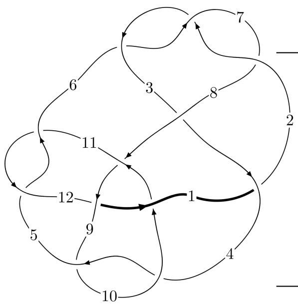
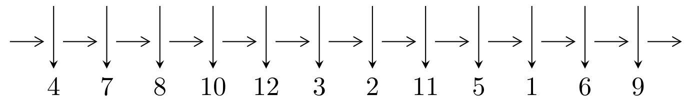
$12a_{1037}$ ($K12a_{1037}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 9u^{38} - 54u^{37} + \cdots + 2b - 61u,\ 3u^{38} - 9u^{37} + \cdots + 2a + 21,\ u^{39} - 6u^{38} + \cdots + 38u - 4\rangle \\
I_2^u &= \langle -3949624u^{17}a^3 - 3395926u^{17}a^2 + \cdots + 4044931a - 2562506,\ 2u^{17}a^3 - 2u^{17}a^2 + \cdots - 35a + 20, \\
&\qquad u^{18} + u^{17} + \cdots - 3u - 1\rangle \\
I_3^u &= \langle -u^{18} - 2u^{17} + \cdots + b + 1,\ 2u^{18} + 2u^{17} + \cdots + a + 1,\ u^{19} + u^{18} + \cdots - 2u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 130 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. $I^u_1 =$
$$\langle 9u^{38}-54u^{37}+\cdots+2b-61u,\ 3u^{38}-9u^{37}+\cdots+2a+21,\ u^{39}-6u^{38}+\cdots+38u-4\rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^4-u^2+1 \\ u^4+2u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{3}{2}u^{38}+\frac{9}{2}u^{37}+\cdots+97u-\frac{21}{2} \\ -\frac{9}{2}u^{38}+27u^{37}+\cdots-\frac{483}{2}u^2+\frac{61}{2}u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{5}{4}u^{38}-6u^{37}+\cdots-\frac{293}{4}u+8 \\ \frac{3}{2}u^{38}-9u^{37}+\cdots-\frac{35}{2}u+1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^8+3u^6+u^4-2u^2+1 \\ -u^8-4u^6-4u^4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{3}{2}u^{38}-\frac{13}{2}u^{37}+\cdots+104u-\frac{25}{2} \\ \frac{5}{2}u^{38}-15u^{37}+\cdots-\frac{433}{2}u+26 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{7}{4}u^{38}-8u^{37}+\cdots-\frac{183}{4}u+6 \\ -\frac{3}{2}u^{38}+5u^{37}+\cdots-\frac{5}{2}u+1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -4u^{38}+\frac{43}{2}u^{37}+\cdots+\frac{267}{2}u-\frac{29}{2} \\ -\frac{5}{2}u^{38}+15u^{37}+\cdots+\frac{277}{2}u-16 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -15u^{38}+90u^{37}+\cdots+1046u-146$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39} - 8u^{38} + \cdots + 6840u + 6208$
c_2, c_6, c_7	$u^{39} + 6u^{38} + \cdots + 38u + 4$
c_3	$u^{39} - 6u^{38} + \cdots + 2982u + 612$
c_4, c_5, c_9 c_{11}	$u^{39} + 16u^{37} + \cdots + 2u + 1$
c_8, c_{10}	$u^{39} + 3u^{38} + \cdots + 7u + 1$
c_{12}	$u^{39} + 40u^{38} + \cdots + 5898240u + 262144$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} + 24y^{38} + \cdots + 872760000y - 38539264$
c_2, c_6, c_7	$y^{39} + 36y^{38} + \cdots + 236y - 16$
c_3	$y^{39} + 10y^{38} + \cdots + 2009772y - 374544$
c_4, c_5, c_9 c_{11}	$y^{39} + 32y^{38} + \cdots + 8y - 1$
c_8, c_{10}	$y^{39} + 9y^{38} + \cdots + 17y - 1$
c_{12}	$y^{39} + 6y^{38} + \cdots + 876173328384y - 68719476736$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.621412 + 0.721365I$ $a = -0.932835 - 0.396053I$ $b = 0.564441 - 0.374185I$	$7.47477 - 1.00733I$	$0.507207 - 0.734789I$
$u = 0.621412 - 0.721365I$ $a = -0.932835 + 0.396053I$ $b = 0.564441 + 0.374185I$	$7.47477 + 1.00733I$	$0.507207 + 0.734789I$
