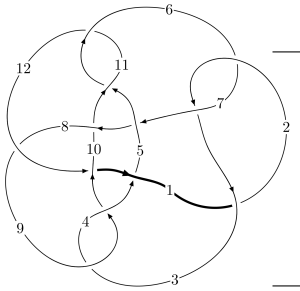
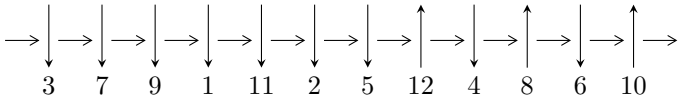
$12a_{0616}$ $(K12a_{0616})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 1.87565 \times 10^{37} u^{44} + 2.88467 \times 10^{37} u^{43} + \cdots + 1.79366 \times 10^{38} b - 2.28855 \times 10^{38}, \\
&\quad - 6.32625 \times 10^{36} u^{44} - 1.60162 \times 10^{37} u^{43} + \cdots + 1.79366 \times 10^{38} a + 2.72634 \times 10^{38}, \\
&\quad u^{45} - 16 u^{43} + \cdots + 8u + 8 \rangle \\
I_2^u &= \langle 1.05402 \times 10^{619} u^{135} - 1.25591 \times 10^{619} u^{134} + \cdots + 1.02383 \times 10^{619} b - 5.96436 \times 10^{620}, \\
&\quad - 1.18864 \times 10^{621} u^{135} + 2.70367 \times 10^{621} u^{134} + \cdots + 9.11212 \times 10^{620} a + 2.71391 \times 10^{623}, \\
&\quad u^{136} - u^{135} + \cdots - 1494u - 89 \rangle \\
I_3^u &= \langle -u^{10} + 4u^8 - 6u^6 + u^5 + 3u^4 - 2u^3 + b + u - 1,\ u^{10} - u^9 - 5u^8 + 4u^7 + 9u^6 - 6u^5 - 5u^4 + 3u^3 - 2u^2 + a \\
&\quad u^{11} - 5u^9 + 9u^7 - u^6 - 5u^5 + 3u^4 - 2u^3 - 2u^2 + 2u - 1 \rangle \\
I_4^u &= \langle -1.69543 \times 10^{27} u^{37} + 1.23907 \times 10^{27} u^{36} + \cdots + 5.29826 \times 10^{24} b + 1.95738 \times 10^{28}, \\
&\quad - 1.69867 \times 10^{27} u^{37} + 1.42937 \times 10^{27} u^{36} + \cdots + 5.29826 \times 10^{24} a + 1.47189 \times 10^{28},\ u^{38} - 7u^{36} + \cdots - 8u -
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 230 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. $\boldsymbol{I_1^u = \langle 1.88 \times 10^{37} u^{44} + 2.88 \times 10^{37} u^{43} + \cdots + 1.79 \times 10^{38} b - 2.29 \times 10^{38},\ -6.33 \times 10^{36} u^{44} - 1.60 \times 10^{37} u^{43} + \cdots + 1.79 \times 10^{38} a + 2.73 \times 10^{38},\ u^{45} - 16u^{43} + \cdots + 8u + 8 \rangle}$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} 0.0352702u^{44} + 0.0892935u^{43} + \cdots + 0.195710u - 1.51999 \\ -0.104571u^{44} - 0.160827u^{43} + \cdots + 2.45646u + 1.27591 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0844913u^{44} - 0.185903u^{43} + \cdots - 0.0125427u + 2.53802 \\ 0.127167u^{44} + 0.359944u^{43} + \cdots - 2.61521u - 2.76088 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0426760u^{44} + 0.174042u^{43} + \cdots - 2.62775u - 0.222856 \\ 0.127167u^{44} + 0.359944u^{43} + \cdots - 2.61521u - 2.76088 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.100777u^{44} + 0.0808879u^{43} + \cdots - 1.02805u + 0.638734 \\ -0.186080u^{44} - 0.0634539u^{43} + \cdots + 0.572085u + 0.149929 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.266430u^{44} - 0.128670u^{43} + \cdots + 1.92246u - 0.109400 \\ -0.0702591u^{44} + 0.300563u^{43} + \cdots + 0.746284u - 1.52508 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0625033u^{44} - 0.153291u^{43} + \cdots + 0.239176u + 1.76637 \\ 0.128670u^{44} + 0.318945u^{43} + \cdots - 2.02204u - 2.13144 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.130212u^{44} + 0.255879u^{43} + \cdots - 3.03747u - 2.28189 \\ -0.111369u^{44} - 0.357286u^{43} + \cdots + 3.45797u + 1.82626 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0661668u^{44} + 0.165654u^{43} + \cdots - 1.78287u - 0.365073 \\ -0.171893u^{44} + 0.256339u^{43} + \cdots - 1.05904u - 2.69352 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.795897u^{44} - 0.590986u^{43} + \cdots + 11.4411u - 4.15369$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{45}+18u^{44}+\cdots+380u+16$
c_2, c_6	$u^{45}-10u^{44}+\cdots-42u+4$
c_3, c_5, c_9 c_{11}	$u^{45}-16u^{43}+\cdots+8u+8$
c_4, c_7	$u^{45}-2u^{44}+\cdots-40u+7$
c_8	$u^{45}-24u^{44}+\cdots-7732u+1004$
c_{10}, c_{12}	$u^{45}+2u^{44}+\cdots+7u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{45} + 14y^{44} + \cdots + 10480y - 256$
c_2, c_6	$y^{45} - 18y^{44} + \cdots + 380y - 16$
c_3, c_5, c_9 c_{11}	$y^{45} - 32y^{44} + \cdots + 192y - 64$
c_4, c_7	$y^{45} - 24y^{44} + \cdots + 1446y - 49$
c_8	$y^{45} + 8y^{44} + \cdots + 10364936y - 1008016$
c_{10}, c_{12}	$y^{45} + 30y^{44} + \cdots + 41y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.904711+0.385250I$ $a=\ \ 0.775036+0.660431I$ $b=-0.673502-0.733229I$	$-0.249509+1.130960I$	$-6.86085-2.19066I$
$u=-0.904711-0.385250I$ $a=\ \ 0.775036-0.660431I$ $b=-0.673502+0.733229I$	$-0.249509-1.130960I$	$-6.86085+2.19066I$
$u=\ \ 0.291429+0.928185I$ $a=-0.43451-1.45901I$ $b=\ \ 0.540257+0.739442I$	$2.51773+3.15764I$	$-2.59892-1.94301I$
$u=\ \ 0.291429-0.928185I$ $a=-0.43451+1.45901I$ $b=\ \ 0.540257-0.739442I$	$2.51773-3.15764I$	$-2.59892+1.94301I$
$u=\ \ 0.959241+0.088882I$ $a=-0.730428+0.364288I$ $b=\ \ 0.803063-0.960107I$	$-2.83419+2.13670I$	$-12.63162-3.17567I$
$u=\ \ 0.959241-0.088882I$ $a=-0.730428-0.364288I$ $b=\ \ 0.803063+0.960107I$	$-2.83419-2.13670I$	$-12.63162+3.17567I$
$u=-1.022320+0.200125I$ $a=\ \ 0.84782+1.55652I$ $b=\ \ 1.145680-0.824759I$	$-3.88575+4.69033I$	$-15.6882-1.6037I$
