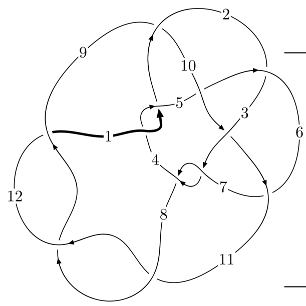
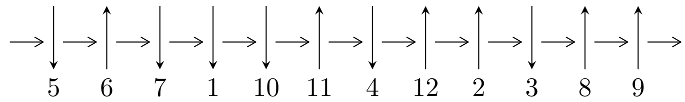
$12a_{1222}$ $(K12a_{1222})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 8.54050\times10^{28}u^{33} - 1.19908\times10^{29}u^{32} + \cdots + 2.02956\times10^{29}b - 1.46806\times10^{29},$$
$$2.00324\times10^{28}u^{33} - 1.85192\times10^{28}u^{32} + \cdots + 1.19386\times10^{28}a - 1.66365\times10^{29},\ u^{34} - u^{33} + \cdots - 14u + 1\rangle$$
$$I_2^u = \langle -1.00686\times10^{316}u^{83} - 2.20932\times10^{316}u^{82} + \cdots + 1.65013\times10^{317}b - 2.02613\times10^{318},$$
$$3.54486\times10^{318}u^{83} + 6.01988\times10^{318}u^{82} + \cdots + 3.48177\times10^{319}a - 5.74769\times10^{319},$$
$$u^{84} + 3u^{83} + \cdots + 1498u + 211\rangle$$
$$I_3^u = \langle u^{11} + u^{10} - 5u^9 - u^8 + 12u^7 - 3u^6 - 20u^5 + 9u^4 + 17u^3 - 12u^2 + b - 8u + 5,$$
$$6u^{11} - 3u^{10} - 20u^9 + 15u^8 + 38u^7 - 43u^6 - 46u^5 + 59u^4 + 28u^3 - 49u^2 + a - 11u + 14,$$
$$u^{12} - u^{11} - 3u^{10} + 4u^9 + 5u^8 - 10u^7 - 4u^6 + 13u^5 - 10u^3 + 2u^2 + 3u - 1\rangle$$
$$I_4^u = \langle b - 1,\ a - 1,\ u^2 + u - 1\rangle$$
$$I_5^u = \langle b - u,\ a - u - 1,\ u^2 + u - 1\rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 134 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.

