0.167285 + 0.634171I$ $b = -0.07410 - 1.59638I$	$-7.17860 - 0.99670I$	$-0.90029 + 7.28189I$
$u = 0.103114 - 0.971310I$ $a = -0.167285 - 0.634171I$ $b = -0.07410 + 1.59638I$	$-7.17860 + 0.99670I$	$-0.90029 - 7.28189I$
$u = -0.576512 + 0.863171I$ $a = 0.596740 + 0.076087I$ $b = 0.40597 - 1.48848I$	$-12.74230 + 1.79763I$	$-6.41469 - 2.68582I$
$u = -0.576512 - 0.863171I$ $a = 0.596740 - 0.076087I$ $b = 0.40597 + 1.48848I$	$-12.74230 - 1.79763I$	$-6.41469 + 2.68582I$
$u = 0.592444 + 0.738728I$ $a = -0.764665 - 0.046892I$ $b = -0.40249 - 1.39892I$	$-8.77245 + 2.65917I$	$-3.02353 - 0.59148I$
$u = 0.592444 - 0.738728I$ $a = -0.764665 + 0.046892I$ $b = -0.40249 + 1.39892I$	$-8.77245 - 2.65917I$	$-3.02353 + 0.59148I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.776941+0.496560I$ $a=-1.53086+0.07470I$ $b=\ \ 0.287961+0.711322I$	$-1.18860+3.44984I$	$-3.33019-8.27194I$
$u=-0.776941-0.496560I$ $a=-1.53086-0.07470I$ $b=\ \ 0.287961-0.711322I$	$-1.18860-3.44984I$	$-3.33019+8.27194I$
$u=-1.144190+0.324015I$ $a=-0.783368+0.352427I$ $b=\ \ 0.462181+0.681220I$	$-2.31746+2.30300I$	$-0.67195-2.29633I$
$u=-1.144190-0.324015I$ $a=-0.783368-0.352427I$ $b=\ \ 0.462181-0.681220I$	$-2.31746-2.30300I$	$-0.67195+2.29633I$
$u=-1.096320+0.676877I$ $a=-0.882148-0.062508I$ $b=\ \ 0.347449+0.585870I$	$-2.59301+3.66859I$	$-4.93513-4.53769I$
$u=-1.096320-0.676877I$ $a=-0.882148+0.062508I$ $b=\ \ 0.347449-0.585870I$	$-2.59301-3.66859I$	$-4.93513+4.53769I$
$u=\ \ 0.628567+0.303903I$ $a=\ \ 2.25583+0.83507I$ $b=-0.264677+0.810740I$	$-2.29425+0.73380I$	$-8.11311+4.27669I$
$u=\ \ 0.628567-0.303903I$ $a=\ \ 2.25583-0.83507I$ $b=-0.264677-0.810740I$	$-2.29425-0.73380I$	$-8.11311-4.27669I$
$u=\ \ 1.126770+0.807829I$ $a=\ \ 0.801307-0.169418I$ $b=-0.323926+0.546394I$	$-5.53609-8.08592I$	$-8.83517+7.64981I$
$u=\ \ 1.126770-0.807829I$ $a=\ \ 0.801307+0.169418I$ $b=-0.323926-0.546394I$	$-5.53609+8.08592I$	$-8.83517-7.64981I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.25611 + 0.66382I$ $a = 0.737015 - 0.016313I$ $b = -0.390803 + 0.546724I$	$-6.03991 + 0.15086I$	$-8.95024 + 1.76304I$
$u = 1.25611 - 0.66382I$ $a = 0.737015 + 0.016313I$ $b = -0.390803 - 0.546724I$	$-6.03991 - 0.15086I$	$-8.95024 - 1.76304I$
$u = 0.093446 + 0.516975I$ $a = -1.09983 + 2.58045I$ $b = -0.058427 - 1.290360I$	$-4.60878 + 2.39167I$	$-5.58364 - 4.20201I$
$u = 0.093446 - 0.516975I$ $a = -1.09983 - 2.58045I$ $b = -0.058427 + 1.290360I$	$-4.60878 - 2.39167I$	$-5.58364 + 4.20201I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^{12}+7u^{11}+\cdots+2u+1)^6)(u^{24}-14u^{23}+\cdots-6u+1)$ $\cdot(u^{39}+21u^{38}+\cdots+16u+64)$
c_2	$((u^{12}+u^{11}+\cdots+2u+1)^6)(u^{24}-7u^{22}+\cdots-3u^2+1)$ $\cdot(u^{39}-7u^{38}+\cdots-68u+8)$
c_3, c_{10}	$(u^{24}+12u^{22}+\cdots+u+1)(u^{39}+20u^{37}+\cdots-u+1)$ $\cdot(u^{72}+u^{71}+\cdots+83070u+21519)$
c_4, c_8	$(u^{24}-u^{23}+\cdots-2u+1)(u^{39}+u^{38}+\cdots+7u^2+1)$ $\cdot(u^{72}+3u^{71}+\cdots-300u+1393)$
c_5, c_9	$(u^{24}+12u^{22}+\cdots-u+1)(u^{39}+20u^{37}+\cdots-u+1)$ $\cdot(u^{72}+u^{71}+\cdots+83070u+21519)$
c_6	$((u^{12}+u^{11}+\cdots+2u+1)^6)(u^{24}-7u^{22}+\cdots-3u^2+1)$ $\cdot(u^{39}-7u^{38}+\cdots-68u+8)$
c_7	$((u^{12}+3u^{11}+\cdots+2u+1)^6)(u^{24}+9u^{22}+\cdots-3u^2+1)$ $\cdot(u^{39}-21u^{38}+\cdots-10052u+1192)$
c_{11}	$((u^3+u^2-1)^{24})(u^{24}+7u^{23}+\cdots-2u^2+1)$ $\cdot(u^{39}-36u^{38}+\cdots+90112u-4096)$
c_{12}	$((u^{12}+3u^{11}+\cdots+2u+1)^6)(u^{24}+9u^{22}+\cdots-3u^2+1)$ $\cdot(u^{39}-21u^{38}+\cdots-10052u+1192)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^{12}-3y^{11}+\cdots+6y+1)^6)(y^{24}-2y^{23}+\cdots-10y+1)$ $\cdot(y^{39}-5y^{38}+\cdots-2816y-4096)$
c_2, c_6	$((y^{12}-7y^{11}+\cdots-2y+1)^6)(y^{24}-14y^{23}+\cdots-6y+1)$ $\cdot(y^{39}-21y^{38}+\cdots+16y-64)$
c_3, c_5, c_9 c_{10}	$(y^{24}+24y^{23}+\cdots+17y+1)(y^{39}+40y^{38}+\cdots+19y-1)$ $\cdot(y^{72}+63y^{71}+\cdots+7005211128y+463067361)$
c_4, c_8	$(y^{24}-7y^{23}+\cdots+2y+1)(y^{39}-15y^{38}+\cdots-14y-1)$ $\cdot(y^{72}-21y^{71}+\cdots-73762984y+1940449)$
c_7, c_{12}	$((y^{12}+13y^{11}+\cdots+6y+1)^6)(y^{24}+18y^{23}+\cdots-6y+1)$ $\cdot(y^{39}+31y^{38}+\cdots+64653328y-1420864)$
c_{11}	$((y^3-y^2+2y-1)^{24})(y^{24}-9y^{23}+\cdots-4y+1)$ $\cdot(y^{39}-10y^{38}+\cdots+125829120y-16777216)$