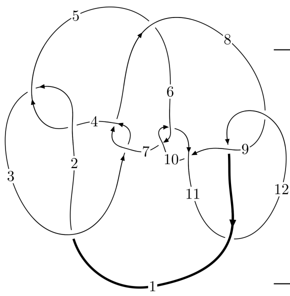
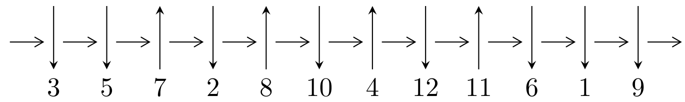
$12a_{0040}$ ($K12a_{0040}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2.52476 \times 10^{40} u^{119} + 1.85032 \times 10^{41} u^{118} + \cdots + 3.97571 \times 10^{38} b + 3.69260 \times 10^{40},$$
$$1.98154 \times 10^{40} u^{119} + 1.49672 \times 10^{41} u^{118} + \cdots + 1.98786 \times 10^{38} a + 3.56279 \times 10^{40},\ u^{120} + 8u^{119} + \cdots + 8u$$
$$I_2^u = \langle b,\ u^8 + 2u^7 - u^6 - 4u^5 - u^4 + 3u^3 + 3u^2 + a + 2u,\ u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1\rangle$$
$$I_3^u = \langle 2a^5 - 2a^4 + 7a^3 - 5a^2 + 3b + a - 4,\ a^6 + 4a^4 + a^3 + 4a^2 + 1,\ u - 1\rangle$$

* 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. $I^u_1 = \langle 2.52\times10^{40}u^{119} + 1.85\times10^{41}u^{118} + \cdots + 3.98\times10^{38}b + 3.69\times10^{40},\ 1.98\times10^{40}u^{119} + 1.50\times10^{41}u^{118} + \cdots + 1.99\times10^{38}a + 3.56\times10^{40},\ u^{120} + 8u^{119} + \cdots + 8u + 1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-99.6821u^{119} - 752.933u^{118} + \cdots - 1132.22u - 179.228\\-63.5047u^{119} - 465.406u^{118} + \cdots - 610.082u - 92.8790\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-87.8357u^{119} - 646.404u^{118} + \cdots - 906.733u - 143.815\\-72.6685u^{119} - 538.693u^{118} + \cdots - 759.203u - 119.616\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-58.4140u^{119} - 454.008u^{118} + \cdots - 741.967u - 116.664\\-11.7388u^{119} - 99.1517u^{118} + \cdots - 221.718u - 34.2318\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^6-u^4+1\\u^8-2u^6+2u^4\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-142.741u^{119} - 1051.82u^{118} + \cdots - 1483.16u - 234.293\\-79.4077u^{119} - 581.716u^{118} + \cdots - 788.076u - 124.403\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-63.3338u^{119} - 470.103u^{118} + \cdots - 695.081u - 109.889\\-79.4077u^{119} - 581.716u^{118} + \cdots - 788.076u - 124.403\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-101.184u^{119} - 771.740u^{118} + \cdots - 1234.87u - 197.448\\-73.1735u^{119} - 538.032u^{118} + \cdots - 737.816u - 115.113\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 155.044u^{119} + 1104.19u^{118} + \cdots + 1214.15u + 168.050$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{120} + 57u^{119} + \cdots + 451u + 1$
c_2, c_4	$u^{120} - 11u^{119} + \cdots + 27u - 1$
c_3, c_7	$u^{120} - 2u^{119} + \cdots - 512u + 512$
c_5	$u^{120} + 3u^{119} + \cdots - 3758933u - 444601$
c_6, c_{10}	$u^{120} + 2u^{119} + \cdots - 128u - 64$
c_8, c_{12}	$u^{120} - 8u^{119} + \cdots - 8u + 1$
c_9	$u^{120} - 42u^{119} + \cdots - 106496u + 4096$
c_{11}	$u^{120} + 64u^{119} + \cdots + 8u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{120} + 23y^{119} + \cdots - 187035y + 1$