$u = 0.795732 + 0.401330I$ $a = 0.036813 - 0.325741I$ $b = 0.905438 + 0.766145I$	$6.46497 - 3.87487I$	$-4.28170 + 7.09893I$
$u = 0.795732 - 0.401330I$ $a = 0.036813 + 0.325741I$ $b = 0.905438 - 0.766145I$	$6.46497 + 3.87487I$	$-4.28170 - 7.09893I$
$u = -0.405140 + 1.083670I$ $a = -1.234740 - 0.069956I$ $b = 0.818856 + 0.510836I$	$5.48677 - 2.23109I$	0
$u = -0.405140 - 1.083670I$ $a = -1.234740 + 0.069956I$ $b = 0.818856 - 0.510836I$	$5.48677 + 2.23109I$	0
$u = 0.566335 + 0.612658I$ $a = 1.17391 + 1.37819I$ $b = -0.758745 + 0.525385I$	$9.36820 + 9.41842I$	$-5.95786 - 3.44024I$
$u = 0.566335 - 0.612658I$ $a = 1.17391 - 1.37819I$ $b = -0.758745 - 0.525385I$	$9.36820 - 9.41842I$	$-5.95786 + 3.44024I$
$u = 0.732516 + 0.383228I$ $a = -0.169603 + 0.225290I$ $b = -1.72263 - 1.08880I$	$8.5551 - 13.8295I$	$-7.67024 + 8.80490I$
$u = 0.732516 - 0.383228I$ $a = -0.169603 - 0.225290I$ $b = -1.72263 + 1.08880I$	$8.5551 + 13.8295I$	$-7.67024 - 8.80490I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.783601+0.096059I$ $a=0.053303+0.259416I$ $b=0.792876-1.059160I$	$2.48065+6.48872I$	$-10.45492-8.33183I$
$u=-0.783601-0.096059I$ $a=0.053303-0.259416I$ $b=0.792876+1.059160I$	$2.48065-6.48872I$	$-10.45492+8.33183I$
$u=-0.103803+1.209710I$ $a=0.50605-2.21549I$ $b=-0.99422+1.38736I$	$0.35295+1.88325I$	0
$u=-0.103803-1.209710I$ $a=0.50605+2.21549I$ $b=-0.99422-1.38736I$	$0.35295-1.88325I$	0
$u=0.099527+1.231270I$ $a=-0.018915+0.867476I$ $b=0.177931-0.711431I$	$2.95447-1.60320I$	0
$u=0.099527-1.231270I$ $a=-0.018915-0.867476I$ $b=0.177931+0.711431I$	$2.95447+1.60320I$	0
$u=0.613014+0.336552I$ $a=0.306076+0.500256I$ $b=1.107600+0.121686I$	$-0.59947-3.61547I$	$-14.0789+6.2920I$
$u=0.613014-0.336552I$ $a=0.306076-0.500256I$ $b=1.107600-0.121686I$	$-0.59947+3.61547I$	$-14.0789-6.2920I$
$u=-0.314712+1.271460I$ $a=0.51202+1.94415I$ $b=0.25798-1.51458I$	$6.72838+10.43640I$	0
$u=-0.314712-1.271460I$ $a=0.51202-1.94415I$ $b=0.25798+1.51458I$	$6.72838-10.43640I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.196182+1.345270I$ $a=\ 1.37134-1.61017I$ $b=-1.43122+0.67225I$	$1.84241+3.16143I$	0
$u=-0.196182-1.345270I$ $a=\ 1.37134+1.61017I$ $b=-1.43122-0.67225I$	$1.84241-3.16143I$	0
$u=\ 0.471183+0.367555I$ $a=\ 0.164394-0.998156I$ $b=-0.313414-0.259898I$	$-0.148043+0.231843I$	$-12.86061+0.25911I$
$u=\ 0.471183-0.367555I$ $a=\ 0.164394+0.998156I$ $b=-0.313414+0.259898I$	$-0.148043-0.231843I$	$-12.86061-0.25911I$
$u=\ 0.20386+1.42529I$ $a=\ 0.545416+0.979984I$ $b=-1.12807-1.21432I$	$5.54119-2.38108I$	0
$u=\ 0.20386-1.42529I$ $a=\ 0.545416-0.979984I$ $b=-1.12807+1.21432I$	$5.54119+2.38108I$	0
$u=-0.544157+0.117730I$ $a=-0.462056-0.632512I$ $b=-1.46475-0.17702I$	$-2.80387+0.48049I$	$-15.5833-11.0293I$
$u=-0.544157-0.117730I$ $a=-0.462056+0.632512I$ $b=-1.46475+0.17702I$	$-2.80387-0.48049I$	$-15.5833+11.0293I$
$u=\ 0.23475+1.43146I$ $a=-1.36069-1.22018I$ $b=\ 2.12508+0.89186I$	$5.07499-6.73147I$	0