$\boldsymbol{I_1^u = \langle 8.54\times10^{28}u^{33} - 1.20\times10^{29}u^{32} + \cdots + 2.03\times10^{29}b - 1.47\times10^{29},\ 2.00\times10^{28}u^{33} - 1.85\times10^{28}u^{32} + \cdots + 1.19\times10^{28}a - 1.66\times10^{29},\ u^{34} - u^{33} + \cdots - 14u + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-1.67795u^{33} + 1.55120u^{32} + \cdots - 54.4816u + 13.9351\\-0.420805u^{33} + 0.590807u^{32} + \cdots + 0.214756u + 0.723340\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-1.82607u^{33} + 1.79373u^{32} + \cdots - 55.2072u + 14.1232\\-0.374427u^{33} + 0.626344u^{32} + \cdots + 2.41017u + 0.440872\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0.0849368u^{33} - 0.674220u^{32} + \cdots - 22.0169u - 4.53343\\0.0652050u^{33} - 0.290176u^{32} + \cdots - 4.20788u + 0.0290844\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1.23819u^{33} - 1.28700u^{32} + \cdots + 25.7222u + 0.477757\\0.429517u^{33} - 0.646675u^{32} + \cdots - 0.921613u + 0.0488161\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-2.09876u^{33} + 2.14201u^{32} + \cdots - 54.2669u + 14.6584\\-0.420805u^{33} + 0.590807u^{32} + \cdots + 0.214756u + 0.723340\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1.11813u^{33} - 2.58902u^{32} + \cdots - 39.5230u + 1.70908\\1.06931u^{33} - 2.11069u^{32} + \cdots - 21.7107u + 1.47090\end{pmatrix}$$
$$a_1 = \begin{pmatrix}2.70908u^{33} - 3.82721u^{32} + \cdots + 8.35933u + 1.59588\\1.47090u^{33} - 2.54021u^{32} + \cdots - 17.3628u + 1.11813\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-0.370824u^{33} + 1.27805u^{32} + \cdots + 28.8631u + 4.34212\\-0.628147u^{33} + 1.22765u^{32} + \cdots + 14.1089u - 0.498700\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2.52397u^{33} - 1.46607u^{32} + \cdots + 104.427u - 1.38626$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_4 c_7	$u^{34} - u^{33} + \cdots - 14u + 1$
c_2	$u^{34} - 15u^{33} + \cdots - 42u + 4$
c_5, c_{10}	$u^{34} - u^{33} + \cdots + 2u - 1$
c_6, c_9	$u^{34} - u^{33} + \cdots + 8u + 1$
c_8, c_{11}, c_{12}	$u^{34} - 12u^{33} + \cdots + 48u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7	$y^{34} - 29y^{33} + \cdots - 146y + 1$
c_2	$y^{34} - 7y^{33} + \cdots - 1628y + 16$
c_5, c_{10}	$y^{34} - 23y^{33} + \cdots - 42y + 1$
c_6, c_9	$y^{34} - 5y^{33} + \cdots - 48y + 1$
c_8, c_{11}, c_{12}	$y^{34} - 36y^{33} + \cdots + 480y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.911688 + 0.363959I$ $a = -0.171944 + 0.102128I$ $b = 1.10685 - 1.31639I$	$2.69872 - 3.21839I$	$4.59732 + 8.11808I$
$u = 0.911688 - 0.363959I$ $a = -0.171944 - 0.102128I$ $b = 1.10685 + 1.31639I$	$2.69872 + 3.21839I$	$4.59732 - 8.11808I$
$u = -0.927431 + 0.304938I$ $a = 0.474616 - 0.316310I$ $b = -0.220232 + 0.174637I$	$-1.71183 + 0.63600I$	$-2.75071 - 0.30580I$
$u = -0.927431 - 0.304938I$ $a = 0.474616 + 0.316310I$ $b = -0.220232 - 0.174637I$	$-1.71183 - 0.63600I$	$-2.75071 + 0.30580I$
$u = 1.038620 + 0.229840I$ $a = 1.201340 + 0.604971I$ $b = 1.061670 + 0.056991I$	$-1.18415 - 2.37587I$	$-5.06552 + 2.01648I$
$u = 1.038620 - 0.229840I$ $a = 1.201340 - 0.604971I$ $b = 1.061670 - 0.056991I$	$-1.18415 + 2.37587I$	$-5.06552 - 2.01648I$
