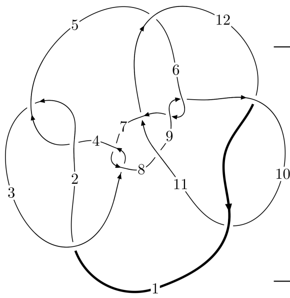
$12a_{0115}$ $(K12a_{0115})$



A knot diagram[1]

Linearized knot diagam

$$\to \underset{3}{\downarrow} \to \underset{5}{\downarrow} \to \underset{8}{\downarrow} \to \underset{2}{\downarrow} \to \underset{12}{\uparrow} \to \underset{9}{\downarrow} \to \underset{4}{\downarrow} \to \underset{11}{\uparrow} \to \underset{6}{\downarrow} \to \underset{1}{\uparrow} \to \underset{7}{\uparrow} \to \underset{10}{\uparrow} \to$$

Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & 1.03066 \times 10^{465} u^{124} + 3.82536 \times 10^{465} u^{123} + \cdots + 1.54622 \times 10^{467} b + 1.91851 \times 10^{468}, \\
& 7.22439 \times 10^{466} u^{124} + 2.12080 \times 10^{467} u^{123} + \cdots + 2.31933 \times 10^{468} a + 1.10931 \times 10^{470}, \\
& u^{125} + 2u^{124} + \cdots + 512u + 512 \rangle \\
I^u_2 = \langle & b,\ 3a + 3u - 5,\ u^2 - u - 1 \rangle
\end{aligned}$$