$u=\ 0.23475-1.43146I$ $a=-1.36069+1.22018I$ $b=\ 2.12508-0.89186I$	$5.07499+6.73147I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.27692 + 1.46170I$ $a = 1.06115 + 2.55968I$ $b = -2.14021 - 2.00162I$	$14.4904 - 17.5068I$	0
$u = 0.27692 - 1.46170I$ $a = 1.06115 - 2.55968I$ $b = -2.14021 + 2.00162I$	$14.4904 + 17.5068I$	0
$u = 0.29538 + 1.47814I$ $a = -0.44941 - 1.62298I$ $b = 1.08264 + 1.26742I$	$12.5250 - 7.8307I$	0
$u = 0.29538 - 1.47814I$ $a = -0.44941 + 1.62298I$ $b = 1.08264 - 1.26742I$	$12.5250 + 7.8307I$	0
$u = 0.15804 + 1.50183I$ $a = 0.492863 - 0.131153I$ $b = 0.409338 + 0.771966I$	$16.2651 + 6.9065I$	0
$u = 0.15804 - 1.50183I$ $a = 0.492863 + 0.131153I$ $b = 0.409338 - 0.771966I$	$16.2651 - 6.9065I$	0
$u = 0.12529 + 1.53061I$ $a = -0.513286 - 0.068115I$ $b = -0.160716 - 0.114876I$	$15.0110 - 3.4153I$	0
$u = 0.12529 - 1.53061I$ $a = -0.513286 + 0.068115I$ $b = -0.160716 + 0.114876I$	$15.0110 + 3.4153I$	0
$u = 0.307285$ $a = 0.836404$ $b = -0.256404$	-0.549271	-17.8940

II. $\boldsymbol{I_2^u = \langle -3.95\times 10^6 a^3u^{17} - 3.40\times 10^6 a^2u^{17} + \cdots + 4.04\times 10^6 a - 2.56\times 10^6,\ 2u^{17}a^3 - 2u^{17}a^2 + \cdots - 35a + 20,\ u^{18} + u^{17} + \cdots - 3u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^4 - u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ 3.35053a^3u^{17} + 2.88082a^2u^{17} + \cdots - 3.43138a + 2.17382 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.326524a^3u^{17} - 0.760371a^2u^{17} + \cdots + 0.486927a + 2.37802 \\ -0.385925a^3u^{17} + 0.993532a^2u^{17} + \cdots - 1.17433a - 0.846691 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^8 + 3u^6 + u^4 - 2u^2 + 1 \\ -u^8 - 4u^6 - 4u^4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.203610a^3u^{17} - 0.760371a^2u^{17} + \cdots + 3.55812a + 0.378015 \\ 3.23037a^3u^{17} + 2.58904a^2u^{17} + \cdots - 2.53286a + 1.26567 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.340485a^3u^{17} + 0.00777567a^2u^{17} + \cdots - 0.614410a + 2.33064 \\ 1.51848a^3u^{17} + 2.60572a^2u^{17} + \cdots - 0.901601a - 3.30391 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1.24583a^3u^{17} - 0.857607a^2u^{17} + \cdots + 0.857607a + 1.07142 \\ -2.10677a^3u^{17} - 0.544094a^2u^{17} + \cdots - 1.00647a + 2.61074 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{8518448}{1178805}u^{17}a^3 - \frac{1539632}{1178805}u^{17}a^2 + \cdots + \frac{5989952}{1178805}a - \frac{19770202}{1178805}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{18}-3u^{17}+\cdots-3u+3)^4$
c_2, c_6, c_7	$(u^{18}-u^{17}+\cdots+3u-1)^4$
c_3	$(u^{18}+u^{17}+\cdots+13u-5)^4$
c_4, c_5, c_9 c_{11}	$u^{72}-u^{71}+\cdots-2u+1$
c_8, c_{10}	$u^{72}-21u^{71}+\cdots-139378u+9841$
c_{12}	$(u^2-u+1)^{36}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{18} + 13y^{17} + \cdots - 75y + 9)^4$
c_2, c_6, c_7	$(y^{18} + 17y^{17} + \cdots - 7y + 1)^4$
c_3	$(y^{18} + 5y^{17} + \cdots - 39y + 25)^4$
c_4, c_5, c_9 c_{11}	$y^{72} + 63y^{71} + \cdots + 144y + 1$
c_8, c_{10}	$y^{72} + 27y^{71} + \cdots + 5486973168y + 96845281$
