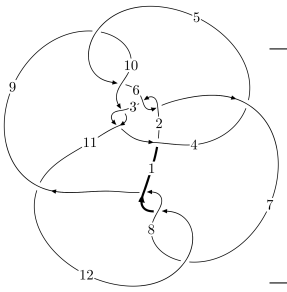
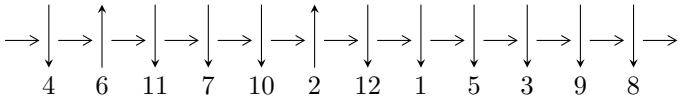
$12a_{0977}$ $(K12a_{0977})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b-u,\ -6.57813\times 10^{24}u^{37}+6.93409\times 10^{24}u^{36}+\cdots+1.58961\times 10^{25}a-1.79176\times 10^{25},$$
$$u^{38}-u^{37}+\cdots-2u-1\rangle$$
$$I_2^u = \langle -3.41732\times 10^{236}u^{71}-6.79357\times 10^{235}u^{70}+\cdots+4.34076\times 10^{236}b+1.29907\times 10^{241},$$
$$4.33939\times 10^{191}u^{71}+8.92073\times 10^{190}u^{70}+\cdots+5.46565\times 10^{191}a-1.64326\times 10^{196},$$
$$u^{72}-u^{71}+\cdots+27418u+45671\rangle$$
$$I_3^u = \langle b+u,\ -29744507u^{22}+20395822u^{21}+\cdots+15493951a-35668774,\ u^{23}-u^{22}+\cdots+2u-1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}}=0$, with total 133 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. $I_1^u = \langle b-u,\ -6.58\times 10^{24}u^{37}+6.93\times 10^{24}u^{36}+\cdots+1.59\times 10^{25}a-1.79\times 10^{25},\ u^{38}-u^{37}+\cdots-2u-1\rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_6 = \begin{pmatrix}0.413821u^{37}-0.436214u^{36}+\cdots-1.50019u+1.12717\\u\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.116083u^{37}-0.0485543u^{36}+\cdots-2.44812u-1.74726\\-0.0852640u^{37}-0.0336343u^{36}+\cdots+0.630964u+0.0223927\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-0.230273u^{37}+0.259709u^{36}+\cdots+1.51707u+1.86697\\-0.0298691u^{37}+0.209123u^{36}+\cdots+0.379824u-0.0451359\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.0235968u^{37}+0.113861u^{36}+\cdots-1.86834u-1.50048\\0.0600474u^{37}-0.161614u^{36}+\cdots-0.0430228u-0.201654\end{pmatrix}$$

$$a_5 = \begin{pmatrix}0.413821u^{37}-0.436214u^{36}+\cdots-0.500191u+1.12717\\u\end{pmatrix}$$

$$a_9 = \begin{pmatrix}0.0223927u^{37}-0.107657u^{36}+\cdots-1.95481u+0.586179\\-u^2\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-0.231100u^{37}+0.0117291u^{36}+\cdots+0.254712u+1.24608\\-0.144821u^{37}+0.0158346u^{36}+\cdots-0.0732163u+0.0228410\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-0.252060u^{37}-0.112582u^{36}+\cdots+0.324884u+1.39835\\-0.124431u^{37}+0.0520392u^{36}+\cdots-0.454891u-0.274698\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{3004492190772385337622 4412}{158960739497769789163209 91}u^{37}-\frac{554058368249546 0952841385}{158960739497769789163209 91}u^{36}+\cdots-\frac{10101758255620469638832 8298}{158960739497769789163209 91}u-\frac{126386542644867906673421663}{158960739497769789163209 91}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{38} - 2u^{37} + \cdots + 4u + 1$
c_2, c_6	$u^{38} - 26u^{37} + \cdots + 65536u - 4096$
c_3, c_5, c_9 c_{10}	$u^{38} - u^{37} + \cdots - 2u - 1$
c_7, c_8, c_{12}	$u^{38} + 9u^{37} + \cdots - 28u + 8$
c_{11}	$u^{38} - 30u^{37} + \cdots + 43124u - 3512$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{38} - 4y^{37} + \cdots - 94y + 1$
c_2, c_6	$y^{38} + 26y^{37} + \cdots - 125829120y + 16777216$
c_3, c_5, c_9 c_{10}	$y^{38} - 33y^{37} + \cdots + 2y + 1$
c_7, c_8, c_{12}	$y^{38} - 33y^{37} + \cdots - 80y + 64$
