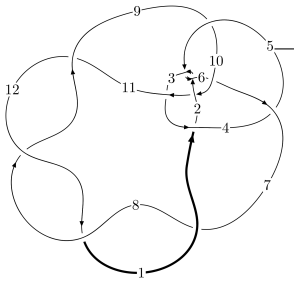
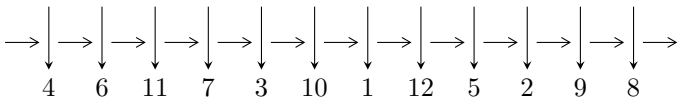
$12a_{0974}$ $(K12a_{0974})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 164445056849340u^{52} + 1528500349483699u^{51} + \cdots + 2249709790958 17b - 3074775125088731, \\
&\quad -1.18394 \times 10^{14}u^{52} - 1.52783 \times 10^{15}u^{51} + \cdots + 2.24971 \times 10^{15}a + 4.96511 \times 10^{16}, \\
&\quad u^{53} + 8u^{52} + \cdots - 90u - 10\rangle \\
I_2^u &= \langle u^{27}a - u^{28} + \cdots + b - a,\ 2u^{28} - 9u^{27} + \cdots - a - 3,\ u^{29} - 5u^{28} + \cdots + 3u - 1\rangle \\
I_3^u &= \langle -u^{22} + 4u^{21} + \cdots + b + 3,\ 3u^{22} - 15u^{21} + \cdots + 2a + 13,\ u^{23} - 5u^{22} + \cdots + 15u - 2\rangle
\end{aligned}$$

* 3 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. $\boldsymbol{I_1^u = \langle 1.64 \times 10^{14} u^{52} + 1.53 \times 10^{15} u^{51} + \cdots + 2.25 \times 10^{14} b - 3.07 \times 10^{15},\ -1.18 \times 10^{14} u^{52} - 1.53 \times 10^{15} u^{51} + \cdots + 2.25 \times 10^{15} a + 4.97 \times 10^{16},\ u^{53} + 8u^{52} + \cdots - 90u - 10 \rangle}$

(i) Arc colorings

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

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

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

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

$$a_4 = \begin{pmatrix} 0.0526262u^{52} + 0.679123u^{51} + \cdots - 152.718u - 22.0700 \\ -0.730961u^{52} - 6.79421u^{51} + \cdots + 138.193u + 13.6674 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.951306u^{52} + 5.67430u^{51} + \cdots + 62.4823u + 6.08672 \\ 0.0348007u^{52} + 1.25907u^{51} + \cdots - 17.3975u - 0.306208 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.10863u^{52} - 7.59814u^{51} + \cdots - 101.312u - 14.6597 \\ -0.258114u^{52} - 2.60484u^{51} + \cdots + 17.3337u - 0.526262 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 0.607936u^{52} + 5.21530u^{51} + \cdots - 182.592u - 23.9187 \\ -0.681469u^{52} - 6.43444u^{51} + \cdots + 122.305u + 12.7557 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.136819u^{52} + 0.281235u^{51} + \cdots - 6.32329u - 1.45857 \\ 0.651638u^{52} + 6.44090u^{51} + \cdots - 60.8623u - 7.32736 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.202862u^{52} - 1.47817u^{51} + \cdots - 33.2032u - 1.30412 \\ -0.528097u^{52} - 4.04273u^{51} + \cdots - 8.57804u - 2.01689 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= -\frac{1416175396984759}{224970979095817}u^{52} - \frac{11695896348510825}{224970979095817}u^{51} + \cdots + \frac{110459786772108940}{224970979095817}u + \frac{4937112965853666}{224970979095817}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{53} - u^{52} + \cdots + 11u + 1$
c_2, c_5	$u^{53} - 14u^{52} + \cdots - 604u + 58$
c_3, c_9	$u^{53} - u^{52} + \cdots + 76u + 79$
c_6, c_{10}	$u^{53} + u^{52} + \cdots + 5u + 1$
c_7, c_8, c_{11} c_{12}	$u^{53} - 8u^{52} + \cdots - 90u + 10$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{53} + 37y^{52} + \cdots - 71y - 1$