$u = -0.912481$ $a = -1.14310$ $b = -2.27341$	5.13008	-6.34130
$u = -0.697714 + 0.835446I$ $a = -0.870469 + 0.103720I$ $b = 0.407551 - 0.163879I$	$3.45848 + 2.06792I$	$4.43870 - 5.42623I$
$u = -0.697714 - 0.835446I$ $a = -0.870469 - 0.103720I$ $b = 0.407551 + 0.163879I$	$3.45848 - 2.06792I$	$4.43870 + 5.42623I$
$u = 0.010441 + 1.142570I$ $a = 0.459850 - 0.901524I$ $b = -0.963785 + 0.761398I$	$8.90412 + 5.78014I$	$5.97608 - 5.27414I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.010441 - 1.142570I$ $a = 0.459850 + 0.901524I$ $b = -0.963785 - 0.761398I$	$8.90412 - 5.78014I$	$5.97608 + 5.27414I$
$u = -0.811070 + 0.238646I$ $a = -0.342154 + 1.115500I$ $b = -0.619559 - 1.163380I$	$0.28385 + 1.96283I$	$-6.27590 - 2.16134I$
$u = -0.811070 - 0.238646I$ $a = -0.342154 - 1.115500I$ $b = -0.619559 + 1.163380I$	$0.28385 - 1.96283I$	$-6.27590 + 2.16134I$
$u = 0.075427 + 0.817878I$ $a = -0.858351 + 0.792060I$ $b = 0.847229 - 0.699141I$	$1.79815 + 4.38530I$	$3.95396 - 7.22221I$
$u = 0.075427 - 0.817878I$ $a = -0.858351 - 0.792060I$ $b = 0.847229 + 0.699141I$	$1.79815 - 4.38530I$	$3.95396 + 7.22221I$
$u = -1.155780 + 0.243350I$ $a = 0.698563 + 0.891085I$ $b = 1.59207 - 0.90588I$	$-5.44196 + 7.07361I$	$-4.67726 - 6.51707I$
$u = -1.155780 - 0.243350I$ $a = 0.698563 - 0.891085I$ $b = 1.59207 + 0.90588I$	$-5.44196 - 7.07361I$	$-4.67726 + 6.51707I$
$u = 1.303250 + 0.103917I$ $a = -0.497132 + 0.728849I$ $b = -1.039970 - 0.136864I$	$-7.94265 - 0.99791I$	$-7.60667 + 0.14420I$
$u = 1.303250 - 0.103917I$ $a = -0.497132 - 0.728849I$ $b = -1.039970 + 0.136864I$	$-7.94265 + 0.99791I$	$-7.60667 - 0.14420I$
$u = -1.33934 + 0.45447I$ $a = -0.547419 - 0.976370I$ $b = -1.41479 + 0.88408I$	$-6.3199 + 13.8634I$	$-3.76798 - 9.05726I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.33934 - 0.45447I$ $a = -0.547419 + 0.976370I$ $b = -1.41479 - 0.88408I$	$-6.3199 - 13.8634I$	$-3.76798 + 9.05726I$
$u = 1.37512 + 0.39242I$ $a = 0.190547 - 0.874693I$ $b = 0.915991 + 0.188064I$	$-8.36073 - 6.05317I$	$-7.48732 + 5.96067I$
$u = 1.37512 - 0.39242I$ $a = 0.190547 + 0.874693I$ $b = 0.915991 - 0.188064I$	$-8.36073 + 6.05317I$	$-7.48732 - 5.96067I$
$u = 0.126385 + 0.485333I$ $a = 1.268100 - 0.215994I$ $b = -0.579090 + 0.694270I$	$0.02966 + 1.58034I$	$0.69900 - 2.53490I$
$u = 0.126385 - 0.485333I$ $a = 1.268100 + 0.215994I$ $b = -0.579090 - 0.694270I$	$0.02966 - 1.58034I$	$0.69900 + 2.53490I$
$u = -1.51144$ $a = -0.475265$ $b = 0.265815$	1.70861	12.4980
$u = 1.36903 + 0.65356I$ $a = 0.004644 + 0.922982I$ $b = -0.833672 - 0.184412I$	$-1.91527 - 10.05270I$	$0. + 6.54721I$
$u = 1.36903 - 0.65356I$ $a = 0.004644 - 0.922982I$ $b = -0.833672 + 0.184412I$	$-1.91527 + 10.05270I$	$0. - 6.54721I$
$u = 1.54476$ $a = -0.725617$ $b = -1.27210$	-8.61022	-10.8990
$u = -1.43017 + 0.65600I$ $a = 0.456870 + 0.988687I$ $b = 1.35012 - 0.87487I$	$0.1342 + 18.8943I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.43017 - 0.65600I$ $a = 0.456870 - 0.988687I$ $b = 1.35012 + 0.87487I$	$0.1342 - 18.8943I$	0
$u = 0.270000$ $a = -5.98277$ $b = -0.799253$	10.5619	31.5940
$u = 1.82431$ $a = 0.862150$ $b = 1.29581$	-5.34464	0
$u = 0.0879429$ $a = 8.53047$ $b = 0.562384$	1.37388	8.39650