$u=-1.022320-0.200125I$ $a=\ \ 0.84782-1.55652I$ $b=\ \ 1.145680+0.824759I$	$-3.88575-4.69033I$	$-15.6882+1.6037I$
$u=-0.227858+1.046760I$ $a=-0.46979-1.39136I$ $b=\ \ 1.046270+0.629755I$	$1.01643-8.38679I$	$-5.74189+7.05298I$
$u=-0.227858-1.046760I$ $a=-0.46979+1.39136I$ $b=\ \ 1.046270-0.629755I$	$1.01643+8.38679I$	$-5.74189-7.05298I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.020840 + 0.474470I$ $a = -0.30089 + 1.87615I$ $b = -0.965362 - 0.683314I$	$-1.09453 - 6.53330I$	$-6.25242 + 7.09488I$
$u = 1.020840 - 0.474470I$ $a = -0.30089 - 1.87615I$ $b = -0.965362 + 0.683314I$	$-1.09453 + 6.53330I$	$-6.25242 - 7.09488I$
$u = 0.978894 + 0.615603I$ $a = 1.11563 - 1.20609I$ $b = -0.581777 + 0.504686I$	$-5.20551 - 3.24310I$	$-11.09110 + 2.51409I$
$u = 0.978894 - 0.615603I$ $a = 1.11563 + 1.20609I$ $b = -0.581777 - 0.504686I$	$-5.20551 + 3.24310I$	$-11.09110 - 2.51409I$
$u = -1.163800 + 0.253636I$ $a = 0.203998 + 1.019120I$ $b = 0.52185 - 1.33849I$	$-3.59461 + 7.16172I$	$-13.9703 - 16.0708I$
$u = -1.163800 - 0.253636I$ $a = 0.203998 - 1.019120I$ $b = 0.52185 + 1.33849I$	$-3.59461 - 7.16172I$	$-13.9703 + 16.0708I$
$u = -0.018703 + 0.798685I$ $a = 0.055612 - 0.481025I$ $b = -1.034700 + 0.034835I$	$-2.63491 - 2.04726I$	$-9.46082 + 3.30363I$
$u = -0.018703 - 0.798685I$ $a = 0.055612 + 0.481025I$ $b = -1.034700 - 0.034835I$	$-2.63491 + 2.04726I$	$-9.46082 - 3.30363I$
$u = 1.151030 + 0.417515I$ $a = 0.725309 - 0.192269I$ $b = 0.305939 + 0.102470I$	$-5.78366 - 3.80601I$	$-9.91407 + 4.67226I$
$u = 1.151030 - 0.417515I$ $a = 0.725309 + 0.192269I$ $b = 0.305939 - 0.102470I$	$-5.78366 + 3.80601I$	$-9.91407 - 4.67226I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.248160+0.077435I$ $a=-1.32534+0.49770I$ $b=-1.141000-0.123861I$	$-10.48110+2.35369I$	$-18.9561-2.8828I$
$u=-1.248160-0.077435I$ $a=-1.32534-0.49770I$ $b=-1.141000+0.123861I$	$-10.48110-2.35369I$	$-18.9561+2.8828I$
$u=1.252930+0.009637I$ $a=0.284744+0.342965I$ $b=1.47674-0.38102I$	$-7.85271+0.47117I$	$-15.8357-5.3347I$
$u=1.252930-0.009637I$ $a=0.284744-0.342965I$ $b=1.47674+0.38102I$	$-7.85271-0.47117I$	$-15.8357+5.3347I$
$u=1.267410+0.296047I$ $a=-0.0569045+0.0061166I$ $b=0.475570-0.657004I$	$-5.73835-4.35066I$	$-13.57540+0.I$
$u=1.267410-0.296047I$ $a=-0.0569045-0.0061166I$ $b=0.475570+0.657004I$	$-5.73835+4.35066I$	$-13.57540+0.I$
$u=-1.110060+0.763457I$ $a=-0.05040-2.03163I$ $b=-1.018720+0.538721I$	$-6.57662+7.58601I$	0
$u=-1.110060-0.763457I$ $a=-0.05040+2.03163I$ $b=-1.018720-0.538721I$	$-6.57662-7.58601I$	0
$u=-1.359340+0.258516I$ $a=1.15485+1.06411I$ $b=1.052060-0.610951I$	$-7.36488+9.33824I$	0
$u=-1.359340-0.258516I$ $a=1.15485-1.06411I$ $b=1.052060+0.610951I$	$-7.36488-9.33824I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.282780+0.587640I$ $a=-0.763655-0.695209I$ $b=\ \ 0.492075+1.014950I$	$-3.7445+14.5021I$	0
$u=-1.282780-0.587640I$ $a=-0.763655+0.695209I$ $b=\ \ 0.492075-1.014950I$	$-3.7445-14.5021I$	0
$u=\ \ 0.058203+0.585764I$ $a=-0.60903+2.25179I$ $b=\ \ 0.926049-0.672054I$	$1.38722+3.01128I$	$-3.65555-3.26283I$
$u=\ \ 0.058203-0.585764I$ $a=-0.60903-2.25179I$ $b=\ \ 0.926049+0.672054I$	$1.38722-3.01128I$	$-3.65555+3.26283I$
$u=-1.298980+0.557564I$ $a=\ \ 0.345931+0.131800I$ $b=\ \ 1.017790+0.327046I$	$-7.94405+1.42176I$	0
$u=-1.298980-0.557564I$ $a=\ \ 0.345931-0.131800I$ $b=\ \ 1.017790-0.327046I$	$-7.94405-1.42176I$	0
$u=\ \ 1.347670+0.427366I$ $a=-0.370615+0.537392I$ $b=-1.394210-0.057858I$	$-11.1522-11.4348I$	0
$u=\ \ 1.347670-0.427366I$ $a=-0.370615-0.537392I$ $b=-1.394210+0.057858I$	$-11.1522+11.4348I$	0
$u=\ \ 0.283063+0.486915I$ $a=-1.61731+0.55400I$ $b=\ \ 0.295704-0.516656I$	$1.74313+1.16289I$	$2.28789-2.49598I$
$u=\ \ 0.283063-0.486915I$ $a=-1.61731-0.55400I$ $b=\ \ 0.295704+0.516656I$	$1.74313-1.16289I$	$2.28789+2.49598I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.117616+0.550594I$ $a=-1.18286+1.76664I$ $b=\ \ 0.803679-0.659214I$	$1.77588+2.15091I$	$-4.72793-2.98792I$
$u=-0.117616-0.550594I$ $a=-1.18286-1.76664I$ $b=\ \ 0.803679+0.659214I$	$1.77588-2.15091I$	$-4.72793+2.98792I$
$u=\ \ 1.33191+0.63733I$ $a=\ \ 0.46686-1.74546I$ $b=\ \ 1.164940+0.710104I$	$-5.8474-20.7422I$	0
$u=\ \ 1.33191-0.63733I$ $a=\ \ 0.46686+1.74546I$ $b=\ \ 1.164940-0.710104I$	$-5.8474+20.7422I$	0
$u=-0.376602$ $a=-0.128105$ $b=-0.516838$	-0.695273	-14.5010