$$\begin{aligned}
I^v_1 = \langle & a,\ 16726v^8 - 41423v^7 + \cdots + 11959b + 26601, \\
& v^9 - 3v^8 - 2v^7 - 6v^6 + 25v^5 - 11v^4 - 9v^3 + 2v^2 + 3v - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 136 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. $\boldsymbol{I_1^u = \langle 1.03 \times 10^{465} u^{124} + 3.83 \times 10^{465} u^{123} + \cdots + 1.55 \times 10^{467} b + 1.92 \times 10^{468},\ 7.22 \times 10^{466} u^{124} + 2.12 \times 10^{467} u^{123} + \cdots + 2.32 \times 10^{468} a + 1.11 \times 10^{470},\ u^{125} + 2u^{124} + \cdots + 512u + 512 \rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.0311487u^{124} - 0.0914405u^{123} + \cdots - 13.8068u - 47.8291 \\ -0.00666572u^{124} - 0.0247401u^{123} + \cdots - 5.19981u - 12.4077 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.0129299u^{124} - 0.0674498u^{123} + \cdots + 31.3986u - 57.3336 \\ 0.00112353u^{124} + 0.0331708u^{123} + \cdots - 7.29416u + 30.7948 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0378144u^{124} - 0.116181u^{123} + \cdots - 19.0066u - 60.2369 \\ -0.00666572u^{124} - 0.0247401u^{123} + \cdots - 5.19981u - 12.4077 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0591666u^{124} - 0.127059u^{123} + \cdots - 50.3219u - 34.3988 \\ -0.0116249u^{124} - 0.0371386u^{123} + \cdots + 1.86792u - 26.7347 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0241892u^{124} - 0.0463826u^{123} + \cdots - 18.7830u - 12.5336 \\ -0.0277806u^{124} - 0.0245777u^{123} + \cdots - 33.9805u + 8.02032 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.0165610u^{124} + 0.00694800u^{123} + \cdots - 26.5606u + 21.5758 \\ -0.0651205u^{124} - 0.0919181u^{123} + \cdots - 57.3802u - 11.4736 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.00359135u^{124} + 0.0218049u^{123} + \cdots - 15.1975u + 20.5539 \\ -0.0514815u^{124} - 0.0693144u^{123} + \cdots - 46.9834u - 6.82131 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.0277532u^{124} - 0.0756995u^{123} + \cdots - 20.2561u - 33.4474 \\ 0.0514815u^{124} + 0.0693144u^{123} + \cdots + 46.9834u + 6.82131 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0955818u^{124} - 0.136137u^{123} + \cdots - 86.1084u - 11.1303$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{125} + 63u^{124} + \cdots + 271u + 1$
c_2, c_4	$u^{125} - 11u^{124} + \cdots - 9u - 1$
c_3, c_7	$u^{125} + 2u^{124} + \cdots + 512u + 512$
c_5	$9(9u^{125} - 12u^{124} + \cdots + 2.83664 \times 10^{9}u + 2.59859 \times 10^{8})$
c_6, c_9	$u^{125} - 3u^{124} + \cdots + 3u - 1$
c_8	$9(9u^{125} - 21u^{124} + \cdots + 1.22889 \times 10^{8}u + 5290529)$
c_{10}, c_{12}	$u^{125} + 4u^{124} + \cdots - 2358u + 81$
c_{11}	$u^{125} - 2u^{124} + \cdots - 756u + 324$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{125}+9y^{124}+\cdots+91007y-1$
c_2, c_4	$y^{125}-63y^{124}+\cdots+271y-1$
c_3, c_7	$y^{125}+54y^{124}+\cdots-1572864y-262144$
c_5	$81(81y^{125}-3294y^{124}+\cdots+2.87254\times 10^{18}y-6.75265\times 10^{16})$
c_6, c_9	$y^{125}+85y^{124}+\cdots+31y-1$
c_8	81 $\cdot(81y^{125}-4023y^{124}+\cdots+7567318376329835y-27989697099841)$
c_{10}, c_{12}	$y^{125}-90y^{124}+\cdots+665982y-6561$
c_{11}	$y^{125}-12y^{124}+\cdots+16685352y-104976$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.189225 + 0.989929I$ $a = -2.72604 - 1.67999I$ $b = 0.545603 - 0.015975I$	$4.85915 + 0.90928I$	0
$u = -0.189225 - 0.989929I$ $a = -2.72604 + 1.67999I$ $b = 0.545603 + 0.015975I$	$4.85915 - 0.90928I$	0
$u = 0.913335 + 0.327879I$ $a = -0.13404 - 1.61461I$ $b = 1.42964 - 1.22199I$	$4.24550 + 3.85404I$	0