c_2, c_4	$y^{120} - 57y^{119} + \cdots - 451y + 1$
c_3, c_7	$y^{120} - 60y^{119} + \cdots - 11796480y + 262144$
c_5	$y^{120} - 21y^{119} + \cdots - 9546190035499y + 197670049201$
c_6, c_{10}	$y^{120} + 42y^{119} + \cdots + 106496y + 4096$
c_8, c_{12}	$y^{120} - 64y^{119} + \cdots - 8y + 1$
c_9	$y^{120} + 62y^{119} + \cdots - 511705088y + 16777216$
c_{11}	$y^{120} - 8y^{119} + \cdots - 64y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.781703 + 0.626996I$ $a = 2.53481 - 0.75078I$ $b = -0.897256 - 0.066842I$	$1.45619 + 2.43204I$	0
$u = -0.781703 - 0.626996I$ $a = 2.53481 + 0.75078I$ $b = -0.897256 + 0.066842I$	$1.45619 - 2.43204I$	0
$u = -0.688922 + 0.732659I$ $a = 1.61210 - 0.53654I$ $b = -1.277420 + 0.530341I$	$6.62514 - 5.23780I$	0
$u = -0.688922 - 0.732659I$ $a = 1.61210 + 0.53654I$ $b = -1.277420 - 0.530341I$	$6.62514 + 5.23780I$	0
$u = -0.739899 + 0.655965I$ $a = 0.767226 + 0.255470I$ $b = -0.164900 - 1.010320I$	$3.04826 + 0.29752I$	0
$u = -0.739899 - 0.655965I$ $a = 0.767226 - 0.255470I$ $b = -0.164900 + 1.010320I$	$3.04826 - 0.29752I$	0
$u = -0.733582 + 0.717890I$ $a = -1.83320 + 0.64066I$ $b = 1.305000 - 0.285363I$	$8.21310 + 0.50687I$	0
$u = -0.733582 - 0.717890I$ $a = -1.83320 - 0.64066I$ $b = 1.305000 + 0.285363I$	$8.21310 - 0.50687I$	0
$u = 0.930786 + 0.465334I$ $a = -1.02154 - 1.67472I$ $b = 1.180540 + 0.406202I$	$0.64675 + 2.54597I$	0
$u = 0.930786 - 0.465334I$ $a = -1.02154 + 1.67472I$ $b = 1.180540 - 0.406202I$	$0.64675 - 2.54597I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.819870+0.648210I$ $a=-0.568752-0.480301I$ $b=-0.257485+1.034380I$	$2.81901+4.71117I$	0
$u=-0.819870-0.648210I$ $a=-0.568752+0.480301I$ $b=-0.257485-1.034380I$	$2.81901-4.71117I$	0
$u=1.072720+0.077721I$ $a=-0.20436-2.27899I$ $b=-0.211326-0.578062I$	$-3.19317-0.58424I$	0
$u=1.072720-0.077721I$ $a=-0.20436+2.27899I$ $b=-0.211326+0.578062I$	$-3.19317+0.58424I$	0
$u=-0.226064+0.885039I$ $a=1.57130+0.52144I$ $b=-1.221930+0.677956I$	$2.10205-12.84790I$	0
$u=-0.226064-0.885039I$ $a=1.57130-0.52144I$ $b=-1.221930-0.677956I$	$2.10205+12.84790I$	0
$u=-0.841471+0.691793I$ $a=-2.07690+1.04697I$ $b=1.296310+0.355054I$	$7.89915+4.80277I$	0
$u=-0.841471-0.691793I$ $a=-2.07690-1.04697I$ $b=1.296310-0.355054I$	$7.89915-4.80277I$	0
$u=-0.248169+0.867541I$ $a=-1.72098-0.45454I$ $b=1.237400-0.490795I$	$4.40266-7.18738I$	0
$u=-0.248169-0.867541I$ $a=-1.72098+0.45454I$ $b=1.237400+0.490795I$	$4.40266+7.18738I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.798069+0.417778I$ $a=-0.028492-0.471920I$ $b=-0.661694-0.043069I$	$1.21358+1.83340I$	0
$u=-0.798069-0.417778I$ $a=-0.028492+0.471920I$ $b=-0.661694+0.043069I$	$1.21358-1.83340I$	0
$u=\ 1.004720+0.468278I$ $a=\ 1.28653+1.75341I$ $b=-1.221750-0.109820I$	$1.69311-2.74237I$	0
$u=\ 1.004720-0.468278I$ $a=\ 1.28653-1.75341I$ $b=-1.221750+0.109820I$	$1.69311+2.74237I$	0