c_{12}	$(y^2 + y + 1)^{36}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215059 + 1.214380I$ $a = 0.84158 + 1.15506I$ $b = -0.634182 - 0.545920I$	$2.78152 - 1.19685I$	$-9.05526 + 0.16546I$
$u = 0.215059 + 1.214380I$ $a = -1.42648 + 0.34743I$ $b = 1.159740 - 0.702226I$	$2.78152 - 1.19685I$	$-9.05526 + 0.16546I$
$u = 0.215059 + 1.214380I$ $a = 0.47279 + 1.95213I$ $b = -1.09686 - 1.42735I$	$2.78152 - 5.25662I$	$-9.05526 + 7.09366I$
$u = 0.215059 + 1.214380I$ $a = 1.12086 - 2.19684I$ $b = -0.24685 + 1.59627I$	$2.78152 - 5.25662I$	$-9.05526 + 7.09366I$
$u = 0.215059 - 1.214380I$ $a = 0.84158 - 1.15506I$ $b = -0.634182 + 0.545920I$	$2.78152 + 1.19685I$	$-9.05526 - 0.16546I$
$u = 0.215059 - 1.214380I$ $a = -1.42648 - 0.34743I$ $b = 1.159740 + 0.702226I$	$2.78152 + 1.19685I$	$-9.05526 - 0.16546I$
$u = 0.215059 - 1.214380I$ $a = 0.47279 - 1.95213I$ $b = -1.09686 + 1.42735I$	$2.78152 + 5.25662I$	$-9.05526 - 7.09366I$
$u = 0.215059 - 1.214380I$ $a = 1.12086 + 2.19684I$ $b = -0.24685 - 1.59627I$	$2.78152 + 5.25662I$	$-9.05526 - 7.09366I$
$u = -0.678984 + 0.355286I$ $a = -0.159736 + 0.522088I$ $b = 0.094560 + 0.657341I$	$3.04600 + 3.68439I$	$-9.06596 - 2.59573I$
$u = -0.678984 + 0.355286I$ $a = -0.090805 - 0.507402I$ $b = 1.283080 - 0.167605I$	$3.04600 + 7.74416I$	$-9.06596 - 9.52393I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.678984 + 0.355286I$ $a = -0.447651 - 0.097294I$ $b = -1.80893 + 1.31318I$	$3.04600 + 7.74416I$	$-9.06596 - 9.52393I$
$u = -0.678984 + 0.355286I$ $a = -0.094718 + 0.246577I$ $b = \quad 1.160460 - 0.774719I$	$3.04600 + 3.68439I$	$-9.06596 - 2.59573I$
$u = -0.678984 - 0.355286I$ $a = -0.159736 - 0.522088I$ $b = \quad 0.094560 - 0.657341I$	$3.04600 - 3.68439I$	$-9.06596 + 2.59573I$
$u = -0.678984 - 0.355286I$ $a = -0.090805 + 0.507402I$ $b = \quad 1.283080 + 0.167605I$	$3.04600 - 7.74416I$	$-9.06596 + 9.52393I$
$u = -0.678984 - 0.355286I$ $a = -0.447651 + 0.097294I$ $b = -1.80893 - 1.31318I$	$3.04600 - 7.74416I$	$-9.06596 + 9.52393I$
$u = -0.678984 - 0.355286I$ $a = -0.094718 - 0.246577I$ $b = \quad 1.160460 + 0.774719I$	$3.04600 - 3.68439I$	$-9.06596 + 2.59573I$
$u = \quad 0.590027 + 0.406016I$ $a = -0.747467 + 0.817649I$ $b = -2.24434 - 0.81502I$	$7.36099 + 0.14420I$	$-3.68331 + 0.52947I$
$u = \quad 0.590027 + 0.406016I$ $a = -0.493746 - 0.244011I$ $b = \quad 1.61229 + 0.75954I$	$7.36099 - 3.91557I$	$-3.68331 + 7.45767I$
$u = \quad 0.590027 + 0.406016I$ $a = -0.74761 - 1.57796I$ $b = \quad 0.477339 + 0.169725I$	$7.36099 + 0.14420I$	$-3.68331 + 0.52947I$
$u = \quad 0.590027 + 0.406016I$ $a = \quad 0.58284 + 1.91894I$ $b = -1.28763 + 1.09338I$	$7.36099 - 3.91557I$	$-3.68331 + 7.45767I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.590027 - 0.406016I$ $a = -0.747467 - 0.817649I$ $b = -2.24434 + 0.81502I$	$7.36099 - 0.14420I$	$-3.68331 - 0.52947I$
$u = 0.590027 - 0.406016I$ $a = -0.493746 + 0.244011I$ $b = 1.61229 - 0.75954I$	$7.36099 + 3.91557I$	$-3.68331 - 7.45767I$
$u = 0.590027 - 0.406016I$ $a = -0.74761 + 1.57796I$ $b = 0.477339 - 0.169725I$	$7.36099 - 0.14420I$	$-3.68331 - 0.52947I$