$u = 0.913335 - 0.327879I$ $a = -0.13404 + 1.61461I$ $b = 1.42964 + 1.22199I$	$4.24550 - 3.85404I$	0
$u = 0.532227 + 0.797562I$ $a = 1.88338 + 0.31904I$ $b = -0.465658 + 0.870917I$	$-4.18791 - 0.46329I$	0
$u = 0.532227 - 0.797562I$ $a = 1.88338 - 0.31904I$ $b = -0.465658 - 0.870917I$	$-4.18791 + 0.46329I$	0
$u = 0.495636 + 0.814877I$ $a = 0.168018 + 0.065540I$ $b = 0.221515 + 1.197440I$	$-4.15405 - 3.73457I$	0
$u = 0.495636 - 0.814877I$ $a = 0.168018 - 0.065540I$ $b = 0.221515 - 1.197440I$	$-4.15405 + 3.73457I$	0
$u = 0.080750 + 1.051060I$ $a = 1.320830 + 0.182380I$ $b = -0.932530 - 0.275816I$	$2.33153 + 1.50993I$	0
$u = 0.080750 - 1.051060I$ $a = 1.320830 - 0.182380I$ $b = -0.932530 + 0.275816I$	$2.33153 - 1.50993I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.413672 + 0.836934I$ $a = -0.275409 - 0.177834I$ $b = -0.74713 + 1.37671I$	$-0.983702 - 0.642828I$	0
$u = -0.413672 - 0.836934I$ $a = -0.275409 + 0.177834I$ $b = -0.74713 - 1.37671I$	$-0.983702 + 0.642828I$	0
$u = 0.918385 + 0.543413I$ $a = 0.240683 + 0.155590I$ $b = 0.604955 + 0.884379I$	$-3.67094 + 2.96823I$	0
$u = 0.918385 - 0.543413I$ $a = 0.240683 - 0.155590I$ $b = 0.604955 - 0.884379I$	$-3.67094 - 2.96823I$	0
$u = -0.422750 + 0.821064I$ $a = -3.17983 + 0.68595I$ $b = 1.19189 + 1.04668I$	$-1.03348 + 4.20848I$	0
$u = -0.422750 - 0.821064I$ $a = -3.17983 - 0.68595I$ $b = 1.19189 - 1.04668I$	$-1.03348 - 4.20848I$	0
$u = -0.962365 + 0.485559I$ $a = -0.437124 - 0.102030I$ $b = -1.34087 + 1.13393I$	$-0.31912 - 6.67340I$	0
$u = -0.962365 - 0.485559I$ $a = -0.437124 + 0.102030I$ $b = -1.34087 - 1.13393I$	$-0.31912 + 6.67340I$	0
$u = -0.807203 + 0.430889I$ $a = 0.056330 + 0.856214I$ $b = -0.364132 - 0.128397I$	$-0.121971 - 0.719876I$	0
$u = -0.807203 - 0.430889I$ $a = 0.056330 - 0.856214I$ $b = -0.364132 + 0.128397I$	$-0.121971 + 0.719876I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.828223 + 0.376343I$ $a = 1.21716 - 1.20280I$ $b = -0.702944 - 0.443518I$	$0.06073 - 2.33875I$	0
$u = -0.828223 - 0.376343I$ $a = 1.21716 + 1.20280I$ $b = -0.702944 + 0.443518I$	$0.06073 + 2.33875I$	0
$u = -0.599973 + 0.683518I$ $a = -0.077597 + 0.147796I$ $b = 0.471466 + 0.834279I$	$1.14990 + 7.95106I$	0
$u = -0.599973 - 0.683518I$ $a = -0.077597 - 0.147796I$ $b = 0.471466 - 0.834279I$	$1.14990 - 7.95106I$	0
$u = 0.402370 + 1.037470I$ $a = -0.86209 - 1.36616I$ $b = 0.498531 - 0.049477I$	$3.98203 - 1.01780I$	0
$u = 0.402370 - 1.037470I$ $a = -0.86209 + 1.36616I$ $b = 0.498531 + 0.049477I$	$3.98203 + 1.01780I$	0
$u = 1.090330 + 0.256832I$ $a = -0.0476149 + 0.1171240I$ $b = 1.10513 + 0.90387I$	$6.12909 + 7.71732I$	0
$u = 1.090330 - 0.256832I$ $a = -0.0476149 - 0.1171240I$ $b = 1.10513 - 0.90387I$	$6.12909 - 7.71732I$	0
$u = -0.248400 + 1.101470I$ $a = -1.33263 + 0.83830I$ $b = 0.354052 + 0.770723I$	$4.76652 + 0.18641I$	0
$u = -0.248400 - 1.101470I$ $a = -1.33263 - 0.83830I$ $b = 0.354052 - 0.770723I$	$4.76652 - 0.18641I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.433618+1.055720I$ $a=\ \ 2.35530-0.20832I$ $b=-1.11177-1.01672I$	$3.54058+9.87816I$	0
$u=-0.433618-1.055720I$ $a=\ \ 2.35530+0.20832I$ $b=-1.11177+1.01672I$	$3.54058-9.87816I$	0
$u=-0.442173+1.054840I$ $a=\ \ 1.210110-0.399870I$ $b=-1.063990-0.003120I$	$1.15542+3.12032I$	0
$u=-0.442173-1.054840I$ $a=\ \ 1.210110+0.399870I$ $b=-1.063990+0.003120I$	$1.15542-3.12032I$	0
$u=-0.840842+0.156626I$ $a=\ \ 0.52324-1.86364I$ $b=\ \ 0.84914-1.46811I$	$4.74563+0.17252I$	$5.48395+0.I$
$u=-0.840842-0.156626I$ $a=\ \ 0.52324+1.86364I$ $b=\ \ 0.84914+1.46811I$	$4.74563-0.17252I$	$5.48395+0.I$
$u=-0.064934+1.160180I$ $a=-1.74953+0.85168I$ $b=\ \ 1.73930-0.46575I$	$5.99018-4.39123I$	0