$u=-0.878883+0.685866I$ $a=\ 2.04246-1.14516I$ $b=-1.272340-0.584117I$	$6.07322+10.56780I$	0
$u=-0.878883-0.685866I$ $a=\ 2.04246+1.14516I$ $b=-1.272340+0.584117I$	$6.07322-10.56780I$	0
$u=-0.344653+0.812462I$ $a=-1.85816-0.05813I$ $b=\ 1.296950+0.114963I$	$6.09868-3.26636I$	0
$u=-0.344653-0.812462I$ $a=-1.85816+0.05813I$ $b=\ 1.296950-0.114963I$	$6.09868+3.26636I$	0
$u=-0.401546+0.783989I$ $a=\ 1.75354-0.06110I$ $b=-1.259800-0.384650I$	$5.11752+2.33858I$	0
$u=-0.401546-0.783989I$ $a=\ 1.75354+0.06110I$ $b=-1.259800+0.384650I$	$5.11752-2.33858I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.233066+0.838650I$ $a=\ \ 0.082248+0.246084I$ $b=-0.431383-1.042700I$	$-0.41671-6.60155I$	0
$u=-0.233066-0.838650I$ $a=\ \ 0.082248-0.246084I$ $b=-0.431383+1.042700I$	$-0.41671+6.60155I$	0
$u=\ \ 0.863965$ $a=-0.644795$ $b=\ \ 0.219021$	-1.25564	0
$u=-1.082180+0.408010I$ $a=-0.060771+0.358868I$ $b=-1.056880+0.541010I$	$-0.617111+1.136830I$	0
$u=-1.082180-0.408010I$ $a=-0.060771-0.358868I$ $b=-1.056880-0.541010I$	$-0.617111-1.136830I$	0
$u=-0.228884+0.809806I$ $a=\ \ 2.14403+0.63084I$ $b=-0.913467+0.317981I$	$-1.37934-4.06817I$	0
$u=-0.228884-0.809806I$ $a=\ \ 2.14403-0.63084I$ $b=-0.913467-0.317981I$	$-1.37934+4.06817I$	0
$u=\ \ 1.091890+0.407398I$ $a=-1.225800-0.382164I$ $b=-0.106806-0.841935I$	$-3.25950-1.43414I$	0
$u=\ \ 1.091890-0.407398I$ $a=-1.225800+0.382164I$ $b=-0.106806+0.841935I$	$-3.25950+1.43414I$	0
$u=-1.114220+0.383038I$ $a=\ \ 0.298421-0.602605I$ $b=\ \ 1.117930-0.678993I$	$-3.13753-4.01738I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.114220 - 0.383038I$ $a = 0.298421 + 0.602605I$ $b = 1.117930 + 0.678993I$	$-3.13753 + 4.01738I$	0
$u = -0.114192 + 0.811962I$ $a = 0.195578 + 0.002860I$ $b = -0.774547 - 0.295093I$	$-1.84565 - 1.28021I$	0
$u = -0.114192 - 0.811962I$ $a = 0.195578 - 0.002860I$ $b = -0.774547 + 0.295093I$	$-1.84565 + 1.28021I$	0
$u = -0.263583 + 0.772995I$ $a = 0.048817 - 0.164759I$ $b = 0.062093 + 0.937483I$	$0.77417 - 2.19825I$	0
$u = -0.263583 - 0.772995I$ $a = 0.048817 + 0.164759I$ $b = 0.062093 - 0.937483I$	$0.77417 + 2.19825I$	0
$u = 1.145450 + 0.314699I$ $a = -0.630962 - 1.037490I$ $b = 0.172083 - 0.746812I$	$-3.47727 - 0.99083I$	0
$u = 1.145450 - 0.314699I$ $a = -0.630962 + 1.037490I$ $b = 0.172083 + 0.746812I$	$-3.47727 + 0.99083I$	0
$u = -1.108160 + 0.433990I$ $a = -0.355791 + 1.337260I$ $b = 0.570690 + 0.939425I$	$-4.90498 + 1.93971I$	0
$u = -1.108160 - 0.433990I$ $a = -0.355791 - 1.337260I$ $b = 0.570690 - 0.939425I$	$-4.90498 - 1.93971I$	0
$u = 1.118830 + 0.445202I$ $a = -1.95584 - 2.05447I$ $b = 0.869061 - 0.363739I$	$-5.50041 - 3.10765I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.118830 - 0.445202I$ $a = -1.95584 + 2.05447I$ $b = 0.869061 + 0.363739I$	$-5.50041 + 3.10765I$	0
$u = -1.119840 + 0.453707I$ $a = -0.521942 - 0.703698I$ $b = 0.849724 - 0.535024I$	$-5.43931 + 4.53491I$	0