c_2, c_5	$y^{53} + 30y^{52} + \cdots + 4636y - 3364$
c_3, c_9	$y^{53} + 9y^{52} + \cdots - 51894y - 6241$
c_6, c_{10}	$y^{53} + 31y^{52} + \cdots - 87y - 1$
c_7, c_8, c_{11} c_{12}	$y^{53} + 64y^{52} + \cdots - 1080y - 100$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.571488+0.854314I$ $a=\ \ 0.032566-0.185130I$ $b=\ \ 1.47379+0.14025I$	$6.0412+14.8317I$	0
$u=-0.571488-0.854314I$ $a=\ \ 0.032566+0.185130I$ $b=\ \ 1.47379-0.14025I$	$6.0412-14.8317I$	0
$u=-0.333373+0.893716I$ $a=\ \ 0.122196+0.270454I$ $b=\ \ 0.752660-0.742316I$	$3.25780-1.48286I$	0
$u=-0.333373-0.893716I$ $a=\ \ 0.122196-0.270454I$ $b=\ \ 0.752660+0.742316I$	$3.25780+1.48286I$	0
$u=-0.514882+0.797117I$ $a=-0.190321+0.041120I$ $b=-1.47025-0.02613I$	$2.18355+8.95648I$	0
$u=-0.514882-0.797117I$ $a=-0.190321-0.041120I$ $b=-1.47025+0.02613I$	$2.18355-8.95648I$	0
$u=-0.361910+0.832045I$ $a=\ \ 0.048979+0.404557I$ $b=\ \ 1.59883-0.06719I$	$7.41008+3.50903I$	0
$u=-0.361910-0.832045I$ $a=\ \ 0.048979-0.404557I$ $b=\ \ 1.59883+0.06719I$	$7.41008-3.50903I$	0
$u=-0.533035+0.701728I$ $a=-0.185867+0.304202I$ $b=-0.714550+0.710437I$	$6.11438+3.16811I$	0
$u=-0.533035-0.701728I$ $a=-0.185867-0.304202I$ $b=-0.714550-0.710437I$	$6.11438-3.16811I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.508757+1.013150I$ $a=\ \ 0.189315-0.149873I$ $b=-0.836774+0.733674I$	$6.93290-5.87882I$	0
$u=-0.508757-1.013150I$ $a=\ \ 0.189315+0.149873I$ $b=-0.836774-0.733674I$	$6.93290+5.87882I$	0
$u=-0.792218+0.065716I$ $a=\ \ 0.613499+1.156200I$ $b=\ \ 0.058973+0.266092I$	$3.65102-10.30440I$	$-8.91398+7.10436I$
$u=-0.792218-0.065716I$ $a=\ \ 0.613499-1.156200I$ $b=\ \ 0.058973-0.266092I$	$3.65102+10.30440I$	$-8.91398-7.10436I$
$u=\ \ 0.146692+1.220860I$ $a=\ \ 0.051603+0.425034I$ $b=\ \ 0.200402-0.509149I$	$2.65741-1.99035I$	0
$u=\ \ 0.146692-1.220860I$ $a=\ \ 0.051603-0.425034I$ $b=\ \ 0.200402+0.509149I$	$2.65741+1.99035I$	0
$u=\ \ 0.362018+0.677893I$ $a=-0.245195+0.777289I$ $b=\ \ 0.514294-0.329515I$	$1.50207-2.55064I$	$-9.75941+4.81296I$
$u=\ \ 0.362018-0.677893I$ $a=-0.245195-0.777289I$ $b=\ \ 0.514294+0.329515I$	$1.50207+2.55064I$	$-9.75941-4.81296I$
$u=\ \ 0.690789+0.151095I$ $a=\ \ 0.180428-0.506714I$ $b=-0.137160+0.263242I$	$-0.340350-0.823156I$	$-15.6364+2.5706I$
$u=\ \ 0.690789-0.151095I$ $a=\ \ 0.180428+0.506714I$ $b=-0.137160-0.263242I$	$-0.340350+0.823156I$	$-15.6364-2.5706I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.084709 + 0.684083I$ $a = -0.34764 - 1.68310I$ $b = -1.17130 + 0.93302I$	$4.62340 - 0.33572I$	$-1.95908 - 0.70589I$
$u = 0.084709 - 0.684083I$ $a = -0.34764 + 1.68310I$ $b = -1.17130 - 0.93302I$	$4.62340 + 0.33572I$	$-1.95908 + 0.70589I$
$u = -0.679848 + 0.096270I$ $a = -0.595374 - 1.265890I$ $b = -0.100020 - 0.402728I$	$0.07833 - 4.93869I$	$-12.17317 + 4.95425I$
$u = -0.679848 - 0.096270I$ $a = -0.595374 + 1.265890I$ $b = -0.100020 + 0.402728I$	$0.07833 + 4.93869I$	$-12.17317 - 4.95425I$