$u = 0.590027 - 0.406016I$ $a = 0.58284 - 1.91894I$ $b = -1.28763 - 1.09338I$	$7.36099 + 3.91557I$	$-3.68331 - 7.45767I$
$u = -0.482433 + 0.528989I$ $a = 0.676484 + 0.200897I$ $b = 0.587231 - 0.287840I$	$3.80604 + 0.24294I$	$-7.23943 - 3.48661I$
$u = -0.482433 + 0.528989I$ $a = -0.126601 + 1.382480I$ $b = -0.170952 - 0.123200I$	$3.80604 - 3.81683I$	$-7.23943 + 3.44160I$
$u = -0.482433 + 0.528989I$ $a = -1.09882 + 0.99815I$ $b = 0.515901 + 0.123082I$	$3.80604 + 0.24294I$	$-7.23943 - 3.48661I$
$u = -0.482433 + 0.528989I$ $a = 1.37618 - 1.61626I$ $b = -0.523299 - 0.749761I$	$3.80604 - 3.81683I$	$-7.23943 + 3.44160I$
$u = -0.482433 - 0.528989I$ $a = 0.676484 - 0.200897I$ $b = 0.587231 + 0.287840I$	$3.80604 - 0.24294I$	$-7.23943 + 3.48661I$
$u = -0.482433 - 0.528989I$ $a = -0.126601 - 1.382480I$ $b = -0.170952 + 0.123200I$	$3.80604 + 3.81683I$	$-7.23943 - 3.44160I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.482433-0.528989I$ $a=-1.09882-0.99815I$ $b=\ \ 0.515901-0.123082I$	$3.80604-0.24294I$	$-7.23943+3.48661I$
$u=-0.482433-0.528989I$ $a=\ \ 1.37618+1.61626I$ $b=-0.523299+0.749761I$	$3.80604+3.81683I$	$-7.23943-3.44160I$
$u=-0.076050+1.298790I$ $a=-0.919925+0.243405I$ $b=\ \ 1.86099-0.27931I$	$8.28842-0.45801I$	$-3.80878-0.75660I$
$u=-0.076050+1.298790I$ $a=-1.44427+1.22259I$ $b=\ \ 0.176652-0.618705I$	$8.28842+3.60176I$	$-3.80878-7.68480I$
$u=-0.076050+1.298790I$ $a=-1.82203-2.73302I$ $b=\ \ 1.65533+2.74318I$	$8.28842+3.60176I$	$-3.80878-7.68480I$
$u=-0.076050+1.298790I$ $a=\ \ 1.24500+3.34050I$ $b=-0.93713-2.36947I$	$8.28842-0.45801I$	$-3.80878-0.75660I$
$u=-0.076050-1.298790I$ $a=-0.919925-0.243405I$ $b=\ \ 1.86099+0.27931I$	$8.28842+0.45801I$	$-3.80878+0.75660I$
$u=-0.076050-1.298790I$ $a=-1.44427-1.22259I$ $b=\ \ 0.176652+0.618705I$	$8.28842-3.60176I$	$-3.80878+7.68480I$
$u=-0.076050-1.298790I$ $a=-1.82203+2.73302I$ $b=\ \ 1.65533-2.74318I$	$8.28842-3.60176I$	$-3.80878+7.68480I$
$u=-0.076050-1.298790I$ $a=\ \ 1.24500-3.34050I$ $b=-0.93713+2.36947I$	$8.28842+0.45801I$	$-3.80878+0.75660I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.663049$ $a = 0.064959 + 0.400733I$ $b = -1.208060 + 0.381728I$	$-0.89775 + 2.02988I$	$-14.3720 - 3.4641I$
$u = 0.663049$ $a = 0.064959 - 0.400733I$ $b = -1.208060 - 0.381728I$	$-0.89775 - 2.02988I$	$-14.3720 + 3.4641I$
$u = 0.663049$ $a = 0.287724 + 0.210132I$ $b = 0.70420 - 1.25443I$	$-0.89775 + 2.02988I$	$-14.3720 - 3.4641I$
$u = 0.663049$ $a = 0.287724 - 0.210132I$ $b = 0.70420 + 1.25443I$	$-0.89775 - 2.02988I$	$-14.3720 + 3.4641I$
$u = -0.17132 + 1.45278I$ $a = 0.520335 + 0.799536I$ $b = 0.70398 - 1.43202I$	$10.07990 - 1.47092I$	$-3.51114 + 3.72120I$
$u = -0.17132 + 1.45278I$ $a = 1.156310 - 0.321118I$ $b = -1.65049 + 0.62665I$	$10.07990 - 1.47092I$	$-3.51114 + 3.72120I$
$u = -0.17132 + 1.45278I$ $a = -1.017530 + 0.809538I$ $b = 1.64441 - 0.36076I$	$10.07990 + 2.58885I$	$-3.51114 - 3.20700I$