II. $I_2^u = \langle 1.05 \times 10^{619} u^{135} - 1.26 \times 10^{619} u^{134} + \cdots + 1.02 \times 10^{619} b - 5.96 \times 10^{620},\ -1.19 \times 10^{621} u^{135} + 2.70 \times 10^{621} u^{134} + \cdots + 9.11 \times 10^{620} a + 2.71 \times 10^{623},\ u^{136} - u^{135} + \cdots - 1494u - 89 \rangle$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} 1.30446u^{135} - 2.96712u^{134} + \cdots - 4742.96u - 297.835 \\ -1.02949u^{135} + 1.22668u^{134} + \cdots + 799.084u + 58.2551 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.09661u^{135} + 2.44759u^{134} + \cdots + 3627.11u + 227.336 \\ -0.172930u^{135} - 0.127330u^{134} + \cdots - 620.903u - 37.8494 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.26954u^{135} + 2.32026u^{134} + \cdots + 3006.21u + 189.486 \\ -0.172930u^{135} - 0.127330u^{134} + \cdots - 620.903u - 37.8494 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.00266u^{135} + 0.871325u^{134} + \cdots + 1587.86u + 115.545 \\ 0.0247029u^{135} - 0.235462u^{134} + \cdots - 632.856u - 37.5718 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.598205u^{135} + 0.431891u^{134} + \cdots - 759.069u - 46.0205 \\ 0.0784493u^{135} - 0.0845611u^{134} + \cdots + 425.706u + 28.2223 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.819782u^{135} + 1.79695u^{134} + \cdots + 2727.66u + 169.316 \\ -0.297854u^{135} + 0.0811558u^{134} + \cdots - 412.200u - 24.2248 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0821989u^{135} - 0.625403u^{134} + \cdots - 1545.30u - 107.137 \\ -0.298922u^{135} + 0.283406u^{134} + \cdots + 170.611u + 13.1531 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 2.35550u^{135} - 3.14795u^{134} + \cdots - 2226.09u - 157.879 \\ -0.438678u^{135} + 1.24542u^{134} + \cdots + 1399.86u + 85.6694 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 1.69391u^{135} - 6.14888u^{134} + \cdots - 9904.87u - 630.170$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{68}+32u^{67}+\cdots+16464u+1849)^2$
c_2, c_6	$(u^{68}+4u^{67}+\cdots-120u-43)^2$
c_3, c_5, c_9 c_{11}	$u^{136}-u^{135}+\cdots-1494u-89$
c_4, c_7	$u^{136}-3u^{135}+\cdots-5351856u+103993$
c_8	$(u^{68}+10u^{67}+\cdots+14u+1)^2$
c_{10}, c_{12}	$u^{136}+14u^{135}+\cdots-1293886u-83089$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{68}+12y^{67}+\cdots+42268244y+3418801)^2$
c_2, c_6	$(y^{68}-32y^{67}+\cdots-16464y+1849)^2$
c_3, c_5, c_9 c_{11}	$y^{136}-71y^{135}+\cdots+801262y+7921$
c_4, c_7	$y^{136}+9y^{135}+\cdots-15840027966342y+10814544049$
c_8	$(y^{68}+6y^{67}+\cdots-190y+1)^2$
c_{10}, c_{12}	$y^{136}-2y^{135}+\cdots+154307077926y+6903781921$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.925086 + 0.391915I$ $a = 1.36638 + 1.38167I$ $b = -0.820960 + 0.447182I$	$0.906398 + 0.207630I$	0
$u = 0.925086 - 0.391915I$ $a = 1.36638 - 1.38167I$ $b = -0.820960 - 0.447182I$	$0.906398 - 0.207630I$	0
$u = 0.989075$ $a = 0.712095$ $b = 1.51343$	-7.69031	0
$u = 0.969957 + 0.104435I$ $a = -1.17113 + 1.42725I$ $b = -0.953322 - 0.767248I$	$-2.91253 - 2.99862I$	0
$u = 0.969957 - 0.104435I$ $a = -1.17113 - 1.42725I$ $b = -0.953322 + 0.767248I$	$-2.91253 + 2.99862I$	0
$u = -0.976826 + 0.315814I$ $a = -1.44119 - 0.95354I$ $b = -1.153420 + 0.511740I$	$0.28525 + 4.98766I$	0
$u = -0.976826 - 0.315814I$ $a = -1.44119 + 0.95354I$ $b = -1.153420 - 0.511740I$	$0.28525 - 4.98766I$	0
$u = 0.345380 + 0.893987I$ $a = -0.27019 + 1.52843I$ $b = -0.335348 - 0.576748I$	$2.71790 + 0.57544I$	0
$u = 0.345380 - 0.893987I$ $a = -0.27019 - 1.52843I$ $b = -0.335348 + 0.576748I$	$2.71790 - 0.57544I$	0
$u = 0.973866 + 0.372475I$ $a = -1.19965 + 2.57130I$ $b = -0.897555 - 0.648418I$	$-0.58087 - 6.80332I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.973866 - 0.372475I$ $a = -1.19965 - 2.57130I$ $b = -0.897555 + 0.648418I$	$-0.58087 + 6.80332I$	0
$u = \ 0.952664$ $a = -1.01518$ $b = -1.75919$	-7.40980	0
$u = \ 0.936933 + 0.140070I$ $a = \ 1.58819 - 1.91607I$ $b = -0.719953 + 0.709662I$	$-2.18721 - 4.85558I$	0
$u = \ 0.936933 - 0.140070I$ $a = \ 1.58819 + 1.91607I$ $b = -0.719953 - 0.709662I$	$-2.18721 + 4.85558I$	0
$u = -0.762365 + 0.728204I$ $a = -1.25225 - 1.03421I$ $b = \ 0.905636 + 0.400851I$	$-5.57459 - 1.63327I$	0
$u = -0.762365 - 0.728204I$ $a = -1.25225 + 1.03421I$ $b = \ 0.905636 - 0.400851I$	$-5.57459 + 1.63327I$	0
$u = -1.026590 + 0.262553I$ $a = -2.43774 - 1.24961I$ $b = -0.926794 + 0.477530I$	$0.50785 + 3.58327I$	0
$u = -1.026590 - 0.262553I$ $a = -2.43774 + 1.24961I$ $b = -0.926794 - 0.477530I$	$0.50785 - 3.58327I$	0
$u = -0.903087 + 0.254105I$ $a = \ 0.98467 - 2.69637I$ $b = -0.964612 + 0.657589I$	$-2.93934 + 10.11590I$	0
$u = -0.903087 - 0.254105I$ $a = \ 0.98467 + 2.69637I$ $b = -0.964612 - 0.657589I$	$-2.93934 - 10.11590I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.609437 + 0.711249I$ $a = -1.300460 + 0.297499I$ $b = 0.927180 - 0.419329I$	$0.27458 + 1.60627I$	0
$u = 0.609437 - 0.711249I$ $a = -1.300460 - 0.297499I$ $b = 0.927180 + 0.419329I$	$0.27458 - 1.60627I$	0
$u = -0.970003 + 0.445147I$ $a = 1.361510 + 0.310735I$ $b = -0.761870 - 0.715848I$	$-0.18514 + 1.56099I$	0
$u = -0.970003 - 0.445147I$ $a = 1.361510 - 0.310735I$ $b = -0.761870 + 0.715848I$	$-0.18514 - 1.56099I$	0
$u = -0.417474 + 0.986241I$ $a = -0.19584 + 1.74464I$ $b = 0.646187 - 0.741324I$	$2.74505 + 2.93414I$	0