$u = -1.119840 - 0.453707I$ $a = -0.521942 + 0.703698I$ $b = 0.849724 + 0.535024I$	$-5.43931 - 4.53491I$	0
$u = -0.777873 + 0.136267I$ $a = 0.441442 + 1.221480I$ $b = 1.019780 + 0.579374I$	$-1.06043 + 6.07967I$	0
$u = -0.777873 - 0.136267I$ $a = 0.441442 - 1.221480I$ $b = 1.019780 - 0.579374I$	$-1.06043 - 6.07967I$	0
$u = 1.116780 + 0.468489I$ $a = 1.380320 - 0.108317I$ $b = 0.451699 + 1.005900I$	$-4.64482 - 5.60149I$	0
$u = 1.116780 - 0.468489I$ $a = 1.380320 + 0.108317I$ $b = 0.451699 - 1.005900I$	$-4.64482 + 5.60149I$	0
$u = 0.617737 + 0.488236I$ $a = -2.91600 - 0.23481I$ $b = 1.193780 - 0.512097I$	$1.56344 - 6.54073I$	0
$u = 0.617737 - 0.488236I$ $a = -2.91600 + 0.23481I$ $b = 1.193780 + 0.512097I$	$1.56344 + 6.54073I$	0
$u = 1.108140 + 0.494518I$ $a = 1.60623 + 2.13884I$ $b = -1.200220 + 0.485456I$	$0.04434 - 6.17641I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.108140 - 0.494518I$ $a = 1.60623 - 2.13884I$ $b = -1.200220 - 0.485456I$	$0.04434 + 6.17641I$	0
$u = -1.121190 + 0.486520I$ $a = 0.532816 - 0.923881I$ $b = -0.373734 - 0.813785I$	$-2.64934 + 6.07508I$	0
$u = -1.121190 - 0.486520I$ $a = 0.532816 + 0.923881I$ $b = -0.373734 + 0.813785I$	$-2.64934 - 6.07508I$	0
$u = 1.224670 + 0.160747I$ $a = -0.065857 - 0.607777I$ $b = 1.163270 - 0.153221I$	$0.928537 + 0.392500I$	0
$u = 1.224670 - 0.160747I$ $a = -0.065857 + 0.607777I$ $b = 1.163270 + 0.153221I$	$0.928537 - 0.392500I$	0
$u = -1.090900 + 0.581156I$ $a = 0.667582 - 0.986969I$ $b = -1.279380 + 0.305378I$	$3.07488 + 2.77369I$	0
$u = -1.090900 - 0.581156I$ $a = 0.667582 + 0.986969I$ $b = -1.279380 - 0.305378I$	$3.07488 - 2.77369I$	0
$u = 1.130050 + 0.504249I$ $a = -1.59951 - 2.24133I$ $b = 1.200410 - 0.671678I$	$-2.26176 - 11.72400I$	0
$u = 1.130050 - 0.504249I$ $a = -1.59951 + 2.24133I$ $b = 1.200410 + 0.671678I$	$-2.26176 + 11.72400I$	0
$u = 1.240540 + 0.097824I$ $a = -0.114954 + 0.943587I$ $b = -1.158460 + 0.463847I$	$-0.36881 - 4.75701I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.240540 - 0.097824I$ $a = -0.114954 - 0.943587I$ $b = -1.158460 - 0.463847I$	$-0.36881 + 4.75701I$	0
$u = 1.205540 + 0.311353I$ $a = 0.787036 - 0.684011I$ $b = -0.825731 - 0.396066I$	$-5.80900 + 0.49213I$	0
$u = 1.205540 - 0.311353I$ $a = 0.787036 + 0.684011I$ $b = -0.825731 + 0.396066I$	$-5.80900 - 0.49213I$	0
$u = -0.014569 + 0.745385I$ $a = -0.132373 + 0.263093I$ $b = 0.852646 - 0.399361I$	$-2.28381 - 4.26886I$	$-4.00000 + 7.23139I$
$u = -0.014569 - 0.745385I$ $a = -0.132373 - 0.263093I$ $b = 0.852646 + 0.399361I$	$-2.28381 + 4.26886I$	$-4.00000 - 7.23139I$
$u = -0.676491 + 0.294104I$ $a = 0.092796 - 0.977502I$ $b = -0.769091 - 0.387965I$	$1.10898 + 1.72747I$	$2.65279 - 4.70086I$
$u = -0.676491 - 0.294104I$ $a = 0.092796 + 0.977502I$ $b = -0.769091 + 0.387965I$	$1.10898 - 1.72747I$	$2.65279 + 4.70086I$