c_{11}	$y^{38} + 6y^{37} + \cdots - 103314128y + 12334144$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.642582+0.529294I$ $a=-0.362091-0.970748I$ $b=-0.642582+0.529294I$	$-0.62981+3.65009I$	$-8.45785-7.32483I$
$u=-0.642582-0.529294I$ $a=-0.362091+0.970748I$ $b=-0.642582-0.529294I$	$-0.62981-3.65009I$	$-8.45785+7.32483I$
$u=-0.311299+0.761183I$ $a=-0.085459-0.793774I$ $b=-0.311299+0.761183I$	$-1.66830-2.81679I$	$-7.20948+0.94774I$
$u=-0.311299-0.761183I$ $a=-0.085459+0.793774I$ $b=-0.311299-0.761183I$	$-1.66830+2.81679I$	$-7.20948-0.94774I$
$u=-1.199830+0.197665I$ $a=-0.39774-1.71231I$ $b=-1.199830+0.197665I$	$-5.74703+1.70191I$	$-30.1093-4.4341I$
$u=-1.199830-0.197665I$ $a=-0.39774+1.71231I$ $b=-1.199830-0.197665I$	$-5.74703-1.70191I$	$-30.1093+4.4341I$
$u=-1.214180+0.163826I$ $a=-1.142910-0.562138I$ $b=-1.214180+0.163826I$	$-3.58346+2.28431I$	$-12.26521-5.93080I$
$u=-1.214180-0.163826I$ $a=-1.142910+0.562138I$ $b=-1.214180-0.163826I$	$-3.58346-2.28431I$	$-12.26521+5.93080I$
$u=0.441998+0.630000I$ $a=0.143471-0.902436I$ $b=0.441998+0.630000I$	$2.72467-0.41534I$	$-1.86874+2.50646I$
$u=0.441998-0.630000I$ $a=0.143471+0.902436I$ $b=0.441998-0.630000I$	$2.72467+0.41534I$	$-1.86874-2.50646I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.125697 + 0.754675I$ $a = 1.46136 - 0.33666I$ $b = 0.125697 + 0.754675I$	$-4.16749 + 6.80742I$	$-11.39539 - 4.57055I$
$u = 0.125697 - 0.754675I$ $a = 1.46136 + 0.33666I$ $b = 0.125697 - 0.754675I$	$-4.16749 - 6.80742I$	$-11.39539 + 4.57055I$
$u = 0.319015 + 0.661353I$ $a = -1.13060 - 0.90619I$ $b = 0.319015 + 0.661353I$	$-5.30082 + 0.18015I$	$-13.27778 + 1.55316I$
$u = 0.319015 - 0.661353I$ $a = -1.13060 + 0.90619I$ $b = 0.319015 - 0.661353I$	$-5.30082 - 0.18015I$	$-13.27778 - 1.55316I$
$u = 1.262990 + 0.084911I$ $a = 0.66371 - 1.32119I$ $b = 1.262990 + 0.084911I$	$-11.45280 + 3.42761I$	$-20.1823 - 6.5471I$
$u = 1.262990 - 0.084911I$ $a = 0.66371 + 1.32119I$ $b = 1.262990 - 0.084911I$	$-11.45280 - 3.42761I$	$-20.1823 + 6.5471I$
$u = 1.263310 + 0.274194I$ $a = 0.921270 - 0.499067I$ $b = 1.263310 + 0.274194I$	$-2.35527 - 7.30757I$	$-10.63293 + 7.72113I$
$u = 1.263310 - 0.274194I$ $a = 0.921270 + 0.499067I$ $b = 1.263310 - 0.274194I$	$-2.35527 + 7.30757I$	$-10.63293 - 7.72113I$
$u = 1.255600 + 0.363345I$ $a = -0.019509 - 1.407240I$ $b = 1.255600 + 0.363345I$	$-8.61451 - 7.26588I$	$-15.9503 + 10.7715I$
$u = 1.255600 - 0.363345I$ $a = -0.019509 + 1.407240I$ $b = 1.255600 - 0.363345I$	$-8.61451 + 7.26588I$	$-15.9503 - 10.7715I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.33470$ $a = 1.18898$ $b = 1.33470$	-12.3935	-21.7990
$u = -1.335100 + 0.309048I$ $a = -0.853516 - 0.422112I$ $b = -1.335100 + 0.309048I$	$-8.15095 + 11.42250I$	$-14.3546 - 7.5460I$
$u = -1.335100 - 0.309048I$ $a = -0.853516 + 0.422112I$ $b = -1.335100 - 0.309048I$	$-8.15095 - 11.42250I$	$-14.3546 + 7.5460I$
$u = -0.170696 + 0.593684I$ $a = -1.78466 - 0.26897I$ $b = -0.170696 + 0.593684I$	$0.71316 - 3.70227I$	$-4.70598 + 2.17127I$
$u = -0.170696 - 0.593684I$ $a = -1.78466 + 0.26897I$ $b = -0.170696 - 0.593684I$	$0.71316 + 3.70227I$	$-4.70598 - 2.17127I$