$u=-0.064934-1.160180I$ $a=-1.74953-0.85168I$ $b=\ \ 1.73930+0.46575I$	$5.99018+4.39123I$	0
$u=\ \ 0.380832+1.099280I$ $a=-1.49403+0.23024I$ $b=\ \ 0.649724-0.705708I$	$-1.50629-4.23005I$	0
$u=\ \ 0.380832-1.099280I$ $a=-1.49403-0.23024I$ $b=\ \ 0.649724+0.705708I$	$-1.50629+4.23005I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.349086 + 1.109990I$ $a = -1.222110 - 0.226288I$ $b = 0.746699 + 0.641099I$	$4.36419 - 2.43164I$	0
$u = 0.349086 - 1.109990I$ $a = -1.222110 + 0.226288I$ $b = 0.746699 - 0.641099I$	$4.36419 + 2.43164I$	0
$u = 0.375408 + 1.108420I$ $a = -1.25787 - 1.15535I$ $b = 1.85937 - 0.00043I$	$5.08150 - 0.59588I$	0
$u = 0.375408 - 1.108420I$ $a = -1.25787 + 1.15535I$ $b = 1.85937 + 0.00043I$	$5.08150 + 0.59588I$	0
$u = -0.235520 + 0.777319I$ $a = -0.153207 + 0.244390I$ $b = -0.262287 - 1.105520I$	$-0.40273 + 3.66473I$	$0. - 6.36269I$
$u = -0.235520 - 0.777319I$ $a = -0.153207 - 0.244390I$ $b = -0.262287 + 1.105520I$	$-0.40273 - 3.66473I$	$0. + 6.36269I$
$u = 1.112620 + 0.422938I$ $a = -0.0662946 - 0.1070030I$ $b = 0.823523 - 0.441900I$	$5.54144 - 5.18578I$	0
$u = 1.112620 - 0.422938I$ $a = -0.0662946 + 0.1070030I$ $b = 0.823523 + 0.441900I$	$5.54144 + 5.18578I$	0
$u = 0.523784 + 1.069500I$ $a = -4.10601 - 0.42204I$ $b = 0.376955 - 0.151157I$	$3.20788 - 5.56394I$	0
$u = 0.523784 - 1.069500I$ $a = -4.10601 + 0.42204I$ $b = 0.376955 + 0.151157I$	$3.20788 + 5.56394I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.634089 + 0.498710I$ $a = 3.69497 + 8.88764I$ $b = -0.145181 + 0.241855I$	$1.42901 + 1.00847I$	$-31.0649 + 44.2359I$
$u = 0.634089 - 0.498710I$ $a = 3.69497 - 8.88764I$ $b = -0.145181 - 0.241855I$	$1.42901 - 1.00847I$	$-31.0649 - 44.2359I$
$u = -0.505552 + 1.083710I$ $a = 1.41400 - 0.27693I$ $b = -0.785972 - 0.862103I$	$0.63717 + 3.65490I$	0
$u = -0.505552 - 1.083710I$ $a = 1.41400 + 0.27693I$ $b = -0.785972 + 0.862103I$	$0.63717 - 3.65490I$	0
$u = -1.185770 + 0.210987I$ $a = 0.0868843 - 0.0106217I$ $b = -0.608506 + 0.512349I$	$0.98816 - 1.89695I$	0
$u = -1.185770 - 0.210987I$ $a = 0.0868843 + 0.0106217I$ $b = -0.608506 - 0.512349I$	$0.98816 + 1.89695I$	0
$u = -0.666834 + 0.423916I$ $a = 0.286152 - 0.017589I$ $b = 0.257842 - 0.749663I$	$-1.37803 + 0.83267I$	$-5.49260 - 3.40594I$
$u = -0.666834 - 0.423916I$ $a = 0.286152 + 0.017589I$ $b = 0.257842 + 0.749663I$	$-1.37803 - 0.83267I$	$-5.49260 + 3.40594I$
$u = 0.234448 + 1.189590I$ $a = 1.74701 - 0.56723I$ $b = -1.01937 + 1.93388I$	$9.39087 + 0.67963I$	0
$u = 0.234448 - 1.189590I$ $a = 1.74701 + 0.56723I$ $b = -1.01937 - 1.93388I$	$9.39087 - 0.67963I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.750828 + 0.154017I$ $a = -0.540540 + 0.290736I$ $b = -1.094100 - 0.737261I$	$1.33029 + 2.74208I$	$0.45355 - 2.62957I$
$u = 0.750828 - 0.154017I$ $a = -0.540540 - 0.290736I$ $b = -1.094100 + 0.737261I$	$1.33029 - 2.74208I$	$0.45355 + 2.62957I$
$u = -0.360615 + 1.181320I$ $a = 0.77945 - 1.47555I$ $b = -1.65817 + 1.47843I$	$8.85777 + 3.95009I$	0
$u = -0.360615 - 1.181320I$ $a = 0.77945 + 1.47555I$ $b = -1.65817 - 1.47843I$	$8.85777 - 3.95009I$	0
$u = 0.521373 + 1.124290I$ $a = -0.96167 - 1.14782I$ $b = 0.202332 - 0.843758I$	$3.12453 - 5.20896I$	0
$u = 0.521373 - 1.124290I$ $a = -0.96167 + 1.14782I$ $b = 0.202332 + 0.843758I$	$3.12453 + 5.20896I$	0
$u = -1.124900 + 0.535801I$ $a = -0.0411915 - 0.1178360I$ $b = 1.16484 - 1.07257I$	$4.42812 - 12.73300I$	0
$u = -1.124900 - 0.535801I$ $a = -0.0411915 + 0.1178360I$ $b = 1.16484 + 1.07257I$	$4.42812 + 12.73300I$	0
$u = 0.492797 + 1.146900I$ $a = -2.03102 - 0.36281I$ $b = 1.54887 - 1.18166I$	$4.19431 - 7.27901I$	0