$u = -1.179610 + 0.459342I$ $a = 0.185176 + 0.934182I$ $b = 0.800243 + 0.459866I$	$-5.61132 + 8.60634I$	0
$u = -1.179610 - 0.459342I$ $a = 0.185176 - 0.934182I$ $b = 0.800243 - 0.459866I$	$-5.61132 - 8.60634I$	0
$u = 1.230470 + 0.297887I$ $a = 0.198205 + 1.323250I$ $b = -0.459486 + 0.970631I$	$-5.03723 + 2.93363I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.230470 - 0.297887I$ $a = 0.198205 - 1.323250I$ $b = -0.459486 - 0.970631I$	$-5.03723 - 2.93363I$	0
$u = 1.191720 + 0.436251I$ $a = 0.796656 - 0.555080I$ $b = 0.789045 + 0.341843I$	$-5.77673 + 0.02106I$	0
$u = 1.191720 - 0.436251I$ $a = 0.796656 + 0.555080I$ $b = 0.789045 - 0.341843I$	$-5.77673 - 0.02106I$	0
$u = -1.129220 + 0.581695I$ $a = -0.96045 + 1.24949I$ $b = 1.324340 - 0.051025I$	$3.76758 + 8.45005I$	0
$u = -1.129220 - 0.581695I$ $a = -0.96045 - 1.24949I$ $b = 1.324340 + 0.051025I$	$3.76758 - 8.45005I$	0
$u = -1.153540 + 0.544827I$ $a = 0.973644 - 0.345979I$ $b = 0.137809 - 0.980748I$	$-1.84822 + 7.13621I$	0
$u = -1.153540 - 0.544827I$ $a = 0.973644 + 0.345979I$ $b = 0.137809 + 0.980748I$	$-1.84822 - 7.13621I$	0
$u = 1.227000 + 0.386133I$ $a = -0.294669 + 0.951287I$ $b = -0.808514 + 0.369592I$	$-5.89085 - 2.84747I$	0
$u = 1.227000 - 0.386133I$ $a = -0.294669 - 0.951287I$ $b = -0.808514 - 0.369592I$	$-5.89085 + 2.84747I$	0
$u = 1.257270 + 0.278547I$ $a = -0.004685 + 0.408350I$ $b = 1.171660 + 0.468968I$	$-0.45388 + 3.46501I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.257270 - 0.278547I$ $a = -0.004685 - 0.408350I$ $b = 1.171660 - 0.468968I$	$-0.45388 - 3.46501I$	0
$u = -1.172770 + 0.546681I$ $a = 1.68702 - 1.69167I$ $b = -0.961413 - 0.359816I$	$-4.16973 + 9.09296I$	0
$u = -1.172770 - 0.546681I$ $a = 1.68702 + 1.69167I$ $b = -0.961413 + 0.359816I$	$-4.16973 - 9.09296I$	0
$u = -1.196940 + 0.506293I$ $a = -0.643195 - 0.390538I$ $b = -0.714462 + 0.313692I$	$-5.03212 + 6.08894I$	0
$u = -1.196940 - 0.506293I$ $a = -0.643195 + 0.390538I$ $b = -0.714462 - 0.313692I$	$-5.03212 - 6.08894I$	0
$u = 0.520939 + 0.466359I$ $a = 3.01766 + 0.01392I$ $b = -1.184520 + 0.244481I$	$3.11618 - 1.21036I$	$0.73938 + 2.05412I$
$u = 0.520939 - 0.466359I$ $a = 3.01766 - 0.01392I$ $b = -1.184520 - 0.244481I$	$3.11618 + 1.21036I$	$0.73938 - 2.05412I$
$u = -1.180790 + 0.555828I$ $a = -1.122070 + 0.075223I$ $b = -0.466595 + 1.068750I$	$-3.23739 + 11.73660I$	0
$u = -1.180790 - 0.555828I$ $a = -1.122070 - 0.075223I$ $b = -0.466595 - 1.068750I$	$-3.23739 - 11.73660I$	0
$u = 1.274470 + 0.300341I$ $a = -0.191230 - 0.651809I$ $b = -1.185770 - 0.660462I$	$-2.72898 + 8.92074I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.274470 - 0.300341I$ $a = -0.191230 + 0.651809I$ $b = -1.185770 + 0.660462I$	$-2.72898 - 8.92074I$	0
$u = -1.186380 + 0.569612I$ $a = -1.30423 + 1.84761I$ $b = 1.240130 + 0.529876I$	$1.59168 + 12.45610I$	0