$u = -0.417474 - 0.986241I$ $a = -0.19584 - 1.74464I$ $b = 0.646187 + 0.741324I$	$2.74505 - 2.93414I$	0
$u = 0.912998 + 0.121195I$ $a = 3.40408 - 1.48710I$ $b = 0.784183 + 0.435265I$	$-2.05944 + 3.53631I$	0
$u = 0.912998 - 0.121195I$ $a = 3.40408 + 1.48710I$ $b = 0.784183 - 0.435265I$	$-2.05944 - 3.53631I$	0
$u = -0.199454 + 1.061150I$ $a = 0.25360 - 1.66075I$ $b = -0.479086 + 0.860207I$	$-0.33553 - 8.62751I$	0
$u = -0.199454 - 1.061150I$ $a = 0.25360 + 1.66075I$ $b = -0.479086 - 0.860207I$	$-0.33553 + 8.62751I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.667865+0.624724I$ $a=\ \ 0.387361+0.749515I$ $b=-0.761870-0.715848I$	$-0.18514+1.56099I$	0
$u=-0.667865-0.624724I$ $a=\ \ 0.387361-0.749515I$ $b=-0.761870+0.715848I$	$-0.18514-1.56099I$	0
$u=-0.212818+1.074840I$ $a=-0.748943-0.360920I$ $b=\ \ 1.199230+0.069488I$	$-6.23292+6.40778I$	0
$u=-0.212818-1.074840I$ $a=-0.748943+0.360920I$ $b=\ \ 1.199230-0.069488I$	$-6.23292-6.40778I$	0
$u=\ \ 1.030740+0.372194I$ $a=\ \ 1.05992-1.40506I$ $b=\ \ 1.223400+0.666080I$	$-3.14096-11.89110I$	0
$u=\ \ 1.030740-0.372194I$ $a=\ \ 1.05992+1.40506I$ $b=\ \ 1.223400-0.666080I$	$-3.14096+11.89110I$	0
$u=\ \ 0.838147+0.712291I$ $a=\ \ 0.069704+1.370090I$ $b=-0.897555-0.648418I$	$-0.58087-6.80332I$	0
$u=\ \ 0.838147-0.712291I$ $a=\ \ 0.069704-1.370090I$ $b=-0.897555+0.648418I$	$-0.58087+6.80332I$	0
$u=-0.827154+0.299291I$ $a=-0.589029+0.033834I$ $b=\ \ 0.254703+1.067970I$	$-0.26659+5.76949I$	0
$u=-0.827154-0.299291I$ $a=-0.589029-0.033834I$ $b=\ \ 0.254703-1.067970I$	$-0.26659-5.76949I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.129002+0.869008I$ $a=\ \ 0.145241-0.920534I$ $b=-1.016810+0.483226I$	$-4.57419+3.97041I$	0
$u=-0.129002-0.869008I$ $a=\ \ 0.145241+0.920534I$ $b=-1.016810-0.483226I$	$-4.57419-3.97041I$	0
$u=-0.843800+0.191474I$ $a=\ \ 1.95784+1.93264I$ $b=\ \ 0.927180-0.419329I$	$0.27458+1.60627I$	0
$u=-0.843800-0.191474I$ $a=\ \ 1.95784-1.93264I$ $b=\ \ 0.927180+0.419329I$	$0.27458-1.60627I$	0
$u=-0.782237+0.368356I$ $a=-1.87574+1.11859I$ $b=\ \ 0.957635+0.489487I$	$-2.72091-7.35302I$	0
$u=-0.782237-0.368356I$ $a=-1.87574-1.11859I$ $b=\ \ 0.957635-0.489487I$	$-2.72091+7.35302I$	0
$u=\ \ 0.728026+0.438957I$ $a=\ \ 0.408231+0.497241I$ $b=-0.335348+0.576748I$	$2.71790-0.57544I$	0
$u=\ \ 0.728026-0.438957I$ $a=\ \ 0.408231-0.497241I$ $b=-0.335348-0.576748I$	$2.71790+0.57544I$	0
$u=-0.051573+1.161320I$ $a=-0.60038+1.33025I$ $b=\ \ 0.856982-0.653873I$	$1.91544+1.58382I$	0
$u=-0.051573-1.161320I$ $a=-0.60038-1.33025I$ $b=\ \ 0.856982+0.653873I$	$1.91544-1.58382I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.142080+0.244273I$ $a=-0.249359-0.653884I$ $b=-0.252896+0.577977I$	$-2.57074+0.03213I$	0
$u=-1.142080-0.244273I$ $a=-0.249359+0.653884I$ $b=-0.252896-0.577977I$	$-2.57074-0.03213I$	0
$u=\ \ 0.753902+0.345217I$ $a=-0.523155-0.823578I$ $b=\ \ 0.646187+0.741324I$	$2.74505-2.93414I$	0
$u=\ \ 0.753902-0.345217I$ $a=-0.523155+0.823578I$ $b=\ \ 0.646187-0.741324I$	$2.74505+2.93414I$	0
$u=\ \ 1.152740+0.258537I$ $a=-0.867906-0.182712I$ $b=-1.276920+0.320168I$	$-10.08000+0.06598I$	0
$u=\ \ 1.152740-0.258537I$ $a=-0.867906+0.182712I$ $b=-1.276920-0.320168I$	$-10.08000-0.06598I$	0
$u=\ \ 0.468915+1.102320I$ $a=-0.84436+1.29181I$ $b=\ \ 1.031160-0.685683I$	$1.58692+2.47123I$	0
$u=\ \ 0.468915-1.102320I$ $a=-0.84436-1.29181I$ $b=\ \ 1.031160+0.685683I$	$1.58692-2.47123I$	0
$u=\ \ 1.113450+0.465551I$ $a=-0.200078+0.891001I$ $b=-0.275997-0.746459I$	$-0.62032-5.12893I$	0
$u=\ \ 1.113450-0.465551I$ $a=-0.200078-0.891001I$ $b=-0.275997+0.746459I$	$-0.62032+5.12893I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.066870 + 0.600839I$ $a = 0.74671 - 2.13567I$ $b = 0.905636 + 0.400851I$	$-5.57459 - 1.63327I$	0
$u = 1.066870 - 0.600839I$ $a = 0.74671 + 2.13567I$ $b = 0.905636 - 0.400851I$	$-5.57459 + 1.63327I$	0
$u = -0.756349 + 0.142756I$ $a = 0.856554 - 0.025826I$ $b = -0.953322 - 0.767248I$	$-2.91253 - 2.99862I$	0
$u = -0.756349 - 0.142756I$ $a = 0.856554 + 0.025826I$ $b = -0.953322 + 0.767248I$	$-2.91253 + 2.99862I$	0
$u = -1.154330 + 0.430414I$ $a = -0.427811 + 1.049550I$ $b = 0.805455 + 0.178381I$	$-6.09941 + 5.67914I$	0
$u = -1.154330 - 0.430414I$ $a = -0.427811 - 1.049550I$ $b = 0.805455 - 0.178381I$	$-6.09941 - 5.67914I$	0
$u = 0.204667 + 1.216490I$ $a = 0.63617 - 1.30650I$ $b = -1.113130 + 0.655195I$	$-2.2541 + 14.2573I$	0
$u = 0.204667 - 1.216490I$ $a = 0.63617 + 1.30650I$ $b = -1.113130 - 0.655195I$	$-2.2541 - 14.2573I$	0
$u = -1.169230 + 0.422065I$ $a = -0.265816 - 0.329693I$ $b = 0.078657 + 0.789019I$	$-5.79756 + 4.00477I$	0
$u = -1.169230 - 0.422065I$ $a = -0.265816 + 0.329693I$ $b = 0.078657 - 0.789019I$	$-5.79756 - 4.00477I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.631760+0.371860I$ $a=-0.181768-1.109020I$ $b=-0.572935+0.905299I$	$0.18870-2.58655I$	0