$u = 0.492797 - 1.146900I$ $a = -2.03102 + 0.36281I$ $b = 1.54887 + 1.18166I$	$4.19431 + 7.27901I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.615779+1.088750I$ $a=-0.650976+1.024930I$ $b=\ \ 0.414729+0.215546I$	$1.80618+5.96754I$	0
$u=-0.615779-1.088750I$ $a=-0.650976-1.024930I$ $b=\ \ 0.414729-0.215546I$	$1.80618-5.96754I$	0
$u=\ \ 0.699810+0.253258I$ $a=\ \ 0.45949-2.64155I$ $b=-0.233666-0.523885I$	$0.621061+0.585081I$	$-8.38094-6.55158I$
$u=\ \ 0.699810-0.253258I$ $a=\ \ 0.45949+2.64155I$ $b=-0.233666+0.523885I$	$0.621061-0.585081I$	$-8.38094+6.55158I$
$u=\ \ 1.156140+0.507162I$ $a=\ \ 0.0934185-0.0006937I$ $b=-0.757298-0.778048I$	$-0.51148+7.10641I$	0
$u=\ \ 1.156140-0.507162I$ $a=\ \ 0.0934185+0.0006937I$ $b=-0.757298+0.778048I$	$-0.51148-7.10641I$	0
$u=-0.329817+0.655522I$ $a=\ \ 0.27779+2.85032I$ $b=\ \ 0.435012-0.387028I$	$-0.74776-1.32568I$	$-1.37223-2.12566I$
$u=-0.329817-0.655522I$ $a=\ \ 0.27779-2.85032I$ $b=\ \ 0.435012+0.387028I$	$-0.74776+1.32568I$	$-1.37223+2.12566I$
$u=-0.585773+1.136850I$ $a=\ \ 0.270868-0.774974I$ $b=-0.675543+0.280117I$	$2.57218-2.94748I$	0
$u=-0.585773-1.136850I$ $a=\ \ 0.270868+0.774974I$ $b=-0.675543-0.280117I$	$2.57218+2.94748I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.164951 + 0.699060I$ $a = 2.01057 + 3.83403I$ $b = -1.12027 - 1.11356I$	$3.23791 - 1.80187I$	$7.60062 + 5.39442I$
$u = 0.164951 - 0.699060I$ $a = 2.01057 - 3.83403I$ $b = -1.12027 + 1.11356I$	$3.23791 + 1.80187I$	$7.60062 - 5.39442I$
$u = -0.494783 + 1.183550I$ $a = 1.67549 + 0.02049I$ $b = -0.72180 - 2.14415I$	$7.89707 + 4.62521I$	0
$u = -0.494783 - 1.183550I$ $a = 1.67549 - 0.02049I$ $b = -0.72180 + 2.14415I$	$7.89707 - 4.62521I$	0
$u = -0.581083 + 1.144450I$ $a = -0.927414 + 0.371926I$ $b = 0.912764 - 0.614051I$	$2.41939 + 7.59298I$	0
$u = -0.581083 - 1.144450I$ $a = -0.927414 - 0.371926I$ $b = 0.912764 + 0.614051I$	$2.41939 - 7.59298I$	0
$u = 0.277864 + 0.645271I$ $a = 0.1293420 - 0.0177373I$ $b = -0.259855 - 1.133830I$	$-3.17582 + 1.37189I$	$-2.02901 + 3.10189I$
$u = 0.277864 - 0.645271I$ $a = 0.1293420 + 0.0177373I$ $b = -0.259855 + 1.133830I$	$-3.17582 - 1.37189I$	$-2.02901 - 3.10189I$
$u = -0.349910 + 0.596945I$ $a = -0.044338 - 0.135561I$ $b = 0.776083 - 1.123390I$	$1.92234 - 6.42207I$	$1.61043 - 2.58323I$
$u = -0.349910 - 0.596945I$ $a = -0.044338 + 0.135561I$ $b = 0.776083 + 1.123390I$	$1.92234 + 6.42207I$	$1.61043 + 2.58323I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.675342 + 0.102623I$ $a = -0.475944 - 0.632806I$ $b = -0.798997 + 0.456385I$	$1.33240 - 2.49877I$	$0.06108 + 4.74869I$
$u = 0.675342 - 0.102623I$ $a = -0.475944 + 0.632806I$ $b = -0.798997 - 0.456385I$	$1.33240 + 2.49877I$	$0.06108 - 4.74869I$
$u = 0.675422 + 1.130710I$ $a = 1.322000 + 0.441156I$ $b = -0.812816 + 1.037590I$	$-1.80399 - 8.86816I$	0
$u = 0.675422 - 1.130710I$ $a = 1.322000 - 0.441156I$ $b = -0.812816 - 1.037590I$	$-1.80399 + 8.86816I$	0
$u = 0.585027 + 1.188980I$ $a = 0.35499 + 1.37574I$ $b = -1.89934 - 1.32123I$	$6.93778 - 9.34093I$	0
$u = 0.585027 - 1.188980I$ $a = 0.35499 - 1.37574I$ $b = -1.89934 + 1.32123I$	$6.93778 + 9.34093I$	0
$u = -0.670642 + 1.165170I$ $a = -1.78726 + 0.65220I$ $b = 1.52212 + 1.38459I$	$1.83437 + 12.66320I$	0
$u = -0.670642 - 1.165170I$ $a = -1.78726 - 0.65220I$ $b = 1.52212 - 1.38459I$	$1.83437 - 12.66320I$	0
$u = -1.212360 + 0.646222I$ $a = -0.0620166 + 0.0911191I$ $b = 0.676884 + 0.094872I$	$3.33646 - 0.19030I$	0
$u = -1.212360 - 0.646222I$ $a = -0.0620166 - 0.0911191I$ $b = 0.676884 - 0.094872I$	$3.33646 + 0.19030I$	0