$u = -1.186380 - 0.569612I$ $a = -1.30423 - 1.84761I$ $b = 1.240130 - 0.529876I$	$1.59168 - 12.45610I$	0
$u = 0.218013 + 0.644463I$ $a = -2.18699 + 0.73008I$ $b = 1.176600 + 0.628728I$	$0.32142 + 7.26034I$	$-3.12276 - 4.25340I$
$u = 0.218013 - 0.644463I$ $a = -2.18699 - 0.73008I$ $b = 1.176600 - 0.628728I$	$0.32142 - 7.26034I$	$-3.12276 + 4.25340I$
$u = -1.199900 + 0.566803I$ $a = 1.29789 - 1.99136I$ $b = -1.219960 - 0.702540I$	$-0.8252 + 18.1477I$	0
$u = -1.199900 - 0.566803I$ $a = 1.29789 + 1.99136I$ $b = -1.219960 + 0.702540I$	$-0.8252 - 18.1477I$	0
$u = -0.187391 + 0.606350I$ $a = -0.0996893 + 0.0375649I$ $b = -0.332098 + 0.642698I$	$-0.05579 - 1.79813I$	$-0.85726 + 4.29000I$
$u = -0.187391 - 0.606350I$ $a = -0.0996893 - 0.0375649I$ $b = -0.332098 - 0.642698I$	$-0.05579 + 1.79813I$	$-0.85726 - 4.29000I$
$u = 0.632989$ $a = -4.83215$ $b = 0.540597$	-2.53994	3.84450

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.556173 + 0.283448I$ $a = -0.385281 - 1.342290I$ $b = 0.228525 + 0.822863I$	$-1.42904 - 1.60232I$	$-4.26980 + 4.78073I$
$u = 0.556173 - 0.283448I$ $a = -0.385281 + 1.342290I$ $b = 0.228525 - 0.822863I$	$-1.42904 + 1.60232I$	$-4.26980 - 4.78073I$
$u = 0.254734 + 0.567111I$ $a = 2.51572 - 0.73225I$ $b = -1.154150 - 0.407412I$	$2.43994 + 1.89866I$	$0.169019 - 0.013106I$
$u = 0.254734 - 0.567111I$ $a = 2.51572 + 0.73225I$ $b = -1.154150 + 0.407412I$	$2.43994 - 1.89866I$	$0.169019 + 0.013106I$
$u = -0.561395 + 0.088207I$ $a = 0.20179 - 1.71648I$ $b = 0.589833 - 0.700153I$	$-2.37909 + 1.13832I$	$-2.91664 - 1.12450I$
$u = -0.561395 - 0.088207I$ $a = 0.20179 + 1.71648I$ $b = 0.589833 + 0.700153I$	$-2.37909 - 1.13832I$	$-2.91664 + 1.12450I$
$u = 0.128372 + 0.511693I$ $a = 0.389966 + 0.703377I$ $b = 0.431553 - 0.892472I$	$-2.01742 + 1.58305I$	$-5.13335 - 1.24333I$
$u = 0.128372 - 0.511693I$ $a = 0.389966 - 0.703377I$ $b = 0.431553 + 0.892472I$	$-2.01742 - 1.58305I$	$-5.13335 + 1.24333I$
$u = -0.019560 + 0.524337I$ $a = -2.28586 + 1.65876I$ $b = 0.713656 + 0.450896I$	$-2.64124 - 0.66798I$	$-4.60713 - 0.98427I$
$u = -0.019560 - 0.524337I$ $a = -2.28586 - 1.65876I$ $b = 0.713656 - 0.450896I$	$-2.64124 + 0.66798I$	$-4.60713 + 0.98427I$

II. $\boldsymbol{I_2^u = \langle b,\ u^8 + 2u^7 - u^6 - 4u^5 - u^4 + 3u^3 + 3u^2 + a + 2u,\ u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1\rangle}$

(i) Arc colorings

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

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

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