II. $\boldsymbol{I_2^u = \langle -1.01 \times 10^{316} u^{83} - 2.21 \times 10^{316} u^{82} + \cdots + 1.65 \times 10^{317} b - 2.03 \times 10^{318},\ 3.54 \times 10^{318} u^{83} + 6.02 \times 10^{318} u^{82} + \cdots + 3.48 \times 10^{319} a - 5.75 \times 10^{319},\ u^{84} + 3u^{83} + \cdots + 1498u + 211 \rangle}$

(i) Arc colorings

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

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

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

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

$$a_{11} = \begin{pmatrix} -0.101812u^{83} - 0.172897u^{82} + \cdots - 58.5822u + 1.65079 \\ 0.0610170u^{83} + 0.133888u^{82} + \cdots + 66.2351u + 12.2786 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0229371u^{83} - 0.00119685u^{82} + \cdots + 45.7496u + 20.0368 \\ 0.0387176u^{83} + 0.0855631u^{82} + \cdots + 42.5175u + 7.59174 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.06633u^{83} - 2.23318u^{82} + \cdots - 1358.51u - 231.319 \\ -0.186757u^{83} - 0.369562u^{82} + \cdots - 202.390u - 32.6268 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.08627u^{83} - 2.33161u^{82} + \cdots - 1675.76u - 278.019 \\ -0.694699u^{83} - 1.42478u^{82} + \cdots - 999.724u - 167.008 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0407949u^{83} - 0.0390090u^{82} + \cdots + 7.65289u + 13.9294 \\ 0.0610170u^{83} + 0.133888u^{82} + \cdots + 66.2351u + 12.2786 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.907194u^{83} - 1.88671u^{82} + \cdots - 1221.77u - 219.358 \\ -0.115687u^{83} - 0.206886u^{82} + \cdots - 176.440u - 33.4054 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.153580u^{83} + 0.345053u^{82} + \cdots + 226.286u + 53.6228 \\ -0.0896750u^{83} - 0.193681u^{82} + \cdots - 140.887u - 22.8274 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.285021u^{83} + 0.581129u^{82} + \cdots + 272.195u + 48.3765 \\ -0.0732276u^{83} - 0.172596u^{82} + \cdots - 66.0729u - 15.3657 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 5.90715u^{83} + 11.8390u^{82} + \cdots + 8273.11u + 1370.31$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_4 c_7	$u^{84} + 3u^{83} + \cdots + 1498u + 211$
c_2	$(u^{42} + 10u^{41} + \cdots - 21u^2 + 4)^2$
c_5, c_{10}	$u^{84} - 2u^{83} + \cdots - 1077u - 171$
c_6, c_9	$u^{84} - 2u^{83} + \cdots + 19u + 1$
c_8, c_{11}, c_{12}	$(u^{42} + 4u^{41} + \cdots + 6u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7	$y^{84} - 47y^{83} + \cdots - 2568522y + 44521$
c_2	$(y^{42} - 6y^{41} + \cdots - 168y + 16)^2$
c_5, c_{10}	$y^{84} - 18y^{83} + \cdots - 1451997y + 29241$
c_6, c_9	$y^{84} - 2y^{83} + \cdots - 153y + 1$
c_8, c_{11}, c_{12}	$(y^{42} - 40y^{41} + \cdots + 10y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.261682 + 0.947043I$ $a = 0.496591 + 0.945052I$ $b = -0.982172 - 0.898519I$	$-1.57098 - 8.97815I$	0
$u = 0.261682 - 0.947043I$ $a = 0.496591 - 0.945052I$ $b = -0.982172 + 0.898519I$	$-1.57098 + 8.97815I$	0
$u = -0.963946 + 0.051725I$ $a = 1.90320 - 2.85570I$ $b = 1.044480 + 0.188443I$	$1.70116 + 0.22078I$	0
$u = -0.963946 - 0.051725I$ $a = 1.90320 + 2.85570I$ $b = 1.044480 - 0.188443I$	$1.70116 - 0.22078I$	0
$u = 0.089013 + 1.048540I$ $a = -0.475100 + 1.029690I$ $b = 0.471537 - 0.871365I$	$7.08036 + 5.12233I$	0
$u = 0.089013 - 1.048540I$ $a = -0.475100 - 1.029690I$ $b = 0.471537 + 0.871365I$	$7.08036 - 5.12233I$	0
$u = -0.844891 + 0.364928I$ $a = 0.436922 + 0.177443I$ $b = 0.19300 - 1.49154I$	$-2.19538 + 5.56633I$	0
$u = -0.844891 - 0.364928I$ $a = 0.436922 - 0.177443I$ $b = 0.19300 + 1.49154I$	$-2.19538 - 5.56633I$	0
$u = -1.08532$ $a = -2.29473$ $b = 0.843743$	1.48229	0
$u = 1.074060 + 0.188077I$ $a = -0.92340 - 1.46590I$ $b = -0.773246 - 0.035442I$	$-1.63855 - 9.41269I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.074060 - 0.188077I$ $a = -0.92340 + 1.46590I$ $b = -0.773246 + 0.035442I$	$-1.63855 + 9.41269I$	0
$u = -1.072080 + 0.206881I$ $a = -0.08182 - 1.67349I$ $b = -0.780522 + 0.178469I$	$-2.86626 + 0.79727I$	0