Solutions to I^u_1	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.327090+0.526695I$ $a=-2.03892+2.29943I$ $b=\ \ 0.609994-0.249849I$	$-0.596246+0.416978I$	$0.26642-6.11778I$
$u=-0.327090-0.526695I$ $a=-2.03892-2.29943I$ $b=\ \ 0.609994+0.249849I$	$-0.596246-0.416978I$	$0.26642+6.11778I$
$u=\ \ 0.612331+1.251960I$ $a=\ \ 1.73548+0.43034I$ $b=-1.25293+1.11281I$	$9.2901-13.7168I$	0
$u=\ \ 0.612331-1.251960I$ $a=\ \ 1.73548-0.43034I$ $b=-1.25293-1.11281I$	$9.2901+13.7168I$	0
$u=-0.60524+1.28225I$ $a=-1.283780+0.186550I$ $b=\ \ 0.904103+0.810181I$	$4.45793+8.07080I$	0
$u=-0.60524-1.28225I$ $a=-1.283780-0.186550I$ $b=\ \ 0.904103-0.810181I$	$4.45793-8.07080I$	0
$u=-0.75455+1.21679I$ $a=\ \ 1.62826-0.67265I$ $b=-1.23586-1.20855I$	$6.6329+19.4885I$	0
$u=-0.75455-1.21679I$ $a=\ \ 1.62826+0.67265I$ $b=-1.23586+1.20855I$	$6.6329-19.4885I$	0
$u=\ \ 0.07864+1.43412I$ $a=\ \ 1.38519-0.43108I$ $b=-1.30927+0.70376I$	$12.5560-9.3062I$	0
$u=\ \ 0.07864-1.43412I$ $a=\ \ 1.38519+0.43108I$ $b=-1.30927-0.70376I$	$12.5560+9.3062I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.75063 + 1.23502I$ $a = -1.301480 - 0.365678I$ $b = 0.913051 - 0.950042I$	$1.84566 - 13.92260I$	0
$u = 0.75063 - 1.23502I$ $a = -1.301480 + 0.365678I$ $b = 0.913051 + 0.950042I$	$1.84566 + 13.92260I$	0
$u = 0.15570 + 1.44249I$ $a = 1.116080 + 0.615912I$ $b = -1.255060 - 0.503238I$	$12.41370 + 3.14260I$	0
$u = 0.15570 - 1.44249I$ $a = 1.116080 - 0.615912I$ $b = -1.255060 + 0.503238I$	$12.41370 - 3.14260I$	0
$u = -0.546681$ $a = 0.853690$ $b = 0.327961$	-1.13268	-9.63470
$u = 0.69181 + 1.30600I$ $a = 0.556692 + 0.479724I$ $b = -0.828035 + 0.099208I$	$8.30974 - 1.49559I$	0
$u = 0.69181 - 1.30600I$ $a = 0.556692 - 0.479724I$ $b = -0.828035 - 0.099208I$	$8.30974 + 1.49559I$	0
$u = -0.79848 + 1.26772I$ $a = 0.617339 - 0.371174I$ $b = -0.753084 - 0.344913I$	$5.49346 + 7.52898I$	0
$u = -0.79848 - 1.26772I$ $a = 0.617339 + 0.371174I$ $b = -0.753084 + 0.344913I$	$5.49346 - 7.52898I$	0
$u = -0.09910 + 1.49843I$ $a = -0.912897 - 0.029897I$ $b = 0.928225 + 0.156147I$	$7.75260 + 3.19534I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.09910 - 1.49843I$ $a = -0.912897 + 0.029897I$ $b = 0.928225 - 0.156147I$	$7.75260 - 3.19534I$	0
$u = -0.234925 + 0.344834I$ $a = -0.39694 - 3.35327I$ $b = 0.591198 - 0.673652I$	$4.30327 + 1.14568I$	$3.56993 + 0.21405I$
$u = -0.234925 - 0.344834I$ $a = -0.39694 + 3.35327I$ $b = 0.591198 + 0.673652I$	$4.30327 - 1.14568I$	$3.56993 - 0.21405I$
$u = 1.62729$ $a = 0.0237227$ $b = -0.0964470$	-7.22833	0
$u = 0.239647$ $a = 3.21183$ $b = -0.449696$	1.26613	9.42890