$u = 0.441678 + 0.391338I$ $a = 1.83459 + 0.60874I$ $b = 0.441678 + 0.391338I$	$-2.20747 + 1.18529I$	$-14.4340 + 4.4751I$
$u = 0.441678 - 0.391338I$ $a = 1.83459 - 0.60874I$ $b = 0.441678 - 0.391338I$	$-2.20747 - 1.18529I$	$-14.4340 - 4.4751I$
$u = -1.50663 + 0.36313I$ $a = -0.112277 - 1.068330I$ $b = -1.50663 + 0.36313I$	$-17.9039 + 7.3787I$	0
$u = -1.50663 - 0.36313I$ $a = -0.112277 + 1.068330I$ $b = -1.50663 - 0.36313I$	$-17.9039 - 7.3787I$	0
$u = 1.46940 + 0.49385I$ $a = -0.023597 - 1.058640I$ $b = 1.46940 + 0.49385I$	$-10.00620 - 8.86952I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 1.46940 - 0.49385I$ $a = -0.023597 + 1.058640I$ $b = \ 1.46940 - 0.49385I$	$-10.00620 + 8.86952I$	0
$u = -0.207067 + 0.387382I$ $a = \ 1.30451 - 1.62960I$ $b = -0.207067 + 0.387382I$	$-0.46850 + 1.50335I$	$-4.10768 - 5.04879I$
$u = -0.207067 - 0.387382I$ $a = \ 1.30451 + 1.62960I$ $b = -0.207067 - 0.387382I$	$-0.46850 - 1.50335I$	$-4.10768 + 5.04879I$
$u = -0.415323$ $a = \ 0.953137$ $b = -0.415323$	-0.837431	-10.5390
$u = -1.52626 + 0.54197I$ $a = \ 0.036058 - 0.993072I$ $b = -1.52626 + 0.54197I$	$-8.3844 + 13.5000I$	0
$u = -1.52626 - 0.54197I$ $a = \ 0.036058 + 0.993072I$ $b = -1.52626 - 0.54197I$	$-8.3844 - 13.5000I$	0
$u = \ 1.57427 + 0.55070I$ $a = -0.023672 - 0.956443I$ $b = \ 1.57427 + 0.55070I$	$-13.9247 - 17.5662I$	0
$u = \ 1.57427 - 0.55070I$ $a = -0.023672 + 0.956443I$ $b = \ 1.57427 - 0.55070I$	$-13.9247 + 17.5662I$	0

II. $\boldsymbol{I_2^u = \langle -3.42 \times 10^{236} u^{71} - 6.79 \times 10^{235} u^{70} + \cdots + 4.34 \times 10^{236} b + 1.30 \times 10^{241},\ 4.34 \times 10^{191} u^{71} + 8.92 \times 10^{190} u^{70} + \cdots + 5.47 \times 10^{191} a - 1.64 \times 10^{196},\ u^{72} - u^{71} + \cdots + 27418u + 45671 \rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.793938u^{71} - 0.163215u^{70} + \cdots + 42952.0u + 30065.3 \\ 0.787262u^{71} + 0.156506u^{70} + \cdots - 42815.4u - 29927.2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.408138u^{71} - 0.0889949u^{70} + \cdots + 21707.3u + 15292.2 \\ 0.267218u^{71} + 0.0807519u^{70} + \cdots - 12557.3u - 9274.97 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.385823u^{71} + 0.0741978u^{70} + \cdots - 21244.3u - 14772.5 \\ 0.617782u^{71} + 0.138655u^{70} + \cdots - 32712.3u - 23063.8 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.328655u^{71} + 0.0965080u^{70} + \cdots - 15531.5u - 11457.2 \\ 0.679992u^{71} + 0.171566u^{70} + \cdots - 34256.0u - 24647.7 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.00667606u^{71} - 0.00670817u^{70} + \cdots + 136.624u + 138.090 \\ 0.787262u^{71} + 0.156506u^{70} + \cdots - 42815.4u - 29927.2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.325476u^{71} + 0.0478554u^{70} + \cdots - 18634.3u - 12815.3 \\ 0.122394u^{71} - 0.0162808u^{70} + \cdots - 9238.65u - 5826.11 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.101849u^{71} + 0.0284827u^{70} + \cdots - 4604.86u - 3500.59 \\ 0.256426u^{71} + 0.0412224u^{70} + \cdots - 14192.2u - 9911.86 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.398346u^{71} + 0.0956167u^{70} + \cdots - 20161.7u - 14516.7 \\ 0.631835u^{71} + 0.123936u^{70} + \cdots - 34126.4u - 23950.8 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.19731u^{71} - 0.498944u^{70} + \cdots + 116066.u + 81882.3$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{72} - 13u^{71} + \cdots - 19474u + 1151$