$u = 0.331739 + 1.322100I$ $a = 0.345446 - 0.293824I$ $b = -0.497956 + 0.157982I$	$4.28652 - 4.55905I$	0
$u = 0.331739 - 1.322100I$ $a = 0.345446 + 0.293824I$ $b = -0.497956 - 0.157982I$	$4.28652 + 4.55905I$	0
$u = -0.548171 + 0.130924I$ $a = 0.97680 - 1.21375I$ $b = 0.379782 - 0.413933I$	$4.58827 + 0.51390I$	$-6.27299 - 1.69527I$
$u = -0.548171 - 0.130924I$ $a = 0.97680 + 1.21375I$ $b = 0.379782 + 0.413933I$	$4.58827 - 0.51390I$	$-6.27299 + 1.69527I$
$u = -0.193987 + 0.484551I$ $a = -0.23294 - 1.53315I$ $b = -1.067610 - 0.351475I$	$-1.41579 + 0.84257I$	$-19.4951 - 7.3381I$
$u = -0.193987 - 0.484551I$ $a = -0.23294 + 1.53315I$ $b = -1.067610 + 0.351475I$	$-1.41579 - 0.84257I$	$-19.4951 + 7.3381I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.014741+0.472127I$ $a=\ \ 1.57493+1.38924I$ $b=\ \ 0.746773-0.962501I$	$3.83390-0.06012I$	$-2.56930-0.12602I$
$u=-0.014741-0.472127I$ $a=\ \ 1.57493-1.38924I$ $b=\ \ 0.746773+0.962501I$	$3.83390+0.06012I$	$-2.56930+0.12602I$
$u=-0.02782+1.57717I$ $a=\ \ 1.95052+0.55742I$ $b=-2.42122-1.38838I$	$5.78164+1.46731I$	0
$u=-0.02782-1.57717I$ $a=\ \ 1.95052-0.55742I$ $b=-2.42122+1.38838I$	$5.78164-1.46731I$	0
$u=-0.01993+1.59734I$ $a=-1.79395+0.64309I$ $b=\ \ 2.58325-0.28191I$	$11.20290+0.20541I$	0
$u=-0.01993-1.59734I$ $a=-1.79395-0.64309I$ $b=\ \ 2.58325+0.28191I$	$11.20290-0.20541I$	0
$u=\ \ 0.07759+1.59910I$ $a=-1.243800-0.046636I$ $b=\ \ 1.55661+0.47044I$	$9.25697-4.06418I$	0
$u=\ \ 0.07759-1.59910I$ $a=-1.243800+0.046636I$ $b=\ \ 1.55661-0.47044I$	$9.25697+4.06418I$	0
$u=-0.16941+1.61795I$ $a=\ \ 1.35369-0.99049I$ $b=-2.16566+1.05980I$	$13.9905+5.8535I$	0
$u=-0.16941-1.61795I$ $a=\ \ 1.35369+0.99049I$ $b=-2.16566-1.05980I$	$13.9905-5.8535I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.02664 + 1.62849I$ $a = 2.05682 - 0.56120I$ $b = -2.82798 + 0.09247I$	$12.75440 - 0.77114I$	0
$u = 0.02664 - 1.62849I$ $a = 2.05682 + 0.56120I$ $b = -2.82798 - 0.09247I$	$12.75440 + 0.77114I$	0
$u = -0.09741 + 1.63542I$ $a = -1.54132 + 0.75143I$ $b = 2.30697 - 0.60574I$	$11.84370 + 0.11908I$	0
$u = -0.09741 - 1.63542I$ $a = -1.54132 - 0.75143I$ $b = 2.30697 + 0.60574I$	$11.84370 - 0.11908I$	0
$u = -0.14856 + 1.64246I$ $a = 2.41249 - 0.23895I$ $b = -3.41599 - 0.26515I$	$10.5226 + 11.4856I$	0
$u = -0.14856 - 1.64246I$ $a = 2.41249 + 0.23895I$ $b = -3.41599 + 0.26515I$	$10.5226 - 11.4856I$	0
$u = -0.10034 + 1.64902I$ $a = -2.48542 + 0.14164I$ $b = 3.42004 + 0.46088I$	$15.9769 + 5.2810I$	0
$u = -0.10034 - 1.64902I$ $a = -2.48542 - 0.14164I$ $b = 3.42004 - 0.46088I$	$15.9769 - 5.2810I$	0
$u = 0.329619$ $a = 0.926533$ $b = -0.282332$	-0.644263	-15.7010
$u = -0.16800 + 1.66325I$ $a = -2.36636 + 0.17556I$ $b = 3.33573 + 0.29398I$	$14.6437 + 17.6986I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.16800-1.66325I$ $a=-2.36636-0.17556I$ $b=\ \ 3.33573-0.29398I$	$14.6437-17.6986I$	0
$u=-0.10112+1.71662I$ $a=\ \ 1.35564-0.64503I$ $b=-1.96049+0.55509I$	$16.5969-3.5463I$	0
$u=-0.10112-1.71662I$ $a=\ \ 1.35564+0.64503I$ $b=-1.96049-0.55509I$	$16.5969+3.5463I$	0

II.