$u = -0.17132 + 1.45278I$ $a = -0.235110 + 0.403267I$ $b = -0.473689 - 0.056257I$	$10.07990 + 2.58885I$	$-3.51114 - 3.20700I$
$u = -0.17132 - 1.45278I$ $a = 0.520335 - 0.799536I$ $b = 0.70398 + 1.43202I$	$10.07990 + 1.47092I$	$-3.51114 - 3.72120I$
$u = -0.17132 - 1.45278I$ $a = 1.156310 + 0.321118I$ $b = -1.65049 - 0.62665I$	$10.07990 + 1.47092I$	$-3.51114 - 3.72120I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.17132-1.45278I$ $a=-1.017530-0.809538I$ $b=\ \ 1.64441+0.36076I$	$10.07990-2.58885I$	$-3.51114+3.20700I$
$u=-0.17132-1.45278I$ $a=-0.235110-0.403267I$ $b=-0.473689+0.056257I$	$10.07990-2.58885I$	$-3.51114+3.20700I$
$u=-0.25789+1.44398I$ $a=-0.335626-0.777806I$ $b=-0.277963+1.122660I$	$8.82504+7.10521I$	$-4.98695-2.40068I$
$u=-0.25789+1.44398I$ $a=-1.55330+1.39269I$ $b=\ \ 2.26174-1.13867I$	$8.8250+11.1650I$	$-4.98695-9.32888I$
$u=-0.25789+1.44398I$ $a=-0.73749+2.01471I$ $b=\ \ 1.35360-1.66105I$	$8.82504+7.10521I$	$-4.98695-2.40068I$
$u=-0.25789+1.44398I$ $a=\ \ 1.01866-2.94049I$ $b=-2.33331+2.33940I$	$8.8250+11.1650I$	$-4.98695-9.32888I$
$u=-0.25789-1.44398I$ $a=-0.335626+0.777806I$ $b=-0.277963-1.122660I$	$8.82504-7.10521I$	$-4.98695+2.40068I$
$u=-0.25789-1.44398I$ $a=-1.55330-1.39269I$ $b=\ \ 2.26174+1.13867I$	$8.8250-11.1650I$	$-4.98695+9.32888I$
$u=-0.25789-1.44398I$ $a=-0.73749-2.01471I$ $b=\ \ 1.35360+1.66105I$	$8.82504-7.10521I$	$-4.98695+2.40068I$
$u=-0.25789-1.44398I$ $a=\ \ 1.01866+2.94049I$ $b=-2.33331-2.33940I$	$8.8250-11.1650I$	$-4.98695+9.32888I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.22144 + 1.45044I$ $a = 0.166678 - 0.743458I$ $b = -0.801939 + 0.292853I$	$13.32210 - 2.84406I$	$-0.473205 + 0.137261I$
$u = 0.22144 + 1.45044I$ $a = 1.90706 - 0.23597I$ $b = -0.96942 + 1.60449I$	$13.3221 - 6.9038I$	$-0.47320 + 7.06546I$
$u = 0.22144 + 1.45044I$ $a = -1.26293 - 2.59937I$ $b = 1.81388 + 2.27983I$	$13.3221 - 6.9038I$	$-0.47320 + 7.06546I$
$u = 0.22144 + 1.45044I$ $a = 1.96674 + 2.71895I$ $b = -2.98421 - 1.50369I$	$13.32210 - 2.84406I$	$-0.473205 + 0.137261I$
$u = 0.22144 - 1.45044I$ $a = 0.166678 + 0.743458I$ $b = -0.801939 - 0.292853I$	$13.32210 + 2.84406I$	$-0.473205 - 0.137261I$
$u = 0.22144 - 1.45044I$ $a = 1.90706 + 0.23597I$ $b = -0.96942 - 1.60449I$	$13.3221 + 6.9038I$	$-0.47320 - 7.06546I$
$u = 0.22144 - 1.45044I$ $a = -1.26293 + 2.59937I$ $b = 1.81388 - 2.27983I$	$13.3221 + 6.9038I$	$-0.47320 - 7.06546I$
$u = 0.22144 - 1.45044I$ $a = 1.96674 - 2.71895I$ $b = -2.98421 + 1.50369I$	$13.32210 + 2.84406I$	$-0.473205 - 0.137261I$
$u = -0.382766$ $a = 1.24526 + 0.85582I$ $b = 0.29856 - 1.81148I$	$4.31288 - 2.02988I$	$-13.9800 + 3.4641I$
$u = -0.382766$ $a = 1.24526 - 0.85582I$ $b = 0.29856 + 1.81148I$	$4.31288 + 2.02988I$	$-13.9800 - 3.4641I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.382766$ $a = 0.11239 + 3.20734I$ $b = 0.785287 + 0.065805I$	$4.31288 + 2.02988I$	$-13.9800 - 3.4641I$
$u = -0.382766$ $a = 0.11239 - 3.20734I$ $b = 0.785287 - 0.065805I$	$4.31288 - 2.02988I$	$-13.9800 + 3.4641I$

III.