$u=-0.631760-0.371860I$ $a=-0.181768+1.109020I$ $b=-0.572935-0.905299I$	$0.18870+2.58655I$	0
$u=1.235650+0.321189I$ $a=1.170020-0.676584I$ $b=1.057930+0.086681I$	$-6.60249-1.94550I$	0
$u=1.235650-0.321189I$ $a=1.170020+0.676584I$ $b=1.057930-0.086681I$	$-6.60249+1.94550I$	0
$u=-0.005243+1.280270I$ $a=-0.24929+1.46601I$ $b=0.865008-0.611749I$	$1.90475+3.36723I$	0
$u=-0.005243-1.280270I$ $a=-0.24929-1.46601I$ $b=0.865008+0.611749I$	$1.90475-3.36723I$	0
$u=-1.213830+0.425770I$ $a=0.834747+0.455836I$ $b=1.199230+0.069488I$	$-6.23292+6.40778I$	0
$u=-1.213830-0.425770I$ $a=0.834747-0.455836I$ $b=1.199230-0.069488I$	$-6.23292-6.40778I$	0
$u=-0.691305+0.073531I$ $a=-0.55253-2.81419I$ $b=0.856982+0.653873I$	$1.91544-1.58382I$	0
$u=-0.691305-0.073531I$ $a=-0.55253+2.81419I$ $b=0.856982-0.653873I$	$1.91544+1.58382I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.183640+0.558804I$ $a=\ \ 0.781738+0.643576I$ $b=-0.572935-0.905299I$	$0.18870+2.58655I$	0
$u=-1.183640-0.558804I$ $a=\ \ 0.781738-0.643576I$ $b=-0.572935+0.905299I$	$0.18870-2.58655I$	0
$u=\ \ 0.630831+0.252224I$ $a=-2.16640-1.60106I$ $b=\ \ 0.865008+0.611749I$	$1.90475-3.36723I$	0
$u=\ \ 0.630831-0.252224I$ $a=-2.16640+1.60106I$ $b=\ \ 0.865008-0.611749I$	$1.90475+3.36723I$	0
$u=-0.204936+0.646408I$ $a=\ \ 1.49344-0.21658I$ $b=-0.998895+0.340741I$	$-3.31082-1.58168I$	0
$u=-0.204936-0.646408I$ $a=\ \ 1.49344+0.21658I$ $b=-0.998895-0.340741I$	$-3.31082+1.58168I$	0
$u=-1.298940+0.302426I$ $a=-0.564197+0.445620I$ $b=-0.998895-0.340741I$	$-3.31082+1.58168I$	0
$u=-1.298940-0.302426I$ $a=-0.564197-0.445620I$ $b=-0.998895+0.340741I$	$-3.31082-1.58168I$	0
$u=\ \ 1.206640+0.573220I$ $a=\ \ 0.807070-0.482658I$ $b=-0.479086+0.860207I$	$-0.33553-8.62751I$	0
$u=\ \ 1.206640-0.573220I$ $a=\ \ 0.807070+0.482658I$ $b=-0.479086-0.860207I$	$-0.33553+8.62751I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.040012+0.660433I$ $a=-0.262338-0.737892I$ $b=-0.252896+0.577977I$	$-2.57074+0.03213I$	0
$u=-0.040012-0.660433I$ $a=-0.262338+0.737892I$ $b=-0.252896-0.577977I$	$-2.57074-0.03213I$	0
$u=1.269730+0.435353I$ $a=1.07987-1.31003I$ $b=1.127820+0.507549I$	$-8.73742-8.51212I$	0
$u=1.269730-0.435353I$ $a=1.07987+1.31003I$ $b=1.127820-0.507549I$	$-8.73742+8.51212I$	0
$u=1.240160+0.515934I$ $a=-0.546149+0.907148I$ $b=0.254703-1.067970I$	$-0.26659-5.76949I$	0
$u=1.240160-0.515934I$ $a=-0.546149-0.907148I$ $b=0.254703+1.067970I$	$-0.26659+5.76949I$	0
$u=-0.640822+0.122913I$ $a=0.628426-1.201680I$ $b=1.031160+0.685683I$	$1.58692-2.47123I$	0
$u=-0.640822-0.122913I$ $a=0.628426+1.201680I$ $b=1.031160-0.685683I$	$1.58692+2.47123I$	0
$u=1.330300+0.253070I$ $a=-0.561032-0.429886I$ $b=-1.016810+0.483226I$	$-4.57419+3.97041I$	0
$u=1.330300-0.253070I$ $a=-0.561032+0.429886I$ $b=-1.016810-0.483226I$	$-4.57419-3.97041I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.343330 + 0.296012I$ $a = 0.296187 - 1.039790I$ $b = 0.078657 + 0.789019I$	$-5.79756 + 4.00477I$	0
$u = 1.343330 - 0.296012I$ $a = 0.296187 + 1.039790I$ $b = 0.078657 - 0.789019I$	$-5.79756 - 4.00477I$	0
$u = -0.330502 + 1.336560I$ $a = 0.752176 + 0.914715I$ $b = -1.153420 - 0.511740I$	$0.28525 - 4.98766I$	0
$u = -0.330502 - 1.336560I$ $a = 0.752176 - 0.914715I$ $b = -1.153420 + 0.511740I$	$0.28525 + 4.98766I$	0
$u = 0.448899 + 1.321000I$ $a = 0.479620 + 1.157290I$ $b = -0.926794 - 0.477530I$	$0.50785 - 3.58327I$	0
$u = 0.448899 - 1.321000I$ $a = 0.479620 - 1.157290I$ $b = -0.926794 + 0.477530I$	$0.50785 + 3.58327I$	0
$u = 0.421282 + 0.431473I$ $a = 0.472397 - 0.578811I$ $b = -1.077780 + 0.697217I$	$-1.36667 + 8.47028I$	$-6.00000 - 3.66392I$
$u = 0.421282 - 0.431473I$ $a = 0.472397 + 0.578811I$ $b = -1.077780 - 0.697217I$	$-1.36667 - 8.47028I$	$-6.00000 + 3.66392I$
$u = 1.267980 + 0.593186I$ $a = -0.54291 + 1.77696I$ $b = -1.077780 - 0.697217I$	$-1.36667 - 8.47028I$	0
$u = 1.267980 - 0.593186I$ $a = -0.54291 - 1.77696I$ $b = -1.077780 + 0.697217I$	$-1.36667 + 8.47028I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.269030+0.595415I$ $a=-0.69559-1.79644I$ $b=-1.113130+0.655195I$	$-2.2541+14.2573I$	0
$u=-1.269030-0.595415I$ $a=-0.69559+1.79644I$ $b=-1.113130-0.655195I$	$-2.2541-14.2573I$	0
$u=1.20856+0.76717I$ $a=-0.564595+0.393514I$ $b=0.784183-0.435265I$	$-2.05944-3.53631I$	0
$u=1.20856-0.76717I$ $a=-0.564595-0.393514I$ $b=0.784183+0.435265I$	$-2.05944+3.53631I$	0
$u=-0.28778+1.42085I$ $a=0.038244+1.139890I$ $b=-0.820960-0.447182I$	$0.906398-0.207630I$	0
$u=-0.28778-1.42085I$ $a=0.038244-1.139890I$ $b=-0.820960+0.447182I$	$0.906398+0.207630I$	0
$u=-1.33532+0.66664I$ $a=0.24518+1.61062I$ $b=1.223400-0.666080I$	$-3.14096+11.89110I$	0
$u=-1.33532-0.66664I$ $a=0.24518-1.61062I$ $b=1.223400+0.666080I$	$-3.14096-11.89110I$	0
$u=1.46850+0.28697I$ $a=0.920290+0.569863I$ $b=0.805455-0.178381I$	$-6.09941-5.67914I$	0