$\boldsymbol{I_2^u = \langle u^{27}a - u^{28} + \cdots + b - a,\ 2u^{28} - 9u^{27} + \cdots - a - 3,\ u^{29} - 5u^{28} + \cdots + 3u - 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_4 = \begin{pmatrix} a \\ -u^{27}a + u^{28} + \cdots + a - 2u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{28}a - 5u^{27}a + \cdots - 8u + 2 \\ u^{26}a + u^{27} + \cdots - au + 3u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^{28}a - 5u^{27}a + \cdots - 4au + 2a \\ -u^{27} + 6u^{26} + \cdots + au - u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u^{28}a + 5u^{27}a + \cdots + 3au + u \\ -u^{27} + 6u^{26} + \cdots + au - u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^{28}a - 5u^{27}a + \cdots + 2a - 2 \\ u^{27} - 4u^{26} + \cdots - au + 3u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^{28}a - 5u^{27}a + \cdots + 2a + 1 \\ u^{27} - 6u^{26} + \cdots + au - 7u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{27} + 20u^{26} - 116u^{25} + 400u^{24} - 1332u^{23} + 3464u^{22} - 8320u^{21} + 17056u^{20} - 31872u^{19} + 52660u^{18} - 78908u^{17} + 105992u^{16} - 128548u^{15} + 140200u^{14} - 137200u^{13} + 120424u^{12} - 94128u^{11} + 65704u^{10} - 40668u^9 + 22460u^8 - 11040u^7 + 4780u^6 - 1836u^5 + 588u^4 - 192u^3 + 60u^2 - 16u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{58} - 9u^{57} + \cdots - 630u + 229$
c_2, c_5	$(u^{29} + 9u^{28} + \cdots + 5u + 1)^2$
c_3, c_9	$u^{58} - u^{57} + \cdots + 1134u + 197$
c_6, c_{10}	$u^{58} + 5u^{57} + \cdots + 4u + 1$
c_7, c_8, c_{11} c_{12}	$(u^{29} + 5u^{28} + \cdots + 3u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{58} - 5y^{57} + \cdots + 1349912y + 52441$
c_2, c_5	$(y^{29} + 19y^{28} + \cdots - 13y - 1)^2$
c_3, c_9	$y^{58} + 19y^{57} + \cdots - 508200y + 38809$
c_6, c_{10}	$y^{58} - 9y^{57} + \cdots - 12y + 1$
c_7, c_8, c_{11} c_{12}	$(y^{29} + 35y^{28} + \cdots - 13y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.195688 + 0.954423I$ $a = -0.972128 - 0.906034I$ $b = 1.76849 + 0.94660I$	$6.38732 - 5.06785I$	$0.07562 + 6.89681I$
$u = 0.195688 + 0.954423I$ $a = -0.369914 + 0.336353I$ $b = -1.063590 + 0.478683I$	$6.38732 - 5.06785I$	$0.07562 + 6.89681I$
$u = 0.195688 - 0.954423I$ $a = -0.972128 + 0.906034I$ $b = 1.76849 - 0.94660I$	$6.38732 + 5.06785I$	$0.07562 - 6.89681I$
$u = 0.195688 - 0.954423I$ $a = -0.369914 - 0.336353I$ $b = -1.063590 - 0.478683I$	$6.38732 + 5.06785I$	$0.07562 - 6.89681I$
$u = 0.501023 + 0.778198I$ $a = 0.130975 + 0.416319I$ $b = 1.072090 - 0.191134I$	$1.64148 - 3.39274I$	$-11.48736 + 3.20502I$
$u = 0.501023 + 0.778198I$ $a = -0.169674 + 0.385781I$ $b = -0.711264 - 0.349089I$	$1.64148 - 3.39274I$	$-11.48736 + 3.20502I$
$u = 0.501023 - 0.778198I$ $a = 0.130975 - 0.416319I$ $b = 1.072090 + 0.191134I$	$1.64148 + 3.39274I$	$-11.48736 - 3.20502I$
$u = 0.501023 - 0.778198I$ $a = -0.169674 - 0.385781I$ $b = -0.711264 + 0.349089I$	$1.64148 + 3.39274I$	$-11.48736 - 3.20502I$
$u = 0.566469 + 0.934578I$ $a = 0.467515 - 0.263005I$ $b = -1.364860 + 0.113870I$	$2.84920 - 5.41618I$	$-8.6789 + 12.8683I$