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^8 - 2u^7 + u^6 + 4u^5 + u^4 - 3u^3 - 3u^2 - 2u \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^8 - 2u^7 + u^6 + 4u^5 + u^4 - 3u^3 - 3u^2 - 2u \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^6 - u^4 + 1 \\ u^8 - 2u^6 + 2u^4 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^3 \\ u^3 - u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u^3 - u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^8 - 2u^7 + u^6 + 4u^5 + u^4 - 3u^3 - 3u^2 - 3u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^8 - 9u^7 + 17u^5 + 12u^4 - 11u^3 - 15u^2 - 12u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_7	u^9
c_4	$(u+1)^9$
c_5, c_9	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$
c_6	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_8	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_{10}	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_{11}	$u^9 - 5u^8 + 12u^7 - 15u^6 + 9u^5 + u^4 - 4u^3 + 2u^2 + u - 1$
c_{12}	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_7	y^9
c_5, c_9	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_6, c_{10}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_8, c_{12}	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_{11}	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.772920 + 0.510351I$ $a = 1.004430 - 0.297869I$ $b = 0$	$0.13850 + 2.09337I$	$-5.16894 - 4.06115I$
$u = -0.772920 - 0.510351I$ $a = 1.004430 + 0.297869I$ $b = 0$	$0.13850 - 2.09337I$	$-5.16894 + 4.06115I$
$u = 0.825933$ $a = -3.80937$ $b = 0$	-2.84338	-27.2330
$u = 1.173910 + 0.391555I$ $a = -0.070080 - 0.850995I$ $b = 0$	$-6.01628 - 1.33617I$	$-9.21174 + 0.80685I$
$u = 1.173910 - 0.391555I$ $a = -0.070080 + 0.850995I$ $b = 0$	$-6.01628 + 1.33617I$	$-9.21174 - 0.80685I$
$u = -0.141484 + 0.739668I$ $a = 0.275254 + 0.816341I$ $b = 0$	$-2.26187 - 2.45442I$	$-4.66498 + 3.27944I$
$u = -0.141484 - 0.739668I$ $a = 0.275254 - 0.816341I$ $b = 0$	$-2.26187 + 2.45442I$	$-4.66498 - 3.27944I$
$u = -1.172470 + 0.500383I$ $a = 0.195086 - 0.635552I$ $b = 0$	$-5.24306 + 7.08493I$	$-7.33806 - 6.93476I$
$u = -1.172470 - 0.500383I$ $a = 0.195086 + 0.635552I$ $b = 0$	$-5.24306 - 7.08493I$	$-7.33806 + 6.93476I$

III. $I_3^u = \langle 2a^5 - 2a^4 + 7a^3 - 5a^2 + 3b + a - 4,\ a^6 + 4a^4 + a^3 + 4a^2 + 1,\ u - 1\rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ -\frac{2}{3}a^5 + \frac{2}{3}a^4 + \cdots - \frac{1}{3}a + \frac{4}{3} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{2}{3}a^5 + \frac{1}{3}a^4 + \cdots + \frac{4}{3}a + \frac{5}{3} \\ \frac{2}{3}a^5 + \frac{1}{3}a^4 + \cdots + \frac{4}{3}a + \frac{5}{3} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{3}a^5 - \frac{1}{3}a^4 + \cdots - \frac{1}{3}a - \frac{2}{3} \\ -\frac{1}{3}a^5 + \frac{1}{3}a^4 + \cdots - \frac{5}{3}a + \frac{2}{3} \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{2}{3}a^5 + \frac{1}{3}a^4 + \cdots + \frac{4}{3}a + \frac{5}{3} \\ \frac{2}{3}a^5 + \frac{1}{3}a^4 + \cdots + \frac{4}{3}a + \frac{5}{3} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ \frac{2}{3}a^5 + \frac{1}{3}a^4 + \cdots + \frac{4}{3}a + \frac{5}{3} \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4a^5 + a^4 - 12a^3 - 4a - 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.341164 + 0.940004I$ $b = -1.073950 + 0.558752I$	$-1.64493 - 5.69302I$	$-8.89162 + 3.92918I$