$u=1.46850-0.28697I$ $a=0.920290-0.569863I$ $b=0.805455+0.178381I$	$-6.09941+5.67914I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.35813+0.63874I$ $a=\ \ 0.529192+0.551252I$ $b=-0.719953-0.709662I$	$-2.18721+4.85558I$	0
$u=-1.35813-0.63874I$ $a=\ \ 0.529192-0.551252I$ $b=-0.719953+0.709662I$	$-2.18721-4.85558I$	0
$u=-1.50725$ $a=\ \ 0.232128$ $b=-1.75919$	-7.40980	0
$u=-1.34980+0.67362I$ $a=\ \ 0.65268+1.48090I$ $b=\ \ 0.957635-0.489487I$	$-2.72091+7.35302I$	0
$u=-1.34980-0.67362I$ $a=\ \ 0.65268-1.48090I$ $b=\ \ 0.957635+0.489487I$	$-2.72091-7.35302I$	0
$u=\ \ 1.54192$ $a=-0.00335629$ $b=\ \ 1.51343$	-7.69031	0
$u=-1.46376+0.58158I$ $a=-0.097113-1.041970I$ $b=-1.276920+0.320168I$	$-10.08000+0.06598I$	0
$u=-1.46376-0.58158I$ $a=-0.097113+1.041970I$ $b=-1.276920-0.320168I$	$-10.08000-0.06598I$	0
$u=\ \ 1.46672+0.62280I$ $a=-0.54525+1.51720I$ $b=-0.964612-0.657589I$	$-2.93934-10.11590I$	0
$u=\ \ 1.46672-0.62280I$ $a=-0.54525-1.51720I$ $b=-0.964612+0.657589I$	$-2.93934+10.11590I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.59494+0.21027I$ $a=\ 0.163658-0.563554I$ $b=\ 1.127820+0.507549I$	$-8.73742-8.51212I$	0
$u=-1.59494-0.21027I$ $a=\ 0.163658+0.563554I$ $b=\ 1.127820-0.507549I$	$-8.73742+8.51212I$	0
$u=-0.127984+0.130583I$ $a=\ 4.54520-4.68829I$ $b=-0.275997-0.746459I$	$-0.62032-5.12893I$	$-1.28170+6.02401I$
$u=-0.127984-0.130583I$ $a=\ 4.54520+4.68829I$ $b=-0.275997+0.746459I$	$-0.62032+5.12893I$	$-1.28170-6.02401I$
$u=-0.0378961+0.0930082I$ $a=\ 4.22004-8.03735I$ $b=\ 1.057930+0.086681I$	$-6.60249-1.94550I$	$-14.2889+0.8778I$
$u=-0.0378961-0.0930082I$ $a=\ 4.22004+8.03735I$ $b=\ 1.057930-0.086681I$	$-6.60249+1.94550I$	$-14.2889-0.8778I$

III.

$$\boldsymbol{I_3^u = \langle -u^{10}+4u^8+\cdots+b-1,\ u^{10}-u^9+\cdots+a+2,\ u^{11}-5u^9+\cdots+2u-1\rangle}$$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} -u^{10}+u^9+5u^8-4u^7-9u^6+6u^5+5u^4-3u^3+2u^2-2 \\ u^{10}-4u^8+6u^6-u^5-3u^4+2u^3-u+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{10}-5u^8+9u^6-5u^4-2u^2+2 \\ -u^{10}+4u^8-5u^6+2u^2-u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^8+4u^6-5u^4-u+2 \\ -u^{10}+4u^8-5u^6+2u^2-u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^6+2u^4-u^2 \\ -u^8+3u^6-3u^4+u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^9-4u^7+5u^5-2u \\ -u^9+3u^7+u^6-2u^5-2u^4-2u^3+u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^{10}+5u^8-u^7-9u^6+3u^5+5u^4-2u^3+2u^2-2 \\ u^{10}-u^9-4u^8+3u^7+5u^6-2u^5-u^3-2u^2+u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^8+4u^6-u^5-5u^4+2u^3-u+2 \\ u^8-u^7-3u^6+2u^5+2u^4-u^3+2u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$$= -5u^{10}-6u^9+21u^8+24u^7-32u^6-25u^5+22u^4-11u^3-11u^2+17u-12$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 5u^{10} + \cdots + 5u - 1$
c_2	$u^{11} + u^{10} - 2u^9 - 3u^8 + u^7 - 5u^5 - 3u^4 + 3u^3 + 2u^2 - u - 1$
c_3, c_{11}	$u^{11} - 5u^9 + 9u^7 - u^6 - 5u^5 + 3u^4 - 2u^3 - 2u^2 + 2u - 1$
c_4, c_7	$u^{11} + 4u^9 + 9u^7 + 4u^6 + 9u^5 + 3u^4 - 2u^2 - 2u - 1$
c_5, c_9	$u^{11} - 5u^9 + 9u^7 + u^6 - 5u^5 - 3u^4 - 2u^3 + 2u^2 + 2u + 1$
c_6	$u^{11} - u^{10} - 2u^9 + 3u^8 + u^7 - 5u^5 + 3u^4 + 3u^3 - 2u^2 - u + 1$
c_8	$u^{11} + 7u^{10} + \cdots + 15u + 1$
c_{10}, c_{12}	$u^{11} + 2u^{10} + u^9 - 2u^8 - 6u^7 + 4u^5 + 5u^4 - 2u^3 - 2u^2 - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - y^{10} + \cdots - 7y - 1$
c_2, c_6	$y^{11} - 5y^{10} + \cdots + 5y - 1$
c_3, c_5, c_9 c_{11}	$y^{11} - 10y^{10} + \cdots - 6y^2 - 1$
c_4, c_7	$y^{11} + 8y^{10} + \cdots + 2y^2 - 1$
c_8	$y^{11} + 13y^{10} + \cdots + 57y - 1$
c_{10}, c_{12}	$y^{11} - 2y^{10} + \cdots + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.151450+0.270588I$ $a=\ 0.057282+1.256840I$ $b=\ 0.604363-0.960598I$	$-3.51965+6.44020I$	$-11.72259-5.01138I$
$u=-1.151450-0.270588I$ $a=\ 0.057282-1.256840I$ $b=\ 0.604363+0.960598I$	$-3.51965-6.44020I$	$-11.72259+5.01138I$
$u=\ 1.24623$ $a=\ 0.311518$ $b=\ 1.62310$	-8.31862	-25.6080
$u=\ 0.070231+0.702666I$ $a=\ 0.397232+1.070860I$ $b=-0.853743-0.619035I$	$3.02416-2.43083I$	$1.37345+3.51612I$
$u=\ 0.070231-0.702666I$ $a=\ 0.397232-1.070860I$ $b=-0.853743+0.619035I$	$3.02416+2.43083I$	$1.37345-3.51612I$
$u=-1.321920+0.360279I$ $a=-0.342346-0.245725I$ $b=-0.641158-0.438088I$	$-4.84069+5.32060I$	$-7.78196-5.42981I$
$u=-1.321920-0.360279I$ $a=-0.342346+0.245725I$ $b=-0.641158+0.438088I$	$-4.84069-5.32060I$	$-7.78196+5.42981I$
$u=\ 1.382780+0.278995I$ $a=-0.948214+0.830037I$ $b=-1.066310-0.544965I$	$-6.39167-9.47527I$	$-9.39685+9.35255I$
$u=\ 1.382780-0.278995I$ $a=-0.948214-0.830037I$ $b=-1.066310+0.544965I$	$-6.39167+9.47527I$	$-9.39685-9.35255I$
$u=\ 0.397248+0.387400I$ $a=-2.31971+0.36228I$ $b=\ 0.645300-0.284628I$	$1.082750+0.592653I$	$-4.66794+3.37871I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.397248 - 0.387400I$		
$a = -2.31971 - 0.36228I$	$1.082750 - 0.592653I$	$-4.66794 - 3.37871I$
$b = 0.645300 + 0.284628I$		

IV.