c_2, c_6	$(u^3 + u^2 + 2u + 1)^{24}$
c_3, c_5, c_9 c_{10}	$u^{72} - u^{71} + \cdots + 27418u + 45671$
c_7, c_8, c_{12}	$(u^{12} - u^{11} - 5u^{10} + 4u^9 + 9u^8 - 4u^7 - 6u^6 - 2u^5 + 3u^3 + u^2 + 1)^6$
c_{11}	$(u^{12} + 3u^{11} + \cdots + 4u + 1)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{72} - 17y^{71} + \cdots - 39129988y + 1324801$
c_2, c_6	$(y^3 + 3y^2 + 2y - 1)^{24}$
c_3, c_5, c_9 c_{10}	$y^{72} - 65y^{71} + \cdots + 1084775528y + 2085840241$
c_7, c_8, c_{12}	$(y^{12} - 11y^{11} + \cdots + 2y + 1)^6$
c_{11}	$(y^{12} + y^{11} + \cdots - 2y + 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.016904 + 0.938793I$ $a = -1.396040 + 0.203966I$ $b = 1.209300 + 0.005604I$	$-4.84384 + 2.73451I$	0
$u = 0.016904 - 0.938793I$ $a = -1.396040 - 0.203966I$ $b = 1.209300 - 0.005604I$	$-4.84384 - 2.73451I$	0
$u = 0.941410 + 0.511838I$ $a = -0.467200 + 0.254013I$ $b = 0.102703 - 0.669479I$	$1.31764 - 3.88480I$	0
$u = 0.941410 - 0.511838I$ $a = -0.467200 - 0.254013I$ $b = 0.102703 + 0.669479I$	$1.31764 + 3.88480I$	0
$u = 0.709464 + 0.503759I$ $a = 0.66819 + 1.36798I$ $b = -1.64033 - 0.08580I$	$-11.07400 - 2.92173I$	0
$u = 0.709464 - 0.503759I$ $a = 0.66819 - 1.36798I$ $b = -1.64033 + 0.08580I$	$-11.07400 + 2.92173I$	0
$u = -0.108050 + 1.182640I$ $a = -1.079650 + 0.280505I$ $b = 1.239000 - 0.126036I$	$-4.84384 + 2.92173I$	0
$u = -0.108050 - 1.182640I$ $a = -1.079650 - 0.280505I$ $b = 1.239000 + 0.126036I$	$-4.84384 - 2.92173I$	0
$u = -1.053450 + 0.548334I$ $a = 0.425615 + 0.221538I$ $b = 0.003969 - 0.768800I$	$-3.82135 + 7.58818I$	0
$u = -1.053450 - 0.548334I$ $a = 0.425615 - 0.221538I$ $b = 0.003969 + 0.768800I$	$-3.82135 - 7.58818I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.163260+0.267260I$ $a=\ \ 0.420845-1.027000I$ $b=-0.205919+0.579765I$	$-2.81995+1.05668I$	0
$u=-1.163260-0.267260I$ $a=\ \ 0.420845+1.027000I$ $b=-0.205919-0.579765I$	$-2.81995-1.05668I$	0
$u=\ \ 1.209300+0.005604I$ $a=-0.182860-1.080060I$ $b=\ \ 0.016904+0.938793I$	$-4.84384+2.73451I$	0
$u=\ \ 1.209300-0.005604I$ $a=-0.182860+1.080060I$ $b=\ \ 0.016904-0.938793I$	$-4.84384-2.73451I$	0
$u=\ \ 1.203930+0.129844I$ $a=-0.060845+1.092290I$ $b=-1.94643-0.60072I$	$-13.09790+1.05668I$	0
$u=\ \ 1.203930-0.129844I$ $a=-0.060845-1.092290I$ $b=-1.94643+0.60072I$	$-13.09790-1.05668I$	0
$u=\ \ 1.182150+0.267603I$ $a=-0.458540+0.103800I$ $b=-1.354490+0.112254I$	$-3.82135-1.20211I$	0
$u=\ \ 1.182150-0.267603I$ $a=-0.458540-0.103800I$ $b=-1.354490-0.112254I$	$-3.82135+1.20211I$	0
$u=-0.697309+0.362810I$ $a=\ \ 0.643103+0.334607I$ $b=-0.316643-0.411076I$	$-0.706253+0.093609I$	$-8.00000+0.I$
$u=-0.697309-0.362810I$ $a=\ \ 0.643103-0.334607I$ $b=-0.316643+0.411076I$	$-0.706253-0.093609I$	$-8.00000+0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.196300+0.253597I$ $a=-0.049609+1.082140I$ $b=\ \ 1.77144-0.52507I$	$-7.95893+1.62601I$	0