$u = -1.072080 - 0.206881I$ $a = -0.08182 + 1.67349I$ $b = -0.780522 - 0.178469I$	$-2.86626 - 0.79727I$	0
$u = 0.231743 + 0.864034I$ $a = -0.18036 + 1.40382I$ $b = -0.703444 - 0.783632I$	9.57206	0
$u = 0.231743 - 0.864034I$ $a = -0.18036 - 1.40382I$ $b = -0.703444 + 0.783632I$	9.57206	0
$u = -0.867762 + 0.124423I$ $a = -2.09750 + 1.35331I$ $b = -0.413691 - 0.104225I$	$0.507064 + 0.220193I$	0
$u = -0.867762 - 0.124423I$ $a = -2.09750 - 1.35331I$ $b = -0.413691 + 0.104225I$	$0.507064 - 0.220193I$	0
$u = -1.134230 + 0.225687I$ $a = 0.783102 + 1.167270I$ $b = 0.591631 - 0.669511I$	$-1.21239 + 1.65323I$	0
$u = -1.134230 - 0.225687I$ $a = 0.783102 - 1.167270I$ $b = 0.591631 + 0.669511I$	$-1.21239 - 1.65323I$	0
$u = 0.806169 + 0.198254I$ $a = 0.752898 - 0.789249I$ $b = 1.28888 + 0.72301I$	$0.987868 - 0.521667I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.806169 - 0.198254I$ $a = 0.752898 + 0.789249I$ $b = 1.28888 - 0.72301I$	$0.987868 + 0.521667I$	0
$u = 0.770426 + 0.275262I$ $a = -0.353303 + 0.266737I$ $b = 0.317608 - 1.175300I$	$0.91619 - 2.04302I$	0
$u = 0.770426 - 0.275262I$ $a = -0.353303 - 0.266737I$ $b = 0.317608 + 1.175300I$	$0.91619 + 2.04302I$	0
$u = 1.127580 + 0.401456I$ $a = -0.499514 + 0.956746I$ $b = -1.30281 - 0.92417I$	$-2.69923 - 5.20353I$	0
$u = 1.127580 - 0.401456I$ $a = -0.499514 - 0.956746I$ $b = -1.30281 + 0.92417I$	$-2.69923 + 5.20353I$	0
$u = -0.486546 + 0.627534I$ $a = -0.389167 - 0.809092I$ $b = -0.87588 + 1.27934I$	$-1.21239 - 1.65323I$	0
$u = -0.486546 - 0.627534I$ $a = -0.389167 + 0.809092I$ $b = -0.87588 - 1.27934I$	$-1.21239 + 1.65323I$	0
$u = 1.152910 + 0.365386I$ $a = -0.483421 + 0.947859I$ $b = -1.00729 - 1.11116I$	$-2.19538 - 5.56633I$	0
$u = 1.152910 - 0.365386I$ $a = -0.483421 - 0.947859I$ $b = -1.00729 + 1.11116I$	$-2.19538 + 5.56633I$	0
$u = -1.021970 + 0.681032I$ $a = -0.276396 - 0.464069I$ $b = 0.28049 + 1.52247I$	$3.24920 + 10.79950I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.021970 - 0.681032I$ $a = -0.276396 + 0.464069I$ $b = 0.28049 - 1.52247I$	$3.24920 - 10.79950I$	0
$u = 1.098220 + 0.560900I$ $a = 0.305597 - 0.466890I$ $b = -0.434696 + 1.129890I$	$7.08036 - 5.12233I$	0
$u = 1.098220 - 0.560900I$ $a = 0.305597 + 0.466890I$ $b = -0.434696 - 1.129890I$	$7.08036 + 5.12233I$	0
$u = 0.752107 + 0.049257I$ $a = -0.90125 - 1.83181I$ $b = -1.070700 + 0.724698I$	$-0.27560 + 8.13259I$	$0. - 6.18539I$
$u = 0.752107 - 0.049257I$ $a = -0.90125 + 1.83181I$ $b = -1.070700 - 0.724698I$	$-0.27560 - 8.13259I$	$0. + 6.18539I$
$u = -0.677497 + 1.046410I$ $a = 0.499516 + 0.752124I$ $b = 1.02566 - 1.07141I$	$4.48711 - 4.62327I$	0
$u = -0.677497 - 1.046410I$ $a = 0.499516 - 0.752124I$ $b = 1.02566 + 1.07141I$	$4.48711 + 4.62327I$	0
$u = 1.265920 + 0.001741I$ $a = 0.708745 - 1.102620I$ $b = 0.680614 - 0.024817I$	$-7.27997 + 5.36611I$	0
$u = 1.265920 - 0.001741I$ $a = 0.708745 + 1.102620I$ $b = 0.680614 + 0.024817I$	$-7.27997 - 5.36611I$	0
$u = -1.208500 + 0.413895I$ $a = 0.42273 + 1.57398I$ $b = 0.744344 - 0.370973I$	$1.34008 + 2.41358I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.208500 - 0.413895I$ $a = 0.42273 - 1.57398I$ $b = 0.744344 + 0.370973I$	$1.34008 - 2.41358I$	0
$u = 1.202340 + 0.450917I$ $a = 0.523601 - 1.173700I$ $b = 1.21578 + 0.78974I$	$-1.57098 - 8.97815I$	0
$u = 1.202340 - 0.450917I$ $a = 0.523601 + 1.173700I$ $b = 1.21578 - 0.78974I$	$-1.57098 + 8.97815I$	0
$u = -1.276910 + 0.228220I$ $a = -0.888336 - 0.616307I$ $b = -1.58590 + 0.42462I$	$-5.60584 + 0.71895I$	0
$u = -1.276910 - 0.228220I$ $a = -0.888336 + 0.616307I$ $b = -1.58590 - 0.42462I$	$-5.60584 - 0.71895I$	0
$u = -1.339800 + 0.191596I$ $a = 0.0909767 + 0.0257604I$ $b = -1.112800 - 0.283400I$	$3.89824 + 0.05208I$	0
$u = -1.339800 - 0.191596I$ $a = 0.0909767 - 0.0257604I$ $b = -1.112800 + 0.283400I$	$3.89824 - 0.05208I$	0
$u = -1.39164 + 0.28613I$ $a = 0.218968 + 0.286840I$ $b = 0.545133 - 0.008653I$	$-2.39805 + 0.09368I$	0
$u = -1.39164 - 0.28613I$ $a = 0.218968 - 0.286840I$ $b = 0.545133 + 0.008653I$	$-2.39805 - 0.09368I$	0