$u = 0.566469 + 0.934578I$ $a = 0.256548 - 0.030398I$ $b = 0.670641 - 0.168517I$	$2.84920 - 5.41618I$	$-8.6789 + 12.8683I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.566469 - 0.934578I$ $a = 0.467515 + 0.263005I$ $b = -1.364860 - 0.113870I$	$2.84920 + 5.41618I$	$-8.6789 - 12.8683I$
$u = 0.566469 - 0.934578I$ $a = 0.256548 + 0.030398I$ $b = 0.670641 + 0.168517I$	$2.84920 + 5.41618I$	$-8.6789 - 12.8683I$
$u = 0.786511 + 0.103322I$ $a = 0.075590 - 0.942723I$ $b = -0.203314 + 0.156273I$	$-0.273694 - 0.889339I$	$-18.0678 + 6.3049I$
$u = 0.786511 + 0.103322I$ $a = 0.313505 + 0.056568I$ $b = -0.065851 + 0.346476I$	$-0.273694 - 0.889339I$	$-18.0678 + 6.3049I$
$u = 0.786511 - 0.103322I$ $a = 0.075590 + 0.942723I$ $b = -0.203314 - 0.156273I$	$-0.273694 + 0.889339I$	$-18.0678 - 6.3049I$
$u = 0.786511 - 0.103322I$ $a = 0.313505 - 0.056568I$ $b = -0.065851 - 0.346476I$	$-0.273694 + 0.889339I$	$-18.0678 - 6.3049I$
$u = 0.494082 + 0.587228I$ $a = 0.302521 + 0.875921I$ $b = 0.983777 - 0.141714I$	$1.43997 - 3.32019I$	$-12.1625 + 7.9197I$
$u = 0.494082 + 0.587228I$ $a = -0.583892 + 0.586111I$ $b = -0.304504 - 0.604439I$	$1.43997 - 3.32019I$	$-12.1625 + 7.9197I$
$u = 0.494082 - 0.587228I$ $a = 0.302521 - 0.875921I$ $b = 0.983777 + 0.141714I$	$1.43997 + 3.32019I$	$-12.1625 - 7.9197I$
$u = 0.494082 - 0.587228I$ $a = -0.583892 - 0.586111I$ $b = -0.304504 + 0.604439I$	$1.43997 + 3.32019I$	$-12.1625 - 7.9197I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.216772+0.623278I$ $a=-1.076190-0.337838I$ $b=\ \ 2.01966+0.88632I$	$3.13189+6.56560I$	$-7.1171-12.8291I$
$u=-0.216772+0.623278I$ $a=\ \ 0.41367+2.27782I$ $b=-0.130503+0.584963I$	$3.13189+6.56560I$	$-7.1171-12.8291I$
$u=-0.216772-0.623278I$ $a=-1.076190+0.337838I$ $b=\ \ 2.01966-0.88632I$	$3.13189-6.56560I$	$-7.1171+12.8291I$
$u=-0.216772-0.623278I$ $a=\ \ 0.41367-2.27782I$ $b=-0.130503-0.584963I$	$3.13189-6.56560I$	$-7.1171+12.8291I$
$u=-0.188616+0.478965I$ $a=\ \ 0.044120-1.082270I$ $b=-1.256420-0.410029I$	$-1.41975+0.83016I$	$-16.3280-7.8903I$
$u=-0.188616+0.478965I$ $a=-0.34963-1.92596I$ $b=-0.746967-0.337731I$	$-1.41975+0.83016I$	$-16.3280-7.8903I$
$u=-0.188616-0.478965I$ $a=\ \ 0.044120+1.082270I$ $b=-1.256420+0.410029I$	$-1.41975-0.83016I$	$-16.3280+7.8903I$
$u=-0.188616-0.478965I$ $a=-0.34963+1.92596I$ $b=-0.746967+0.337731I$	$-1.41975-0.83016I$	$-16.3280+7.8903I$
$u=\ \ 0.505604$ $a=\ \ 0.870038+0.975031I$ $b=-0.376046+0.324956I$	-0.296707	-14.3160
$u=\ \ 0.505604$ $a=\ \ 0.870038-0.975031I$ $b=-0.376046-0.324956I$	-0.296707	-14.3160

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.04467 + 1.55722I$ $a = 0.023319 + 0.830907I$ $b = -0.295170 - 0.221687I$	$8.27486 - 4.88057I$	$-12.00000 + 5.42301I$
$u = 0.04467 + 1.55722I$ $a = -2.56750 - 0.54184I$ $b = 3.67601 + 0.75264I$	$8.27486 - 4.88057I$	$-12.00000 + 5.42301I$
$u = 0.04467 - 1.55722I$ $a = 0.023319 - 0.830907I$ $b = -0.295170 + 0.221687I$	$8.27486 + 4.88057I$	$-12.00000 - 5.42301I$
$u = 0.04467 - 1.55722I$ $a = -2.56750 + 0.54184I$ $b = 3.67601 - 0.75264I$	$8.27486 + 4.88057I$	$-12.00000 - 5.42301I$