$u=-1.196300-0.253597I$ $a=-0.049609-1.082140I$ $b=\ \ 1.77144+0.52507I$	$-7.95893-1.62601I$	0
$u=\ \ 0.003969+0.768800I$ $a=-0.003826+0.741188I$ $b=-1.053450-0.548334I$	$-3.82135-7.58818I$	$-8.98049+5.13539I$
$u=\ \ 0.003969-0.768800I$ $a=-0.003826-0.741188I$ $b=-1.053450+0.548334I$	$-3.82135+7.58818I$	$-8.98049-5.13539I$
$u=\ \ 1.239000+0.126036I$ $a=-0.065594+1.061670I$ $b=-0.108050-1.182640I$	$-4.84384-2.92173I$	0
$u=\ \ 1.239000-0.126036I$ $a=-0.065594-1.061670I$ $b=-0.108050+1.182640I$	$-4.84384+2.92173I$	0
$u=\ \ 1.268300+0.097095I$ $a=-0.446678+0.034196I$ $b=-0.625462-0.283222I$	$-6.93644+0.09361I$	0
$u=\ \ 1.268300-0.097095I$ $a=-0.446678-0.034196I$ $b=-0.625462+0.283222I$	$-6.93644-0.09361I$	0
$u=-1.264550+0.238133I$ $a=-0.023731+1.029210I$ $b=\ \ 0.20647-1.45163I$	$-2.81995+6.71292I$	0
$u=-1.264550-0.238133I$ $a=-0.023731-1.029210I$ $b=\ \ 0.20647+1.45163I$	$-2.81995-6.71292I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.625462+0.283222I$ $a=\ 0.756046+0.342354I$ $b=\ 1.268300-0.097095I$	$-6.93644-0.09361I$	$-10.97137-0.76204I$
$u=-0.625462-0.283222I$ $a=\ 0.756046-0.342354I$ $b=\ 1.268300+0.097095I$	$-6.93644+0.09361I$	$-10.97137+0.76204I$
$u=\ 0.102703+0.669479I$ $a=-0.127574+0.831599I$ $b=\ 0.941410-0.511838I$	$1.31764+3.88480I$	$-4.17488-4.17140I$
$u=\ 0.102703-0.669479I$ $a=-0.127574-0.831599I$ $b=\ 0.941410+0.511838I$	$1.31764-3.88480I$	$-4.17488+4.17140I$
$u=\ 1.295140+0.280941I$ $a=\ 0.050487+0.998312I$ $b=-0.29281-1.57276I$	$-7.95893-10.41630I$	0
$u=\ 1.295140-0.280941I$ $a=\ 0.050487-0.998312I$ $b=-0.29281+1.57276I$	$-7.95893+10.41630I$	0
$u=-1.275570+0.379612I$ $a=\ 0.410386+0.122131I$ $b=\ 1.44696+0.17098I$	$-8.96033+3.88480I$	0
$u=-1.275570-0.379612I$ $a=\ 0.410386-0.122131I$ $b=\ 1.44696-0.17098I$	$-8.96033-3.88480I$	0
$u=\ 1.271480+0.448451I$ $a=-0.472922-0.861251I$ $b=\ 0.165937+0.330843I$	$-7.95893-4.76006I$	0
$u=\ 1.271480-0.448451I$ $a=-0.472922+0.861251I$ $b=\ 0.165937-0.330843I$	$-7.95893+4.76006I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.354490+0.112254I$ $a=\ \ 0.417835+0.034628I$ $b=\ \ 1.182150+0.267603I$	$-3.82135-1.20211I$	0
$u=-1.354490-0.112254I$ $a=\ \ 0.417835-0.034628I$ $b=\ \ 1.182150-0.267603I$	$-3.82135+1.20211I$	0
$u=-0.205919+0.579765I$ $a=\ \ 2.11905-0.38166I$ $b=-1.163260+0.267260I$	$-2.81995+1.05668I$	$-10.70414-1.19195I$
$u=-0.205919-0.579765I$ $a=\ \ 2.11905+0.38166I$ $b=-1.163260-0.267260I$	$-2.81995-1.05668I$	$-10.70414+1.19195I$
$u=\ \ 0.906082+1.051410I$ $a=\ \ 0.612247+0.732186I$ $b=-1.46963-0.20075I$	$-11.07400-2.73451I$	0
$u=\ \ 0.906082-1.051410I$ $a=\ \ 0.612247-0.732186I$ $b=-1.46963+0.20075I$	$-11.07400+2.73451I$	0
$u=-1.394260+0.162883I$ $a=\ \ 0.044134+0.942674I$ $b=\ \ 1.73833-0.97198I$	$-13.0979+6.7129I$	0
$u=-1.394260-0.162883I$ $a=\ \ 0.044134-0.942674I$ $b=\ \ 1.73833+0.97198I$	$-13.0979-6.7129I$	0
$u=\ \ 1.392260+0.231638I$ $a=\ \ 0.001675+0.938584I$ $b=-1.56676-0.84322I$	$-7.95893-4.03024I$	0