$u = 1.31620 + 0.55010I$ $a = 0.501394 - 1.024750I$ $b = 0.859520 + 0.949549I$	$3.24920 - 10.79950I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.31620 - 0.55010I$ $a = 0.501394 + 1.024750I$ $b = 0.859520 - 0.949549I$	$3.24920 + 10.79950I$	0
$u = 0.03070 + 1.43339I$ $a = -0.327596 - 0.653038I$ $b = 0.930451 + 0.936755I$	$4.62755 - 11.80560I$	0
$u = 0.03070 - 1.43339I$ $a = -0.327596 + 0.653038I$ $b = 0.930451 - 0.936755I$	$4.62755 + 11.80560I$	0
$u = 1.21120 + 0.77433I$ $a = 0.174602 - 0.980751I$ $b = 1.14337 + 0.95826I$	$-0.27560 - 8.13259I$	0
$u = 1.21120 - 0.77433I$ $a = 0.174602 + 0.980751I$ $b = 1.14337 - 0.95826I$	$-0.27560 + 8.13259I$	0
$u = 0.050029 + 0.549506I$ $a = 1.19600 - 1.13071I$ $b = -0.300770 + 0.829222I$	$0.91619 + 2.04302I$	$5.13446 - 5.82498I$
$u = 0.050029 - 0.549506I$ $a = 1.19600 + 1.13071I$ $b = -0.300770 - 0.829222I$	$0.91619 - 2.04302I$	$5.13446 + 5.82498I$
$u = -1.36026 + 0.52579I$ $a = 0.430615 + 0.801303I$ $b = 1.39194 - 0.74929I$	$-7.27997 + 5.36611I$	0
$u = -1.36026 - 0.52579I$ $a = 0.430615 - 0.801303I$ $b = 1.39194 + 0.74929I$	$-7.27997 - 5.36611I$	0
$u = -0.13420 + 1.45685I$ $a = -0.248480 - 0.121273I$ $b = 0.488133 + 0.519185I$	$-2.86626 + 0.79727I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.13420 - 1.45685I$ $a = -0.248480 + 0.121273I$ $b = 0.488133 - 0.519185I$	$-2.86626 - 0.79727I$	0
$u = -0.408727 + 0.343565I$ $a = -2.13532 - 0.61742I$ $b = -0.117649 + 0.517025I$	$0.987868 + 0.521667I$	$5.50066 - 8.13511I$
$u = -0.408727 - 0.343565I$ $a = -2.13532 + 0.61742I$ $b = -0.117649 - 0.517025I$	$0.987868 - 0.521667I$	$5.50066 + 8.13511I$
$u = -1.41452 + 0.41919I$ $a = -0.816772 - 0.885755I$ $b = -0.836044 + 0.659983I$	$4.48711 + 4.62327I$	0
$u = -1.41452 - 0.41919I$ $a = -0.816772 + 0.885755I$ $b = -0.836044 - 0.659983I$	$4.48711 - 4.62327I$	0
$u = 1.37747 + 0.56787I$ $a = -0.566296 + 1.126800I$ $b = -1.23078 - 0.74714I$	$4.62755 - 11.80560I$	0
$u = 1.37747 - 0.56787I$ $a = -0.566296 - 1.126800I$ $b = -1.23078 + 0.74714I$	$4.62755 + 11.80560I$	0
$u = 0.445807 + 0.240650I$ $a = 1.99187 - 1.36233I$ $b = 1.55450 + 0.24918I$	$3.89824 + 0.05208I$	$2.96308 + 1.55808I$
$u = 0.445807 - 0.240650I$ $a = 1.99187 + 1.36233I$ $b = 1.55450 - 0.24918I$	$3.89824 - 0.05208I$	$2.96308 - 1.55808I$
$u = 0.457836 + 0.210235I$ $a = 0.336633 + 0.579630I$ $b = 1.63519 - 1.30874I$	$0.507064 + 0.220193I$	$-45.7148 - 2.4288I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.457836 - 0.210235I$ $a = 0.336633 - 0.579630I$ $b = 1.63519 + 1.30874I$	$0.507064 - 0.220193I$	$-45.7148 + 2.4288I$
$u = 0.85356 + 1.25954I$ $a = 0.175588 + 0.316617I$ $b = -0.470436 - 0.893443I$	$1.34008 + 2.41358I$	0
$u = 0.85356 - 1.25954I$ $a = 0.175588 - 0.316617I$ $b = -0.470436 + 0.893443I$	$1.34008 - 2.41358I$	0
$u = 1.53419 + 0.16764I$ $a = -0.598062 + 0.544708I$ $b = -0.560505 + 0.033219I$	$-5.60584 + 0.71895I$	0
$u = 1.53419 - 0.16764I$ $a = -0.598062 - 0.544708I$ $b = -0.560505 - 0.033219I$	$-5.60584 - 0.71895I$	0
$u = -0.437176 + 0.122731I$ $a = 1.70371 - 0.40044I$ $b = -1.024860 - 0.072173I$	$-2.39805 + 0.09368I$	$-10.6271 + 12.2420I$
$u = -0.437176 - 0.122731I$ $a = 1.70371 + 0.40044I$ $b = -1.024860 + 0.072173I$	$-2.39805 - 0.09368I$	$-10.6271 - 12.2420I$
$u = -1.38461 + 0.80608I$ $a = -0.200188 - 0.822733I$ $b = -1.20849 + 0.84935I$	$-1.63855 + 9.41269I$	0
$u = -1.38461 - 0.80608I$ $a = -0.200188 + 0.822733I$ $b = -1.20849 - 0.84935I$	$-1.63855 - 9.41269I$	0
$u = -0.243722 + 0.100188I$ $a = -1.27642 + 2.43808I$ $b = 0.868378 + 0.853813I$	$-2.69923 - 5.20353I$	$-2.14266 + 4.41682I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.243722-0.100188I$ $a=-1.27642-2.43808I$ $b=\ \ 0.868378-0.853813I$	$-2.69923+5.20353I$	$-2.14266-4.41682I$
$u=\ \ 1.21685+2.64688I$ $a=-0.0932233+0.0359602I$ $b=\ \ 0.199281-0.378399I$	$1.70116-0.22078I$	0
$u=\ \ 1.21685-2.64688I$ $a=-0.0932233-0.0359602I$ $b=\ \ 0.199281+0.378399I$	$1.70116+0.22078I$	0
$u=-3.22872$ $a=-0.0656876$ $b=-0.198217$	1.48229	0