$u = -0.02297 + 1.57694I$ $a = 1.031300 + 0.891923I$ $b = -1.27596 - 1.98763I$	$5.75764 + 1.39775I$	$-12.00000 + 0.I$
$u = -0.02297 + 1.57694I$ $a = 2.42065 + 0.36806I$ $b = -2.90576 - 0.83473I$	$5.75764 + 1.39775I$	$-12.00000 + 0.I$
$u = -0.02297 - 1.57694I$ $a = 1.031300 - 0.891923I$ $b = -1.27596 + 1.98763I$	$5.75764 - 1.39775I$	$-12.00000 + 0.I$
$u = -0.02297 - 1.57694I$ $a = 2.42065 - 0.36806I$ $b = -2.90576 + 0.83473I$	$5.75764 - 1.39775I$	$-12.00000 + 0.I$
$u = -0.04870 + 1.60940I$ $a = 0.30754 - 1.70729I$ $b = -0.53659 + 3.24918I$	$10.92340 + 7.47108I$	$-12.00000 + 0.I$
$u = -0.04870 + 1.60940I$ $a = -3.14722 - 0.78581I$ $b = 3.59046 + 0.95749I$	$10.92340 + 7.47108I$	$-12.00000 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.04870-1.60940I$ $a=\ \ 0.30754+1.70729I$ $b=-0.53659-3.24918I$	$10.92340-7.47108I$	$-12.00000+0.I$
$u=-0.04870-1.60940I$ $a=-3.14722+0.78581I$ $b=\ \ 3.59046-0.95749I$	$10.92340-7.47108I$	$-12.00000+0.I$
$u=-0.243173+0.281252I$ $a=\ \ 2.16112-0.32713I$ $b=\ \ 0.955798+0.909043I$	$2.20930-4.73918I$	$-12.69833+0.12567I$
$u=-0.243173+0.281252I$ $a=\ \ 0.20097+3.38461I$ $b=\ \ 0.552481-0.575987I$	$2.20930-4.73918I$	$-12.69833+0.12567I$
$u=-0.243173-0.281252I$ $a=\ \ 2.16112+0.32713I$ $b=\ \ 0.955798-0.909043I$	$2.20930+4.73918I$	$-12.69833-0.12567I$
$u=-0.243173-0.281252I$ $a=\ \ 0.20097-3.38461I$ $b=\ \ 0.552481+0.575987I$	$2.20930+4.73918I$	$-12.69833-0.12567I$
$u=\ \ 0.14130+1.64406I$ $a=\ \ 1.39862+0.38362I$ $b=-2.00910+0.04697I$	$9.97047-5.82183I$	0
$u=\ \ 0.14130+1.64406I$ $a=-2.13183-0.07965I$ $b=\ \ 3.00192-0.19303I$	$9.97047-5.82183I$	0
$u=\ \ 0.14130-1.64406I$ $a=\ \ 1.39862-0.38362I$ $b=-2.00910-0.04697I$	$9.97047+5.82183I$	0
$u=\ \ 0.14130-1.64406I$ $a=-2.13183+0.07965I$ $b=\ \ 3.00192+0.19303I$	$9.97047+5.82183I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.06820 + 1.67990I$ $a = 2.22054 - 0.61828I$ $b = -3.29320 + 1.26808I$	$15.5849 - 6.2095I$	0
$u = 0.06820 + 1.67990I$ $a = -2.00367 - 1.22703I$ $b = 2.49427 + 0.99693I$	$15.5849 - 6.2095I$	0
$u = 0.06820 - 1.67990I$ $a = 2.22054 + 0.61828I$ $b = -3.29320 - 1.26808I$	$15.5849 + 6.2095I$	0
$u = 0.06820 - 1.67990I$ $a = -2.00367 + 1.22703I$ $b = 2.49427 - 0.99693I$	$15.5849 + 6.2095I$	0
$u = 0.16948 + 1.68267I$ $a = -1.44232 + 0.16410I$ $b = 2.14852 - 0.68418I$	$11.8057 - 8.3466I$	0
$u = 0.16948 + 1.68267I$ $a = 2.17542 + 0.32124I$ $b = -2.89502 - 0.11683I$	$11.8057 - 8.3466I$	0
$u = 0.16948 - 1.68267I$ $a = -1.44232 - 0.16410I$ $b = 2.14852 + 0.68418I$	$11.8057 + 8.3466I$	0
$u = 0.16948 - 1.68267I$ $a = 2.17542 - 0.32124I$ $b = -2.89502 + 0.11683I$	$11.8057 + 8.3466I$	0

III. $I_3^u =$