$u=\ \ 1.392260-0.231638I$ $a=\ \ 0.001675-0.938584I$ $b=-1.56676+0.84322I$	$-7.95893+4.03024I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 1.44696 + 0.17098I$ $a = -0.388397 + 0.045894I$ $b = -1.275570 + 0.379612I$	$-8.96033 + 3.88480I$	0
$u = \ 1.44696 - 0.17098I$ $a = -0.388397 - 0.045894I$ $b = -1.275570 - 0.379612I$	$-8.96033 - 3.88480I$	0
$u = \ 0.20647 + 1.45163I$ $a = \ 0.861955 + 0.270762I$ $b = -1.264550 - 0.238133I$	$-2.81995 - 6.71292I$	0
$u = \ 0.20647 - 1.45163I$ $a = \ 0.861955 - 0.270762I$ $b = -1.264550 + 0.238133I$	$-2.81995 + 6.71292I$	0
$u = -0.316643 + 0.411076I$ $a = \ 0.670151 + 0.870012I$ $b = -0.697309 - 0.362810I$	$-0.706253 - 0.093609I$	$-6.98961 - 0.76204I$
$u = -0.316643 - 0.411076I$ $a = \ 0.670151 - 0.870012I$ $b = -0.697309 + 0.362810I$	$-0.706253 + 0.093609I$	$-6.98961 + 0.76204I$
$u = -1.46963 + 0.20075I$ $a = \ 0.024396 + 0.892768I$ $b = \ 0.906082 - 1.051410I$	$-11.07400 + 2.73451I$	0
$u = -1.46963 - 0.20075I$ $a = \ 0.024396 - 0.892768I$ $b = \ 0.906082 + 1.051410I$	$-11.07400 - 2.73451I$	0
$u = -0.29281 + 1.57276I$ $a = -0.778664 + 0.281724I$ $b = \ 1.295140 - 0.280941I$	$-7.95893 + 10.41630I$	0
$u = -0.29281 - 1.57276I$ $a = -0.778664 - 0.281724I$ $b = \ 1.295140 + 0.280941I$	$-7.95893 - 10.41630I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.165937 + 0.330843I$ $a = -3.41733 - 1.06389I$ $b = 1.271480 + 0.448451I$	$-7.95893 - 4.76006I$	$-15.5098 + 2.1559I$
$u = 0.165937 - 0.330843I$ $a = -3.41733 + 1.06389I$ $b = 1.271480 - 0.448451I$	$-7.95893 + 4.76006I$	$-15.5098 - 2.1559I$
$u = -1.64033 + 0.08580I$ $a = 0.089194 + 0.801543I$ $b = 0.709464 - 0.503759I$	$-11.07400 + 2.92173I$	0
$u = -1.64033 - 0.08580I$ $a = 0.089194 - 0.801543I$ $b = 0.709464 + 0.503759I$	$-11.07400 - 2.92173I$	0
$u = -1.56676 + 0.84322I$ $a = -0.241722 + 0.704203I$ $b = 1.392260 - 0.231638I$	$-7.95893 + 4.03024I$	0
$u = -1.56676 - 0.84322I$ $a = -0.241722 - 0.704203I$ $b = 1.392260 + 0.231638I$	$-7.95893 - 4.03024I$	0
$u = 1.77144 + 0.52507I$ $a = 0.089447 + 0.711385I$ $b = -1.196300 - 0.253597I$	$-7.95893 - 1.62601I$	0
$u = 1.77144 - 0.52507I$ $a = 0.089447 - 0.711385I$ $b = -1.196300 + 0.253597I$	$-7.95893 + 1.62601I$	0
$u = 1.73833 + 0.97198I$ $a = 0.226048 + 0.625558I$ $b = -1.394260 - 0.162883I$	$-13.0979 - 6.7129I$	0
$u = 1.73833 - 0.97198I$ $a = 0.226048 - 0.625558I$ $b = -1.394260 + 0.162883I$	$-13.0979 + 6.7129I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.94643+0.60072I$ $a=-0.088346+0.644294I$ $b=\ \ 1.203930-0.129844I$	$-13.09790-1.05668I$	0
$u=-1.94643-0.60072I$ $a=-0.088346-0.644294I$ $b=\ \ 1.203930+0.129844I$	$-13.09790+1.05668I$	0

III. $I_3^u = \langle b+u,\ -2.97\times 10^7 u^{22} + 2.04\times 10^7 u^{21} + \cdots + 1.55\times 10^7 a - 3.57\times 10^7,\ u^{23} - u^{22} + \cdots + 2u - 1\rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1.91975u^{22} - 1.31637u^{21} + \cdots - 2.47288u + 2.30211 \\ -u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.65430u^{22} + 0.436475u^{21} + \cdots - 0.745774u - 1.51994 \\ 0.236376u^{22} - 0.321252u^{21} + \cdots + 1.71300u + 0.603376 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 2.38913u^{22} - 1.00853u^{21} + \cdots + 0.373712u + 