$u = 1.00000$ $a = -0.341164 - 0.940004I$ $b = -1.073950 - 0.558752I$	$-1.64493 + 5.69302I$	$-8.89162 - 3.92918I$
$u = 1.00000$ $a = 0.084211 + 0.566250I$ $b = 1.002190 + 0.295542I$	$0.245672 + 0.924305I$	$-3.44826 - 0.47256I$
$u = 1.00000$ $a = 0.084211 - 0.566250I$ $b = 1.002190 - 0.295542I$	$0.245672 - 0.924305I$	$-3.44826 + 0.47256I$
$u = 1.00000$ $a = 0.25695 + 1.72779I$ $b = -0.428243 + 0.664531I$	$-3.53554 + 0.92430I$	$-13.66012 - 2.42665I$
$u = 1.00000$ $a = 0.25695 - 1.72779I$ $b = -0.428243 - 0.664531I$	$-3.53554 - 0.92430I$	$-13.66012 + 2.42665I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^9(u^6-3u^5+5u^4-4u^3+2u^2-u+1)$ $\cdot(u^{120}+57u^{119}+\cdots+451u+1)$
c_2	$((u-1)^9)(u^6+u^5+\cdots+u+1)(u^{120}-11u^{119}+\cdots+27u-1)$
c_3	$u^9(u^6-u^5+\cdots-u+1)(u^{120}-2u^{119}+\cdots-512u+512)$
c_4	$((u+1)^9)(u^6-u^5+\cdots-u+1)(u^{120}-11u^{119}+\cdots+27u-1)$
c_5	$(u^6+3u^5+5u^4+4u^3+2u^2+u+1)$ $\cdot(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{120}+3u^{119}+\cdots-3758933u-444601)$
c_6	$u^6(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)$ $\cdot(u^{120}+2u^{119}+\cdots-128u-64)$
c_7	$u^9(u^6+u^5+\cdots+u+1)(u^{120}-2u^{119}+\cdots-512u+512)$
c_8	$(u-1)^6(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{120}-8u^{119}+\cdots-8u+1)$
c_9	$u^6(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{120}-42u^{119}+\cdots-106496u+4096)$
c_{10}	$u^6(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(u^{120}+2u^{119}+\cdots-128u-64)$
c_{11}	$(u-1)^6(u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1)$ $\cdot(u^{120}+64u^{119}+\cdots+8u+1)$
c_{12}	$(u+1)^6(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)$ $\cdot(u^{120}-8u^{119}+\cdots-8u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^9(y^6+y^5+5y^4+6y^2+3y+1)$ $\cdot\,(y^{120}+23y^{119}+\cdots-187035y+1)$
c_2, c_4	$(y-1)^9(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot\,(y^{120}-57y^{119}+\cdots-451y+1)$
c_3, c_7	$y^9(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot\,(y^{120}-60y^{119}+\cdots-11796480y+262144)$
c_5	$(y^6+y^5+5y^4+6y^2+3y+1)$ $\cdot\,(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot\,(y^{120}-21y^{119}+\cdots-9546190035499y+197670049201)$
c_6, c_{10}	$y^6(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot\,(y^{120}+42y^{119}+\cdots+106496y+4096)$
c_8, c_{12}	$(y-1)^6(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot\,(y^{120}-64y^{119}+\cdots-8y+1)$
c_9	$y^6(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot\,(y^{120}+62y^{119}+\cdots-511705088y+16777216)$
c_{11}	$(y-1)^6(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot\,(y^{120}-8y^{119}+\cdots-64y+1)$