$\boldsymbol{I^u_3 = \langle -u^{18} - 2u^{17} + \cdots + b + 1,\ 2u^{18} + 2u^{17} + \cdots + a + 1,\ u^{19} + u^{18} + \cdots - 2u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^4 - u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2u^{18} - 2u^{17} + \cdots + 4u - 1 \\ u^{18} + 2u^{17} + \cdots - 3u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^{18} + 17u^{16} + \cdots - 4u - 1 \\ -u^{18} - 8u^{16} + \cdots + u^3 - u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^8 + 3u^6 + u^4 - 2u^2 + 1 \\ -u^8 - 4u^6 - 4u^4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2u^{18} - u^{17} + \cdots + 3u - 1 \\ u^{18} + u^{17} + \cdots - 2u^2 - 2u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2u^{18} - 4u^{17} + \cdots + 5u + 4 \\ 2u^{17} + 2u^{16} + \cdots - 2u - 2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^{18} - u^{17} + \cdots + u - 1 \\ u^{18} + 2u^{17} + \cdots - 3u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^{17} + u^{16} + 9u^{15} + 6u^{14} + 28u^{13} + 11u^{12} + 31u^{11} + u^{10} - 8u^9 - 14u^8 - 33u^7 - 7u^6 - 12u^5 - 5u^3 - 5u^2 - 6u - 5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{19} + 5u^{18} + \cdots - 6u - 1$
c_2	$u^{19} + u^{18} + \cdots - 2u - 1$
c_3	$u^{19} - u^{18} + \cdots + 2u - 1$
c_4, c_{11}	$u^{19} + 11u^{17} + \cdots + 11u^2 - 1$
c_5, c_9	$u^{19} + 11u^{17} + \cdots - 11u^2 + 1$
c_6, c_7	$u^{19} - u^{18} + \cdots - 2u + 1$
c_8, c_{10}	$u^{19} + 3u^{18} + \cdots - 3u - 1$
c_{12}	$u^{19} - 3u^{18} + \cdots - 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{19} + 11y^{18} + \cdots - 4y - 1$
c_2, c_6, c_7	$y^{19} + 19y^{18} + \cdots - 14y^2 - 1$
c_3	$y^{19} + 5y^{18} + \cdots - 4y - 1$
c_4, c_5, c_9 c_{11}	$y^{19} + 22y^{18} + \cdots + 22y - 1$
c_8, c_{10}	$y^{19} + 3y^{18} + \cdots - 5y - 1$
c_{12}	$y^{19} + 5y^{18} + \cdots - 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.235288 + 0.915709I$ $a = -1.411480 - 0.044591I$ $b = 0.746747 + 0.027293I$	$5.44511 - 1.35552I$	$-4.89852 - 1.07017I$
$u = -0.235288 - 0.915709I$ $a = -1.411480 + 0.044591I$ $b = 0.746747 - 0.027293I$	$5.44511 + 1.35552I$	$-4.89852 + 1.07017I$
$u = -0.708819 + 0.304677I$ $a = -0.177007 - 0.019901I$ $b = 0.774542 - 0.956982I$	$3.79141 + 5.07606I$	$-6.47879 - 7.14339I$
$u = -0.708819 - 0.304677I$ $a = -0.177007 + 0.019901I$ $b = 0.774542 + 0.956982I$	$3.79141 - 5.07606I$	$-6.47879 + 7.14339I$
$u = 0.608408 + 0.473769I$ $a = -0.453736 - 0.906033I$ $b = 1.159460 + 0.033720I$	$6.60042 - 2.09094I$	$-5.46216 + 3.45807I$
$u = 0.608408 - 0.473769I$ $a = -0.453736 + 0.906033I$ $b = 1.159460 - 0.033720I$	$6.60042 + 2.09094I$	$-5.46216 - 3.45807I$
$u = -0.031829 + 1.293340I$ $a = -0.22504 - 2.60016I$ $b = 0.99670 + 2.02747I$	$8.34281 + 2.44030I$	$-3.33990 - 0.56667I$
$u = -0.031829 - 1.293340I$ $a = -0.22504 + 2.60016I$ $b = 0.99670 - 2.02747I$	$8.34281 - 2.44030I$	$-3.33990 + 0.56667I$
$u = 0.171821 + 1.297070I$ $a = 0.93833 + 1.52105I$ $b = -1.117650 - 0.751284I$	$1.46611 - 2.46863I$	$-11.04601 + 1.02417I$