III.

$\boldsymbol{I_3^u = \langle u^{11}+u^{10}+\cdots+b+5,\ 6u^{11}-3u^{10}+\cdots+a+14,\ u^{12}-u^{11}+\cdots+3u-1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_{11} = \begin{pmatrix}-6u^{11}+3u^{10}+\cdots+11u-14\\-u^{11}-u^{10}+\cdots+8u-5\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-7u^{11}+3u^{10}+\cdots+17u-18\\-u^{10}+u^9+2u^8-3u^7-2u^6+7u^5-7u^3+3u^2+4u-2\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-7u^{11}+5u^{10}+\cdots+6u-16\\-u^{11}+u^{10}+3u^9-4u^8-5u^7+10u^6+4u^5-13u^4+10u^2-u-2\end{pmatrix}$$

$$a_2 = \begin{pmatrix}7u^{11}-3u^{10}+\cdots-14u+20\\u^{11}-4u^9+u^8+9u^7-5u^6-14u^5+9u^4+13u^3-9u^2-6u+4\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-7u^{11}+2u^{10}+\cdots+19u-19\\-u^{11}-u^{10}+\cdots+8u-5\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-6u^{11}+6u^{10}+\cdots-5u-6\\-2u^{11}+3u^{10}+\cdots+13u^2-6u\end{pmatrix}$$

$$a_1 = \begin{pmatrix}7u^{11}-u^{10}+\cdots-26u+26\\2u^{10}-3u^9-4u^8+9u^7+5u^6-20u^5+2u^4+20u^3-7u^2-12u+6\end{pmatrix}$$

$$a_9 = \begin{pmatrix}9u^{11}-8u^{10}+\cdots-u+17\\u^{11}-2u^{10}-u^9+6u^8-u^7-12u^6+8u^5+10u^4-11u^3-4u^2+7u-1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -35u^{11}+26u^{10}+102u^9-101u^8-181u^7+266u^6+184u^5-326u^4-88u^3+253u^2+16u-66$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7	$y^{12} - 7y^{11} + \cdots - 13y + 1$
c_2	$y^{12} - 4y^{11} + \cdots - 2031y + 1$
c_5, c_{10}	$y^{12} - 9y^{11} + \cdots - 13y + 1$
c_6, c_9	$y^{12} + y^{11} + \cdots - 3y + 1$
c_8, c_{11}, c_{12}	$y^{12} - 17y^{11} + \cdots + 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.980426+0.359776I$ $a=\ \ 0.315577+1.061870I$ $b=\ \ 1.20958-1.14556I$	$-3.49372+6.79468I$	$-3.95649-8.34398I$
$u=-0.980426-0.359776I$ $a=\ \ 0.315577-1.061870I$ $b=\ \ 1.20958+1.14556I$	$-3.49372-6.79468I$	$-3.95649+8.34398I$
$u=\ \ 0.922366+0.567855I$ $a=\ \ 0.507673+0.469719I$ $b=-0.699044+0.101088I$	$-2.48246-0.51237I$	$-13.45230-1.02564I$
$u=\ \ 0.922366-0.567855I$ $a=\ \ 0.507673-0.469719I$ $b=-0.699044-0.101088I$	$-2.48246+0.51237I$	$-13.45230+1.02564I$
$u=-0.819983$ $a=-1.14846$ $b=-2.35691$	5.45924	19.6690
$u=\ \ 0.844858+0.958336I$ $a=-0.825525-0.232337I$ $b=\ \ 0.673751-0.164556I$	$2.99376-1.52653I$	$-3.62688-2.79584I$
$u=\ \ 0.844858-0.958336I$ $a=-0.825525+0.232337I$ $b=\ \ 0.673751+0.164556I$	$2.99376+1.52653I$	$-3.62688+2.79584I$
$u=-1.092040+0.663905I$ $a=\ \ 0.075491-1.097560I$ $b=-0.802211+0.921101I$	$0.63288+10.74750I$	$0.04011-9.58433I$
$u=-1.092040-0.663905I$ $a=\ \ 0.075491+1.097560I$ $b=-0.802211-0.921101I$	$0.63288-10.74750I$	$0.04011+9.58433I$
$u=\ \ 0.611943$ $a=\ \ 1.31568$ $b=\ \ 0.787635$	0.657166	-4.13140