II. $I_2^u = \langle b,\ 3a+3u-5,\ u^2-u-1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u+\frac{5}{3} \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{8}{9}u+\frac{22}{9} \\ u+1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u+\frac{5}{3} \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ 3u+1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{2}{3}u-\frac{5}{9} \\ -3u-2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ -3u-2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1 \\ -2u-2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -2u-2 \\ -9u-6 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u+\frac{11}{3} \\ 9u+6 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{560}{3}u - \frac{1105}{9}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9	$y^2 - 7y + 1$
c_2, c_3, c_4 c_7	$y^2 - 3y + 1$
c_5	$(9y - 1)^2$
c_8	$81y^2 - 63y + 1$
c_{10}, c_{12}	$(y - 1)^2$
c_{11}	y^2

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 2.28470$ $b = 0$	0.657974	-7.41140
$u = 1.61803$ $a = 0.0486327$ $b = 0$	-7.23771	-424.810

III.

$$\boldsymbol{I_1^v = \langle a,\ 16726v^8 - 41423v^7 + \cdots + 11959b + 26601,\ v^9 - 3v^8 + \cdots + 3v - 1\rangle}$$

(i) Arc colorings

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

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

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

$$a_{11} = \begin{pmatrix} 0 \\ -1.39861v^8 + 3.46375v^7 + \cdots + 3.94598v - 2.22435 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 1.45213v^8 - 3.82515v^7 + \cdots - 3.73944v + 4.14098 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1.39861v^8 + 3.46375v^7 + \cdots + 3.94598v - 2.22435 \\ -1.39861v^8 + 3.46375v^7 + \cdots + 3.94598v - 2.22435 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -1.45213v^8 + 3.82515v^7 + \cdots + 3.73944v - 3.14098 \\ -1.21114v^8 + 2.94147v^7 + \cdots + 5.63826v - 2.00702 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.759010v^8 - 2.11631v^7 + \cdots + 0.101179v + 1.86604 \\ v^8 - 3v^7 - 2v^6 - 6v^5 + 25v^4 - 11v^3 - 9v^2 + 2v + 3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.759010v^8 + 2.11631v^7 + \cdots + 0.898821v - 1.86604 \\ -v^8 + 3v^7 + 2v^6 + 6v^5 - 25v^4 + 11v^3 + 9v^2 - 2v - 3 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.759010v^8 + 2.11631v^7 + \cdots - 0.101179v - 1.86604 \\ -v^8 + 3v^7 + 2v^6 + 6v^5 - 25v^4 + 11v^3 + 9v^2 - 2v - 3 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.240990v^8 + 0.883686v^7 + \cdots - 1.89882v - 1.13396 \\ -v^8 + 3v^7 + 2v^6 + 6v^5 - 25v^4 + 11v^3 + 9v^2 - 2v - 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $=$
$$\frac{109765}{11959}v^8 - \frac{294476}{11959}v^7 - \frac{325323}{11959}v^6 - \frac{729072}{11959}v^5 + \frac{2542695}{11959}v^4 - \frac{295872}{11959}v^3 - \frac{1329263}{11959}v^2 - \frac{115465}{11959}v + \frac{259811}{11959}$$