2.90053 \\ -0.970927u^{22} + 0.441354u^{21} + \cdots - 0.931646u - 1.82120 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.99583u^{22} + 0.689350u^{21} + \cdots - 0.0526426u - 2.20819 \\ 0.403903u^{22} - 0.280797u^{21} + \cdots + 0.855641u + 1.20298 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1.91975u^{22} - 1.31637u^{21} + \cdots - 3.47288u + 2.30211 \\ -u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.603376u^{22} - 0.367000u^{21} + \cdots - 1.53739u + 2.91975 \\ -u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.706876u^{22} - 0.0341473u^{21} + \cdots + 0.110254u - 0.653981 \\ -0.173528u^{22} - 0.105623u^{21} + \cdots + 0.125425u - 0.105151 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1.64529u^{22} - 0.478970u^{21} + \cdots - 0.146050u + 2.82677 \\ -0.690842u^{22} + 0.254814u^{21} + \cdots - 0.00180316u - 1.64235 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{65051930}{15493951}u^{22} + \frac{29092423}{15493951}u^{21} + \cdots + \frac{179315328}{15493951}u - \frac{327170903}{15493951}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{23} - 2u^{22} + \cdots + u^2 - 1$
c_2	$u^{23} - u^{22} + \cdots - u - 1$
c_3, c_9	$u^{23} + u^{22} + \cdots + 2u + 1$
c_5, c_{10}	$u^{23} - u^{22} + \cdots + 2u - 1$
c_6	$u^{23} + u^{22} + \cdots - u + 1$
c_7, c_8	$u^{23} + 2u^{22} + \cdots + 3u + 1$
c_{11}	$u^{23} + 3u^{22} + \cdots + 5u - 1$
c_{12}	$u^{23} - 2u^{22} + \cdots + 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{23} - 4y^{22} + \cdots + 2y - 1$
c_2, c_6	$y^{23} + 23y^{22} + \cdots - 27y - 1$
c_3, c_5, c_9 c_{10}	$y^{23} - 25y^{22} + \cdots - 2y - 1$
c_7, c_8, c_{12}	$y^{23} - 22y^{22} + \cdots + 7y - 1$
c_{11}	$y^{23} + 5y^{22} + \cdots + 23y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.022740+0.185305I$ $a=\ \ 0.065484-0.316927I$ $b=\ \ 1.022740-0.185305I$	$-8.18170-0.18078I$	$-19.5491-0.2814I$
$u=-1.022740-0.185305I$ $a=\ \ 0.065484+0.316927I$ $b=\ \ 1.022740+0.185305I$	$-8.18170+0.18078I$	$-19.5491+0.2814I$
$u=\ \ 0.596983+0.540925I$ $a=-0.352894-0.886196I$ $b=-0.596983-0.540925I$	$-5.45844-8.17580I$	$-15.7018+6.8790I$
$u=\ \ 0.596983-0.540925I$ $a=-0.352894+0.886196I$ $b=-0.596983+0.540925I$	$-5.45844+8.17580I$	$-15.7018-6.8790I$
$u=\ \ 1.21273$ $a=-0.580501$ $b=-1.21273$	-3.94477	-10.2950
$u=-1.139270+0.457575I$ $a=-0.436874+1.214120I$ $b=\ \ 1.139270-0.457575I$	$-9.02432+6.23311I$	$-18.2377-4.9365I$
$u=-1.139270-0.457575I$ $a=-0.436874-1.214120I$ $b=\ \ 1.139270+0.457575I$	$-9.02432-6.23311I$	$-18.2377+4.9365I$
$u=\ \ 1.217490+0.245448I$ $a=-0.207007+1.398780I$ $b=-1.217490-0.245448I$	$-5.38741-1.61647I$	$-7.35891-0.92793I$
$u=\ \ 1.217490-0.245448I$ $a=-0.207007-1.398780I$ $b=-1.217490+0.245448I$	$-5.38741+1.61647I$	$-7.35891+0.92793I$
$u=-0.492312+0.423106I$ $a=\ \ 0.317897-1.196720I$ $b=\ \ 0.492312-0.423106I$	$-0.17088+4.63461I$	$-11.11237-7.01654I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.492312-0.423106I$ $a=\ 0.317897+1.196720I$ $b=\ 0.492312+0.423106I$	$-0.17088-4.63461I$	$-11.11237+7.01654I$
$u=-1.389650+0.114676I$ $a=\ 0.350228+0.794231I$ $b=\ 1.389650-0.114676I$	$-10.91490-2.29746I$	$-16.6998+0.8164I$