$\langle -u^{22}+4u^{21}+\cdots+b+3,\ 3u^{22}-15u^{21}+\cdots+2a+13,\ u^{23}-5u^{22}+\cdots+15u-2\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{3}{2}u^{22} + \frac{15}{2}u^{21} + \cdots + 42u - \frac{13}{2} \\ u^{22} - 4u^{21} + \cdots + 14u - 3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{22} + \frac{5}{2}u^{21} + \cdots + 32u - \frac{13}{2} \\ u^{22} - 4u^{21} + \cdots + 13u^2 - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{3}{2}u^{22} + \frac{15}{2}u^{21} + \cdots + 42u - \frac{11}{2} \\ u^{21} - 4u^{20} + \cdots + 16u - 3 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{3}{2}u^{22} + \frac{15}{2}u^{21} + \cdots + 45u - \frac{13}{2} \\ u^{21} - 4u^{20} + \cdots + 17u - 3 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{2}u^{22} - \frac{5}{2}u^{21} + \cdots - 28u + \frac{9}{2} \\ -u^5 + 2u^4 - 4u^3 + 5u^2 - 3u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{2}u^{22} + \frac{5}{2}u^{21} + \cdots + 19u - \frac{3}{2} \\ u^9 - 3u^8 + 9u^7 - 17u^6 + 25u^5 - 29u^4 + 24u^3 - 15u^2 + 5u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -14u^{22} + 63u^{21} - 337u^{20} + 1047u^{19} - 3171u^{18} + 7386u^{17} - 15902u^{16} + 28885u^{15} - 47567u^{14} + 68545u^{13} - 88589u^{12} + 101470u^{11} - 103114u^{10} + 92788u^9 - 72959u^8 + 50192u^7 - 29523u^6 + 14773u^5 - 6201u^4 + 2045u^3 - 605u^2 + 98u - 20$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{23} - u^{22} + \cdots + u - 1$
c_2	$u^{23} - 11u^{22} + \cdots + 95u - 12$
c_3, c_9	$u^{23} + u^{22} + \cdots + u^2 + 1$
c_5	$u^{23} + 11u^{22} + \cdots + 95u + 12$
c_6, c_{10}	$u^{23} + u^{22} + \cdots + u - 1$
c_7, c_8	$u^{23} - 5u^{22} + \cdots + 15u - 2$
c_{11}, c_{12}	$u^{23} + 5u^{22} + \cdots + 15u + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{23} - 9y^{22} + \cdots + 5y - 1$
c_2, c_5	$y^{23} + 11y^{22} + \cdots - 1079y - 144$
c_3, c_9	$y^{23} + 11y^{22} + \cdots - 2y - 1$
c_6, c_{10}	$y^{23} - 7y^{22} + \cdots - 7y - 1$
c_7, c_8, c_{11} c_{12}	$y^{23} + 29y^{22} + \cdots - 47y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.055098 + 0.963623I$ $a = -0.659715 - 0.383311I$ $b = 1.089160 - 0.395794I$	$4.65113 - 5.19324I$	$-6.36369 + 6.25683I$
$u = 0.055098 - 0.963623I$ $a = -0.659715 + 0.383311I$ $b = 1.089160 + 0.395794I$	$4.65113 + 5.19324I$	$-6.36369 - 6.25683I$
$u = 0.595550 + 0.857992I$ $a = 0.008760 - 0.154425I$ $b = -0.925111 - 0.027434I$	$2.53184 - 4.13729I$	$-5.48066 + 6.37467I$
$u = 0.595550 - 0.857992I$ $a = 0.008760 + 0.154425I$ $b = -0.925111 + 0.027434I$	$2.53184 + 4.13729I$	$-5.48066 - 6.37467I$
$u = 0.846406 + 0.134230I$ $a = -0.034807 + 0.689285I$ $b = 0.0817028 + 0.1146360I$	$0.271559 - 0.666279I$	$-2.13311 - 0.86043I$
$u = 0.846406 - 0.134230I$ $a = -0.034807 - 0.689285I$ $b = 0.0817028 - 0.1146360I$	$0.271559 + 0.666279I$	$-2.13311 + 0.86043I$
$u = 0.368780 + 1.190300I$ $a = -0.362792 - 0.067037I$ $b = 0.856694 - 0.067276I$	$4.39247 - 5.06548I$	$-3.80725 + 10.44286I$
$u = 0.368780 - 1.190300I$ $a = -0.362792 + 0.067037I$ $b = 0.856694 + 0.067276I$	$4.39247 + 5.06548I$	$-3.80725 - 10.44286I$
$u = 0.130274 + 1.326600I$ $a = 0.361916 - 0.408395I$ $b = -0.312860 + 0.821004I$	$2.21466 - 1.65415I$	$-14.0246 - 2.2364I$
$u = 0.130274 - 1.326600I$ $a = 0.361916 + 0.408395I$ $b = -0.312860 - 0.821004I$	$2.21466 + 1.65415I$	$-14.0246 + 2.2364I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.172894 + 0.521546I$ $a = -0.02050 + 1.68866I$ $b = -1.261940 + 0.449992I$	$-1.163930 - 0.723592I$	$6.96325 - 4.99921I$