(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	$u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1$
c_6	$u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1$
c_8	$u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1$
c_9	$u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1$
c_{10}	$u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1$
c_{11}	$u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1$
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	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$
c_6, c_9	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_8, c_{11}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_{10}, c_{12}	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 1.022450 + 0.246780I$ $a = 0$ $b = -0.628449 + 0.875112I$	$-1.02799 - 2.45442I$	$-3.88318 + 3.00529I$
$v = 1.022450 - 0.246780I$ $a = 0$ $b = -0.628449 - 0.875112I$	$-1.02799 + 2.45442I$	$-3.88318 - 3.00529I$
$v = -0.483566 + 0.305056I$ $a = 0$ $b = -0.140343 + 0.966856I$	$-3.42837 - 2.09337I$	$-7.05683 + 6.62869I$
$v = -0.483566 - 0.305056I$ $a = 0$ $b = -0.140343 - 0.966856I$	$-3.42837 + 2.09337I$	$-7.05683 - 6.62869I$
$v = 0.411691 + 0.129409I$ $a = 0$ $b = 0.728966 + 0.986295I$	$1.95319 + 7.08493I$	$2.13339 - 8.87891I$
$v = 0.411691 - 0.129409I$ $a = 0$ $b = 0.728966 - 0.986295I$	$1.95319 - 7.08493I$	$2.13339 + 8.87891I$
$v = -1.23246 + 1.62704I$ $a = 0$ $b = 0.796005 + 0.733148I$	$2.72642 - 1.33617I$	$-1.90921 - 3.07774I$
$v = -1.23246 - 1.62704I$ $a = 0$ $b = 0.796005 - 0.733148I$	$2.72642 + 1.33617I$	$-1.90921 + 3.07774I$
$v = 3.56378$ $a = 0$ $b = -0.512358$	-0.446489	13.4320

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^2-3u+1)(u^{125}+63u^{124}+\cdots+271u+1)$
c_2	$((u-1)^9)(u^2+u-1)(u^{125}-11u^{124}+\cdots-9u-1)$
c_3	$u^9(u^2+u-1)(u^{125}+2u^{124}+\cdots+512u+512)$
c_4	$((u+1)^9)(u^2-u-1)(u^{125}-11u^{124}+\cdots-9u-1)$
c_5	$(3u-1)^2(u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1)$ $\cdot(9u^{125}-12u^{124}+\cdots+2836642102u+259858639)$
c_6	$(u^2-3u+1)(u^9-3u^8+\cdots+u+1)$ $\cdot(u^{125}-3u^{124}+\cdots+3u-1)$
c_7	$u^9(u^2-u-1)(u^{125}+2u^{124}+\cdots+512u+512)$
c_8	$(9u^2+9u+1)(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(9u^{125}-21u^{124}+\cdots+122889219u+5290529)$
c_9	$(u^2+3u+1)(u^9+3u^8+\cdots+u-1)$ $\cdot(u^{125}-3u^{124}+\cdots+3u-1)$
c_{10}	$(u+1)^2(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)$ $\cdot(u^{125}+4u^{124}+\cdots-2358u+81)$
c_{11}	$u^2(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)$ $\cdot(u^{125}-2u^{124}+\cdots-756u+324)$
c_{12}	$(u-1)^2(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{125}+4u^{124}+\cdots-2358u+81)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^2-7y+1)(y^{125}+9y^{124}+\cdots+91007y-1)$
c_2, c_4	$((y-1)^9)(y^2-3y+1)(y^{125}-63y^{124}+\cdots+271y-1)$
c_3, c_7	$y^9(y^2-3y+1)(y^{125}+54y^{124}+\cdots-1572864y-262144)$
c_5	$(9y-1)^2(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(81y^{125}-3294y^{124}+\cdots+2.87\times10^{18}y-6.75\times10^{16})$
c_6, c_9	$(y^2-7y+1)(y^9+7y^8+\cdots+13y-1)$ $\cdot(y^{125}+85y^{124}+\cdots+31y-1)$
c_8	$(81y^2-63y+1)$ $\cdot(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(81y^{125}-4023y^{124}+\cdots+7567318376329835y-27989697099841)$
c_{10}, c_{12}	$(y-1)^2(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{125}-90y^{124}+\cdots+665982y-6561)$
c_{11}	$y^2(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{125}-12y^{124}+\cdots+16685352y-104976)$