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.40176$ $a = -0.316874$ $b = 0.645260$	1.31420	-8.21480
$u = 0.416765$ $a = -3.99678$ $b = -0.840139$	10.4279	-28.3320

IV. $I^u_4 = \langle b-1,\ a-1,\ u^2+u-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.00000$ $b = 1.00000$	0.657974	−5.00000
$u = -1.61803$ $a = 1.00000$ $b = 1.00000$	−7.23771	−5.00000

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

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ -u+1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ -u+1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u+1 \\ u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 2u+1 \\ 2u-1 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} 2u+1 \\ u \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} u+1 \\ u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.61803$ $b = 0.618034$	0.657974	-5.00000
$u = -1.61803$ $a = -0.618034$ $b = -1.61803$	-7.23771	-5.00000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$((u^2+u-1)^2)(u^{12}-u^{11}+\cdots+3u-1)(u^{34}-u^{33}+\cdots-14u+1)$ $\cdot(u^{84}+3u^{83}+\cdots+1498u+211)$
c_2	$u^4(u^{12}-10u^{11}+\cdots+41u+1)(u^{34}-15u^{33}+\cdots-42u+4)$ $\cdot(u^{42}+10u^{41}+\cdots-21u^2+4)^2$
c_4, c_7	$((u^2-u-1)^2)(u^{12}+u^{11}+\cdots-3u-1)(u^{34}-u^{33}+\cdots-14u+1)$ $\cdot(u^{84}+3u^{83}+\cdots+1498u+211)$
c_5, c_{10}	$((u+1)^2)(u^2-u-1)(u^{12}-u^{11}+\cdots+u+1)(u^{34}-u^{33}+\cdots+2u-1)$ $\cdot(u^{84}-2u^{83}+\cdots-1077u-171)$
c_6, c_9	$(u+1)^2(u^2-u-1)$ $\cdot(u^{12}-u^{11}+u^{10}-2u^9+u^8-2u^7-5u^6+u^5-4u^4-2u^3-u^2-u+1)$ $\cdot(u^{34}-u^{33}+\cdots+8u+1)(u^{84}-2u^{83}+\cdots+19u+1)$
c_8	$((u+1)^4)(u^{12}-3u^{11}+\cdots-4u-1)(u^{34}-12u^{33}+\cdots+48u+16)$ $\cdot(u^{42}+4u^{41}+\cdots+6u+1)^2$
c_{11}, c_{12}	$((u-1)^4)(u^{12}+3u^{11}+\cdots+4u-1)(u^{34}-12u^{33}+\cdots+48u+16)$ $\cdot(u^{42}+4u^{41}+\cdots+6u+1)^2$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7	$((y^2-3y+1)^2)(y^{12}-7y^{11}+\cdots-13y+1)$ $\cdot(y^{34}-29y^{33}+\cdots-146y+1)$ $\cdot(y^{84}-47y^{83}+\cdots-2568522y+44521)$
c_2	$y^4(y^{12}-4y^{11}+\cdots-2031y+1)(y^{34}-7y^{33}+\cdots-1628y+16)$ $\cdot(y^{42}-6y^{41}+\cdots-168y+16)^2$
c_5, c_{10}	$((y-1)^2)(y^2-3y+1)(y^{12}-9y^{11}+\cdots-13y+1)$ $\cdot(y^{34}-23y^{33}+\cdots-42y+1)(y^{84}-18y^{83}+\cdots-1451997y+29241)$
c_6, c_9	$((y-1)^2)(y^2-3y+1)(y^{12}+y^{11}+\cdots-3y+1)$ $\cdot(y^{34}-5y^{33}+\cdots-48y+1)(y^{84}-2y^{83}+\cdots-153y+1)$
c_8, c_{11}, c_{12}	$((y-1)^4)(y^{12}-17y^{11}+\cdots+4y+1)(y^{34}-36y^{33}+\cdots+480y+256)$ $\cdot(y^{42}-40y^{41}+\cdots+10y+1)^2$