$\boldsymbol{I_4^u = \langle -1.70\times10^{27}u^{37}+1.24\times10^{27}u^{36}+\cdots+5.30\times10^{24}b+1.96\times10^{28},\ -1.70\times10^{27}u^{37}+1.43\times10^{27}u^{36}+\cdots+5.30\times10^{24}a+1.47\times10^{28},\ u^{38}-7u^{36}+\cdots-8u-8\rangle}$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix}320.610u^{37} - 269.781u^{36} + \cdots + 459.319u - 2778.07\\319.997u^{37} - 233.863u^{36} + \cdots + 1322.19u - 3694.38\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_2 = \begin{pmatrix}274.608u^{37} - 212.241u^{36} + \cdots + 707.263u - 2803.79\\81.1598u^{37} - 55.6729u^{36} + \cdots + 444.111u - 879.219\end{pmatrix}$$

$$a_1 = \begin{pmatrix}355.768u^{37} - 267.914u^{36} + \cdots + 1151.37u - 3683.01\\81.1598u^{37} - 55.6729u^{36} + \cdots + 444.111u - 879.219\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-560.307u^{37} + 426.125u^{36} + \cdots - 1690.86u + 5625.00\\-234.102u^{37} + 163.899u^{36} + \cdots - 1153.60u + 2719.57\end{pmatrix}$$

$$a_6 = \begin{pmatrix}1111.00u^{37} - 831.399u^{36} + \cdots + 3504.54u - 11329.5\\401.920u^{37} - 289.788u^{36} + \cdots + 1838.86u - 4583.33\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}227.483u^{37} - 173.687u^{36} + \cdots + 646.271u - 2345.76\\137.037u^{37} - 95.1247u^{36} + \cdots + 676.758u - 1462.65\end{pmatrix}$$

$$a_8 = \begin{pmatrix}534.801u^{37} - 415.351u^{36} + \cdots + 1290.98u - 5592.67\\443.750u^{37} - 319.344u^{36} + \cdots + 1874.40u - 4833.85\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-1163.12u^{37} + 911.426u^{36} + \cdots - 3036.30u + 12109.3\\-396.422u^{37} + 270.231u^{36} + \cdots - 2010.78u + 4636.37\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{211866323044741564264605988}{1324563949752981045028271}u^{37} + \frac{168246143813986661551146 8107}{1324563949752981045028271}u^{36} + \cdots - \frac{4971119587870413232610550824}{1324563949752981045028271}u + \frac{2142720889253844650328179 6044}{1324563949752981045028271}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{19} - 11u^{18} + \cdots + 8u - 1)^2$
c_2	$(u^{19} - u^{18} + \cdots - 2u + 1)^2$
c_3, c_{11}	$u^{38} - 7u^{36} + \cdots - 8u - 8$
c_4, c_7	$u^{38} + 8u^{37} + \cdots - 20u + 1$
c_5, c_9	$u^{38} - 7u^{36} + \cdots + 8u - 8$
c_6	$(u^{19} + u^{18} + \cdots - 2u - 1)^2$
c_8	$(u^{19} - 5u^{18} + \cdots + 9u - 1)^2$
c_{10}, c_{12}	$u^{38} - 3u^{37} + \cdots + 4u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{19} - 3y^{18} + \cdots + 40y^2 - 1)^2$
c_2, c_6	$(y^{19} - 11y^{18} + \cdots + 8y - 1)^2$
c_3, c_5, c_9 c_{11}	$y^{38} - 14y^{37} + \cdots - 1536y + 64$
c_4, c_7	$y^{38} + 8y^{37} + \cdots - 314y + 1$
c_8	$(y^{19} + y^{18} + \cdots + 27y - 1)^2$
c_{10}, c_{12}	$y^{38} - 11y^{37} + \cdots + 20y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.895574 + 0.353013I$ $a = -1.10550 - 1.32087I$ $b = 0.699213 - 0.473663I$	$1.220080 - 0.247886I$	$-3.77645 + 5.75966I$
$u = 0.895574 - 0.353013I$ $a = -1.10550 + 1.32087I$ $b = 0.699213 + 0.473663I$	$1.220080 + 0.247886I$	$-3.77645 - 5.75966I$
$u = -1.010990 + 0.262082I$ $a = 1.81826 + 1.02315I$ $b = 1.058470 - 0.519496I$	$-0.04870 + 4.32778I$	$-13.01553 - 4.32298I$
$u = -1.010990 - 0.262082I$ $a = 1.81826 - 1.02315I$ $b = 1.058470 + 0.519496I$	$-0.04870 - 4.32778I$	$-13.01553 + 4.32298I$
$u = 0.938881 + 0.496783I$ $a = 0.608775 + 0.005795I$ $b = -0.900014 + 0.043524I$	$-7.19798 - 3.56543I$	$-16.9042 + 4.0677I$
$u = 0.938881 - 0.496783I$ $a = 0.608775 - 0.005795I$ $b = -0.900014 - 0.043524I$	$-7.19798 + 3.56543I$	$-16.9042 - 4.0677I$
$u = 0.905399$ $a = -1.00100$ $b = -1.70004$	-7.20162	14.5360
$u = -0.770302 + 0.417123I$ $a = -0.78571 - 1.66290I$ $b = 0.582060$	-5.25056	$-12.96376 + 0.I$
$u = -0.770302 - 0.417123I$ $a = -0.78571 + 1.66290I$ $b = 0.582060$	-5.25056	$-12.96376 + 0.I$
$u = 0.755337 + 0.231569I$ $a = 1.89302 + 1.26738I$ $b = -0.743514 - 0.618726I$	$1.91902 - 2.60027I$	$-7.81669 + 0.53490I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.755337 - 0.231569I$ $a = 1.89302 - 1.26738I$ $b = -0.743514 + 0.618726I$	$1.91902 + 2.60027I$	$-7.81669 - 0.53490I$
$u = 1.094940 + 0.528473I$ $a = -0.318977 + 1.000950I$ $b = -0.375977 - 0.700747I$	$-1.40055 - 5.07982I$	0
$u = 1.094940 - 0.528473I$ $a = -0.318977 - 1.000950I$ $b = -0.375977 + 0.700747I$	$-1.40055 + 5.07982I$	0
$u = -0.770073 + 0.121528I$ $a = -0.12537 + 1.88132I$ $b = -0.998644 - 0.658078I$	$1.09453 - 2.40927I$	$-16.1025 + 1.8432I$
$u = -0.770073 - 0.121528I$ $a = -0.12537 - 1.88132I$ $b = -0.998644 + 0.658078I$	$1.09453 + 2.40927I$	$-16.1025 - 1.8432I$
$u = 0.204174 + 1.209660I$ $a = -0.198030 + 1.151590I$ $b = 0.699213 - 0.473663I$	$1.220080 - 0.247886I$	0