$u = 0.171821 - 1.297070I$ $a = 0.93833 - 1.52105I$ $b = -1.117650 + 0.751284I$	$1.46611 + 2.46863I$	$-11.04601 - 1.02417I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.17378 + 1.42845I$ $a = 1.014020 - 0.128298I$ $b = -1.88482 + 0.07849I$	$10.85170 + 0.51651I$	$-1.208225 - 0.024037I$
$u = -0.17378 - 1.42845I$ $a = 1.014020 + 0.128298I$ $b = -1.88482 - 0.07849I$	$10.85170 - 0.51651I$	$-1.208225 + 0.024037I$
$u = -0.27003 + 1.43292I$ $a = -0.26706 + 1.90078I$ $b = 0.98783 - 1.87047I$	$9.37856 + 8.63319I$	$-3.01636 - 7.40521I$
$u = -0.27003 - 1.43292I$ $a = -0.26706 - 1.90078I$ $b = 0.98783 + 1.87047I$	$9.37856 - 8.63319I$	$-3.01636 + 7.40521I$
$u = 0.21619 + 1.46250I$ $a = -1.28775 - 1.23021I$ $b = 1.198330 + 0.453553I$	$12.79670 - 5.06751I$	$-2.04376 + 3.02477I$
$u = 0.21619 - 1.46250I$ $a = -1.28775 + 1.23021I$ $b = 1.198330 - 0.453553I$	$12.79670 + 5.06751I$	$-2.04376 - 3.02477I$
$u = 0.516155$ $a = -0.717462$ $b = -1.29834$	-2.60799	-11.0690
$u = -0.334750 + 0.331722I$ $a = -1.77154 + 1.50786I$ $b = -0.211963 - 0.541557I$	$5.13870 - 1.64426I$	$-3.47177 - 1.01784I$
$u = -0.334750 - 0.331722I$ $a = -1.77154 - 1.50786I$ $b = -0.211963 + 0.541557I$	$5.13870 + 1.64426I$	$-3.47177 + 1.01784I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^{18} - 3u^{17} + \cdots - 3u + 3)^4)(u^{19} + 5u^{18} + \cdots - 6u - 1)$ $\cdot (u^{39} - 8u^{38} + \cdots + 6840u + 6208)$
c_2	$((u^{18} - u^{17} + \cdots + 3u - 1)^4)(u^{19} + u^{18} + \cdots - 2u - 1)$ $\cdot (u^{39} + 6u^{38} + \cdots + 38u + 4)$
c_3	$((u^{18} + u^{17} + \cdots + 13u - 5)^4)(u^{19} - u^{18} + \cdots + 2u - 1)$ $\cdot (u^{39} - 6u^{38} + \cdots + 2982u + 612)$
c_4, c_{11}	$(u^{19} + 11u^{17} + \cdots + 11u^2 - 1)(u^{39} + 16u^{37} + \cdots + 2u + 1)$ $\cdot (u^{72} - u^{71} + \cdots - 2u + 1)$
c_5, c_9	$(u^{19} + 11u^{17} + \cdots - 11u^2 + 1)(u^{39} + 16u^{37} + \cdots + 2u + 1)$ $\cdot (u^{72} - u^{71} + \cdots - 2u + 1)$
c_6, c_7	$((u^{18} - u^{17} + \cdots + 3u - 1)^4)(u^{19} - u^{18} + \cdots - 2u + 1)$ $\cdot (u^{39} + 6u^{38} + \cdots + 38u + 4)$
c_8, c_{10}	$(u^{19} + 3u^{18} + \cdots - 3u - 1)(u^{39} + 3u^{38} + \cdots + 7u + 1)$ $\cdot (u^{72} - 21u^{71} + \cdots - 139378u + 9841)$
c_{12}	$((u^2 - u + 1)^{36})(u^{19} - 3u^{18} + \cdots - 3u + 1)$ $\cdot (u^{39} + 40u^{38} + \cdots + 5898240u + 262144)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^{18}+13y^{17}+\cdots-75y+9)^4)(y^{19}+11y^{18}+\cdots-4y-1)$ $\cdot(y^{39}+24y^{38}+\cdots+872760000y-38539264)$
c_2, c_6, c_7	$((y^{18}+17y^{17}+\cdots-7y+1)^4)(y^{19}+19y^{18}+\cdots-14y^2-1)$ $\cdot(y^{39}+36y^{38}+\cdots+236y-16)$
c_3	$((y^{18}+5y^{17}+\cdots-39y+25)^4)(y^{19}+5y^{18}+\cdots-4y-1)$ $\cdot(y^{39}+10y^{38}+\cdots+2009772y-374544)$
c_4, c_5, c_9 c_{11}	$(y^{19}+22y^{18}+\cdots+22y-1)(y^{39}+32y^{38}+\cdots+8y-1)$ $\cdot(y^{72}+63y^{71}+\cdots+144y+1)$
c_8, c_{10}	$(y^{19}+3y^{18}+\cdots-5y-1)(y^{39}+9y^{38}+\cdots+17y-1)$ $\cdot(y^{72}+27y^{71}+\cdots+5486973168y+96845281)$
c_{12}	$((y^2+y+1)^{36})(y^{19}+5y^{18}+\cdots-3y-1)$ $\cdot(y^{39}+6y^{38}+\cdots+876173328384y-68719476736)$