$u=-1.389650-0.114676I$ $a=\ 0.350228-0.794231I$ $b=\ 1.389650+0.114676I$	$-10.91490+2.29746I$	$-16.6998-0.8164I$
$u=\ 0.566870+0.089301I$ $a=\ 0.88106-1.21817I$ $b=-0.566870-0.089301I$	$-1.46405-0.87010I$	$-13.9110+3.4078I$
$u=\ 0.566870-0.089301I$ $a=\ 0.88106+1.21817I$ $b=-0.566870+0.089301I$	$-1.46405+0.87010I$	$-13.9110-3.4078I$
$u=-1.47841+0.47470I$ $a=-0.121772+0.812453I$ $b=\ 1.47841-0.47470I$	$-7.48689+3.06719I$	$-9.94851-1.26230I$
$u=-1.47841-0.47470I$ $a=-0.121772-0.812453I$ $b=\ 1.47841+0.47470I$	$-7.48689-3.06719I$	$-9.94851+1.26230I$
$u=\ 1.45451+0.58040I$ $a=\ 0.217296+0.784893I$ $b=-1.45451-0.58040I$	$-11.46970-1.01894I$	$-17.6089-1.1247I$
$u=\ 1.45451-0.58040I$ $a=\ 0.217296-0.784893I$ $b=-1.45451+0.58040I$	$-11.46970+1.01894I$	$-17.6089+1.1247I$
$u=\ 1.56026+0.41054I$ $a=\ 0.049018+0.755358I$ $b=-1.56026-0.41054I$	$-12.18930-5.38792I$	$-16.7986+3.0834I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.56026 - 0.41054I$ $a = \quad 0.049018 - 0.755358I$ $b = -1.56026 + 0.41054I$	$-12.18930 + 5.38792I$	$-16.7986 - 3.0834I$
$u = \quad 0.019909 + 0.348445I$ $a = -2.47219 - 1.41321I$ $b = -0.019909 - 0.348445I$	$-1.94701 - 1.83327I$	$-9.92563 + 5.88323I$
$u = \quad 0.019909 - 0.348445I$ $a = -2.47219 + 1.41321I$ $b = -0.019909 + 0.348445I$	$-1.94701 + 1.83327I$	$-9.92563 - 5.88323I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^{23}-2u^{22}+\cdots+u^2-1)(u^{38}-2u^{37}+\cdots+4u+1)$ $\cdot(u^{72}-13u^{71}+\cdots-19474u+1151)$
c_2	$((u^3+u^2+2u+1)^{24})(u^{23}-u^{22}+\cdots-u-1)$ $\cdot(u^{38}-26u^{37}+\cdots+65536u-4096)$
c_3, c_9	$(u^{23}+u^{22}+\cdots+2u+1)(u^{38}-u^{37}+\cdots-2u-1)$ $\cdot(u^{72}-u^{71}+\cdots+27418u+45671)$
c_5, c_{10}	$(u^{23}-u^{22}+\cdots+2u-1)(u^{38}-u^{37}+\cdots-2u-1)$ $\cdot(u^{72}-u^{71}+\cdots+27418u+45671)$
c_6	$((u^3+u^2+2u+1)^{24})(u^{23}+u^{22}+\cdots-u+1)$ $\cdot(u^{38}-26u^{37}+\cdots+65536u-4096)$
c_7, c_8	$(u^{12}-u^{11}-5u^{10}+4u^9+9u^8-4u^7-6u^6-2u^5+3u^3+u^2+1)^6$ $\cdot(u^{23}+2u^{22}+\cdots+3u+1)(u^{38}+9u^{37}+\cdots-28u+8)$
c_{11}	$((u^{12}+3u^{11}+\cdots+4u+1)^6)(u^{23}+3u^{22}+\cdots+5u-1)$ $\cdot(u^{38}-30u^{37}+\cdots+43124u-3512)$
c_{12}	$(u^{12}-u^{11}-5u^{10}+4u^9+9u^8-4u^7-6u^6-2u^5+3u^3+u^2+1)^6$ $\cdot(u^{23}-2u^{22}+\cdots+3u-1)(u^{38}+9u^{37}+\cdots-28u+8)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^{23} - 4y^{22} + \cdots + 2y - 1)(y^{38} - 4y^{37} + \cdots - 94y + 1)$ $\cdot (y^{72} - 17y^{71} + \cdots - 39129988y + 1324801)$
c_2, c_6	$((y^3 + 3y^2 + 2y - 1)^{24})(y^{23} + 23y^{22} + \cdots - 27y - 1)$ $\cdot (y^{38} + 26y^{37} + \cdots - 125829120y + 16777216)$
c_3, c_5, c_9 c_{10}	$(y^{23} - 25y^{22} + \cdots - 2y - 1)(y^{38} - 33y^{37} + \cdots + 2y + 1)$ $\cdot (y^{72} - 65y^{71} + \cdots + 1084775528y + 2085840241)$
c_7, c_8, c_{12}	$((y^{12} - 11y^{11} + \cdots + 2y + 1)^6)(y^{23} - 22y^{22} + \cdots + 7y - 1)$ $\cdot (y^{38} - 33y^{37} + \cdots - 80y + 64)$
c_{11}	$((y^{12} + y^{11} + \cdots - 2y + 1)^6)(y^{23} + 5y^{22} + \cdots + 23y - 1)$ $\cdot (y^{38} + 6y^{37} + \cdots - 103314128y + 12334144)$