$u = 0.204174 - 1.209660I$ $a = -0.198030 - 1.151590I$ $b = 0.699213 + 0.473663I$	$1.220080 + 0.247886I$	0
$u = 1.203740 + 0.254532I$ $a = 0.643123 - 0.494320I$ $b = 1.36517$	-8.51087	0
$u = 1.203740 - 0.254532I$ $a = 0.643123 + 0.494320I$ $b = 1.36517$	-8.51087	0
$u = -0.736846 + 0.025385I$ $a = 0.13304 - 1.60590I$ $b = -0.375977 - 0.700747I$	$-1.40055 - 5.07982I$	$-11.73199 + 5.00622I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.736846-0.025385I$ $a=\ \ 0.13304+1.60590I$ $b=-0.375977+0.700747I$	$-1.40055+5.07982I$	$-11.73199-5.00622I$
$u=-0.044420+1.278510I$ $a=-0.594982+1.175760I$ $b=\ \ 1.058470-0.519496I$	$-0.04870+4.32778I$	0
$u=-0.044420-1.278510I$ $a=-0.594982-1.175760I$ $b=\ \ 1.058470+0.519496I$	$-0.04870-4.32778I$	0
$u=\ \ 0.684526+0.165833I$ $a=-0.07723-3.05194I$ $b=\ \ 1.028370+0.643129I$	$-2.66460-9.29619I$	$-9.58159+6.06051I$
$u=\ \ 0.684526-0.165833I$ $a=-0.07723+3.05194I$ $b=\ \ 1.028370-0.643129I$	$-2.66460+9.29619I$	$-9.58159-6.06051I$
$u=-1.242290+0.402620I$ $a=-1.34356-0.44247I$ $b=-0.900014-0.043524I$	$-7.19798+3.56543I$	0
$u=-1.242290-0.402620I$ $a=-1.34356+0.44247I$ $b=-0.900014+0.043524I$	$-7.19798-3.56543I$	0
$u=-0.343251+1.262530I$ $a=\ \ 0.67187+1.36800I$ $b=-0.998644-0.658078I$	$1.09453-2.40927I$	0
$u=-0.343251-1.262530I$ $a=\ \ 0.67187-1.36800I$ $b=-0.998644+0.658078I$	$1.09453+2.40927I$	0
$u=\ \ 0.277614+1.284550I$ $a=\ \ 0.32053+1.49775I$ $b=-0.743514-0.618726I$	$1.91902-2.60027I$	0

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.277614 - 1.284550I$ $a = 0.32053 - 1.49775I$ $b = -0.743514 + 0.618726I$	$1.91902 + 2.60027I$	0
$u = -0.673745 + 0.076557I$ $a = -3.09869 - 0.75586I$ $b = 0.608507 + 0.606791I$	$-1.35702 + 4.26093I$	$-4.32855 - 4.14732I$
$u = -0.673745 - 0.076557I$ $a = -3.09869 + 0.75586I$ $b = 0.608507 - 0.606791I$	$-1.35702 - 4.26093I$	$-4.32855 + 4.14732I$
$u = 1.25703 + 0.70421I$ $a = -0.503895 + 0.690602I$ $b = 0.608507 - 0.606791I$	$-1.35702 - 4.26093I$	0
$u = 1.25703 - 0.70421I$ $a = -0.503895 - 0.690602I$ $b = 0.608507 + 0.606791I$	$-1.35702 + 4.26093I$	0
$u = -1.38849 + 0.66696I$ $a = 0.43786 + 1.60559I$ $b = 1.028370 - 0.643129I$	$-2.66460 + 9.29619I$	0
$u = -1.38849 - 0.66696I$ $a = 0.43786 - 1.60559I$ $b = 1.028370 + 0.643129I$	$-2.66460 - 9.29619I$	0
$u = -1.56823$ $a = 0.251945$ $b = -1.70004$	-7.20162	0

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{11}-5u^{10}+\cdots+5u-1)(u^{19}-11u^{18}+\cdots+8u-1)^2$ $\cdot(u^{45}+18u^{44}+\cdots+380u+16)$ $\cdot(u^{68}+32u^{67}+\cdots+16464u+1849)^2$
c_2	$(u^{11}+u^{10}-2u^9-3u^8+u^7-5u^5-3u^4+3u^3+2u^2-u-1)$ $\cdot((u^{19}-u^{18}+\cdots-2u+1)^2)(u^{45}-10u^{44}+\cdots-42u+4)$ $\cdot(u^{68}+4u^{67}+\cdots-120u-43)^2$
c_3, c_{11}	$(u^{11}-5u^9+9u^7-u^6-5u^5+3u^4-2u^3-2u^2+2u-1)$ $\cdot(u^{38}-7u^{36}+\cdots-8u-8)(u^{45}-16u^{43}+\cdots+8u+8)$ $\cdot(u^{136}-u^{135}+\cdots-1494u-89)$
c_4, c_7	$(u^{11}+4u^9+9u^7+4u^6+9u^5+3u^4-2u^2-2u-1)$ $\cdot(u^{38}+8u^{37}+\cdots-20u+1)(u^{45}-2u^{44}+\cdots-40u+7)$ $\cdot(u^{136}-3u^{135}+\cdots-5351856u+103993)$
c_5, c_9	$(u^{11}-5u^9+9u^7+u^6-5u^5-3u^4-2u^3+2u^2+2u+1)$ $\cdot(u^{38}-7u^{36}+\cdots+8u-8)(u^{45}-16u^{43}+\cdots+8u+8)$ $\cdot(u^{136}-u^{135}+\cdots-1494u-89)$
c_6	$(u^{11}-u^{10}-2u^9+3u^8+u^7-5u^5+3u^4+3u^3-2u^2-u+1)$ $\cdot((u^{19}+u^{18}+\cdots-2u-1)^2)(u^{45}-10u^{44}+\cdots-42u+4)$ $\cdot(u^{68}+4u^{67}+\cdots-120u-43)^2$
c_8	$(u^{11}+7u^{10}+\cdots+15u+1)(u^{19}-5u^{18}+\cdots+9u-1)^2$ $\cdot(u^{45}-24u^{44}+\cdots-7732u+1004)(u^{68}+10u^{67}+\cdots+14u+1)^2$
c_{10}, c_{12}	$(u^{11}+2u^{10}+u^9-2u^8-6u^7+4u^5+5u^4-2u^3-2u^2-u+1)$ $\cdot(u^{38}-3u^{37}+\cdots+4u-1)(u^{45}+2u^{44}+\cdots+7u+1)$ $\cdot(u^{136}+14u^{135}+\cdots-1293886u-83089)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{11}-y^{10}+\cdots-7y-1)(y^{19}-3y^{18}+\cdots+40y^2-1)^2$ $\cdot(y^{45}+14y^{44}+\cdots+10480y-256)$ $\cdot(y^{68}+12y^{67}+\cdots+42268244y+3418801)^2$
c_2, c_6	$(y^{11}-5y^{10}+\cdots+5y-1)(y^{19}-11y^{18}+\cdots+8y-1)^2$ $\cdot(y^{45}-18y^{44}+\cdots+380y-16)$ $\cdot(y^{68}-32y^{67}+\cdots-16464y+1849)^2$
c_3, c_5, c_9 c_{11}	$(y^{11}-10y^{10}+\cdots-6y^2-1)(y^{38}-14y^{37}+\cdots-1536y+64)$ $\cdot(y^{45}-32y^{44}+\cdots+192y-64)$ $\cdot(y^{136}-71y^{135}+\cdots+801262y+7921)$
c_4, c_7	$(y^{11}+8y^{10}+\cdots+2y^2-1)(y^{38}+8y^{37}+\cdots-314y+1)$ $\cdot(y^{45}-24y^{44}+\cdots+1446y-49)$ $\cdot(y^{136}+9y^{135}+\cdots-15840027966342y+10814544049)$
c_8	$(y^{11}+13y^{10}+\cdots+57y-1)(y^{19}+y^{18}+\cdots+27y-1)^2$ $\cdot(y^{45}+8y^{44}+\cdots+10364936y-1008016)$ $\cdot(y^{68}+6y^{67}+\cdots-190y+1)^2$
c_{10}, c_{12}	$(y^{11}-2y^{10}+\cdots+5y-1)(y^{38}-11y^{37}+\cdots+20y+1)$ $\cdot(y^{45}+30y^{44}+\cdots+41y-1)$ $\cdot(y^{136}-2y^{135}+\cdots+154307077926y+6903781921)$