$u = \quad 0.172894 - 0.521546I$ $a = -0.02050 - 1.68866I$ $b = -1.261940 - 0.449992I$	$-1.163930 + 0.723592I$	$6.96325 + 4.99921I$
$u = -0.084481 + 0.431444I$ $a = -1.32681 - 2.09175I$ $b = \quad 1.190500 - 0.294292I$	$2.87183 + 5.49525I$	$-5.86092 - 5.26519I$
$u = -0.084481 - 0.431444I$ $a = -1.32681 + 2.09175I$ $b = \quad 1.190500 + 0.294292I$	$2.87183 - 5.49525I$	$-5.86092 + 5.26519I$
$u = -0.03280 + 1.57202I$ $a = -1.68788 + 0.65851I$ $b = \quad 1.95942 - 1.43311I$	$9.94959 + 5.95892I$	$-5.64533 - 5.36115I$
$u = -0.03280 - 1.57202I$ $a = -1.68788 - 0.65851I$ $b = \quad 1.95942 + 1.43311I$	$9.94959 - 5.95892I$	$-5.64533 + 5.36115I$
$u = \quad 0.03283 + 1.58195I$ $a = \quad 2.07621 - 0.78435I$ $b = -2.52263 + 1.72561I$	$6.17515 - 1.37592I$	$3.79659 - 2.06448I$
$u = \quad 0.03283 - 1.58195I$ $a = \quad 2.07621 + 0.78435I$ $b = -2.52263 - 1.72561I$	$6.17515 + 1.37592I$	$3.79659 + 2.06448I$
$u = \quad 0.342716$ $a = -1.76801$ $b = -0.514065$	-2.03702	-20.3640
$u = \quad 0.16963 + 1.66277I$ $a = \quad 1.70693 + 0.26846I$ $b = -2.44017 + 0.01339I$	$11.13330 - 7.07448I$	$-5.11624 + 4.28864I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.16963 - 1.66277I$ $a = 1.70693 - 0.26846I$ $b = -2.44017 - 0.01339I$	$11.13330 + 7.07448I$	$-5.11624 - 4.28864I$
$u = 0.07445 + 1.67426I$ $a = -1.92731 + 0.14325I$ $b = 2.54227 - 0.68786I$	$13.9187 - 6.2443I$	$-4.64599 + 5.22587I$
$u = 0.07445 - 1.67426I$ $a = -1.92731 - 0.14325I$ $b = 2.54227 + 0.68786I$	$13.9187 + 6.2443I$	$-4.64599 - 5.22587I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^{23}-u^{22}+\cdots+u-1)(u^{53}-u^{52}+\cdots+11u+1)$ $\cdot(u^{58}-9u^{57}+\cdots-630u+229)$
c_2	$(u^{23}-11u^{22}+\cdots+95u-12)(u^{29}+9u^{28}+\cdots+5u+1)^2$ $\cdot(u^{53}-14u^{52}+\cdots-604u+58)$
c_3, c_9	$(u^{23}+u^{22}+\cdots+u^2+1)(u^{53}-u^{52}+\cdots+76u+79)$ $\cdot(u^{58}-u^{57}+\cdots+1134u+197)$
c_5	$(u^{23}+11u^{22}+\cdots+95u+12)(u^{29}+9u^{28}+\cdots+5u+1)^2$ $\cdot(u^{53}-14u^{52}+\cdots-604u+58)$
c_6, c_{10}	$(u^{23}+u^{22}+\cdots+u-1)(u^{53}+u^{52}+\cdots+5u+1)$ $\cdot(u^{58}+5u^{57}+\cdots+4u+1)$
c_7, c_8	$(u^{23}-5u^{22}+\cdots+15u-2)(u^{29}+5u^{28}+\cdots+3u+1)^2$ $\cdot(u^{53}-8u^{52}+\cdots-90u+10)$
c_{11}, c_{12}	$(u^{23}+5u^{22}+\cdots+15u+2)(u^{29}+5u^{28}+\cdots+3u+1)^2$ $\cdot(u^{53}-8u^{52}+\cdots-90u+10)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^{23} - 9y^{22} + \cdots + 5y - 1)(y^{53} + 37y^{52} + \cdots - 71y - 1)$ $\cdot (y^{58} - 5y^{57} + \cdots + 1349912y + 52441)$
c_2, c_5	$(y^{23} + 11y^{22} + \cdots - 1079y - 144)(y^{29} + 19y^{28} + \cdots - 13y - 1)^2$ $\cdot (y^{53} + 30y^{52} + \cdots + 4636y - 3364)$
c_3, c_9	$(y^{23} + 11y^{22} + \cdots - 2y - 1)(y^{53} + 9y^{52} + \cdots - 51894y - 6241)$ $\cdot (y^{58} + 19y^{57} + \cdots - 508200y + 38809)$
c_6, c_{10}	$(y^{23} - 7y^{22} + \cdots - 7y - 1)(y^{53} + 31y^{52} + \cdots - 87y - 1)$ $\cdot (y^{58} - 9y^{57} + \cdots - 12y + 1)$
c_7, c_8, c_{11} c_{12}	$(y^{23} + 29y^{22} + \cdots - 47y - 4)(y^{29} + 35y^{28} + \cdots - 13y - 1)^2$ $\cdot (y^{53} + 64y^{52} + \cdots - 1080y - 100)$