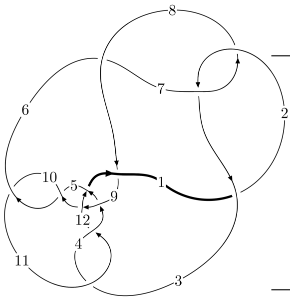
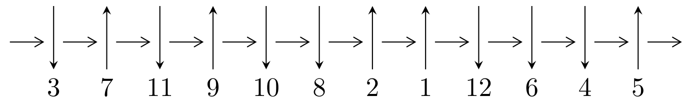
$12a_{0673}$ $(K12a_{0673})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-579387u^{39} - 23275447u^{38} + \cdots + 8192b - 8251727872,\\
&- 1007291u^{39} - 40140157u^{38} + \cdots + 16384a - 16662396928,\\
&u^{40} + 41u^{39} + \cdots + 401408u + 16384\rangle\\
I_2^u = \langle &-3.50204 \times 10^{97}a^{27}u^2 + 1.27267 \times 10^{97}a^{26}u^2 + \cdots - 3.32558 \times 10^{97}a - 9.43161 \times 10^{94},\\
&a^{27}u^2 - 5a^{26}u^2 + \cdots + 285596a + 148877,\ u^3 - u^2 + 1\rangle\\
I_3^u = \langle &-13u^{22} + 66u^{21} + \cdots + b + 11,\ -11u^{22} + 53u^{21} + \cdots + a + 1,\ u^{23} - 6u^{22} + \cdots - 4u^2 + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 147 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.

$\boldsymbol{I_1^u = \langle -5.79\times10^5u^{39} - 2.33\times10^7u^{38} + \cdots + 8192b - 8.25\times10^9,\ -1.01\times10^6u^{39} - 4.01\times10^7u^{38} + \cdots + 1.64\times10^4a - 1.67\times10^{10},\ u^{40} + 41u^{39} + \cdots + 401408u + 16384\rangle}$

(i) Arc colorings

$$a_9 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}61.4802u^{39} + 2449.96u^{38} + \cdots + 2.36167\times10^7u + 1016992\\70.7260u^{39} + 2841.24u^{38} + \cdots + 2.36616\times10^7u + 1007291\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}49.2772u^{39} + 2035.73u^{38} + \cdots + 2.73378\times10^7u + 1168475\\-140.846u^{39} - 5495.21u^{38} + \cdots - 1.06948\times10^7u - 403173\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-1.00781u^{39} - 40.3125u^{38} + \cdots - 386593u - 16447.5\\-1.00781u^{39} - 40.3203u^{38} + \cdots - 388096.u - 16512\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-9.24579u^{39} - 391.280u^{38} + \cdots - 44895.3u + 9701\\70.7260u^{39} + 2841.24u^{38} + \cdots + 2.36616\times10^7u + 1007291\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-8.96484u^{39} - 359.707u^{38} + \cdots - 3.84858\times10^6u - 164479\\-6.85156u^{39} - 275.133u^{38} + \cdots - 3046048u - 130368\end{pmatrix}$$
$$a_7 = \begin{pmatrix}115.111u^{39} + 4531.45u^{38} + \cdots + 1.61831\times10^7u + 643411\\135.594u^{39} + 5527.05u^{38} + \cdots + 5.94395\times10^7u + 2503924\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}\frac{1}{128}u^{39} + \frac{5}{16}u^{38} + \cdots + 1568u + \frac{129}{2}\\-0.00781250u^{39} - 0.304688u^{38} + \cdots - 1503.50u^2 - 63.5000u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-21.4449u^{39} - 742.195u^{38} + \cdots + 1.96811\times10^7u + 856786.\\-128.012u^{39} - 5132.03u^{38} + \cdots - 3.03051\times10^7u - 1238166\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-2.46484u^{39} - 99.5313u^{38} + \cdots - 783425.u - 32640\\11.0078u^{39} + 439.559u^{38} + \cdots + 3859393u + 163968\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{313701}{2048}u^{39} + \frac{12529453}{2048}u^{38} + \cdots + 15458438u + 553758$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{40} + 13u^{39} + \cdots + 32u + 64$
c_2, c_7	$u^{40} + 7u^{39} + \cdots + 2u^2 + 8$
c_3, c_5, c_{10} c_{11}	$u^{40} + u^{39} + \cdots + 2u + 1$
c_4, c_{12}	$u^{40} + 3u^{38} + \cdots + 3u + 1$
c_8	$u^{40} - 35u^{39} + \cdots - 4086976u + 307752$
c_9	$u^{40} - 41u^{39} + \cdots - 401408u + 16384$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{40} + 25y^{39} + \cdots - 27136y + 4096$
c_2, c_7	$y^{40} + 13y^{39} + \cdots + 32y + 64$
c_3, c_5, c_{10} c_{11}	$y^{40} - 35y^{39} + \cdots + 20y + 1$
c_4, c_{12}	$y^{40} + 6y^{39} + \cdots + 5y + 1$
c_8	$y^{40} + 17y^{39} + \cdots + 373353571616y + 94711293504$
c_9	$y^{40} - 7y^{39} + \cdots - 1409286144y + 268435456$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.386041 + 0.781738I$ $a = 0.327982 + 0.912189I$ $b = 0.839708 + 0.095747I$	$4.29895 - 4.62297I$	0
$u = -0.386041 - 0.781738I$ $a = 0.327982 - 0.912189I$ $b = 0.839708 - 0.095747I$	$4.29895 + 4.62297I$	0
$u = -0.424468 + 0.716698I$ $a = -0.337606 - 1.005260I$ $b = -0.863768 - 0.184738I$	$4.71501 + 0.92897I$	0
$u = -0.424468 - 0.716698I$ $a = -0.337606 + 1.005260I$ $b = -0.863768 + 0.184738I$	$4.71501 - 0.92897I$	0
$u = -0.688781 + 0.410406I$ $a = 0.50871 + 1.50198I$ $b = 0.966812 + 0.825756I$	$2.54965 + 8.13634I$	0
$u = -0.688781 - 0.410406I$ $a = 0.50871 - 1.50198I$ $b = 0.966812 - 0.825756I$	$2.54965 - 8.13634I$	0
$u = -0.654557 + 0.438339I$ $a = -0.47237 - 1.45216I$ $b = -0.945733 - 0.743460I$	$3.41551 + 2.50598I$	0
$u = -0.654557 - 0.438339I$ $a = -0.47237 + 1.45216I$ $b = -0.945733 + 0.743460I$	$3.41551 - 2.50598I$	0
$u = -0.607234 + 0.303704I$ $a = 0.34044 + 1.61539I$ $b = 0.697328 + 0.877527I$	$-2.53281 + 2.82471I$	0
$u = -0.607234 - 0.303704I$ $a = 0.34044 - 1.61539I$ $b = 0.697328 - 0.877527I$	$-2.53281 - 2.82471I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.445048+0.401866I$ $a=-0.184660-1.394420I$ $b=-0.642554-0.546377I$	$1.01499+1.04142I$	0
$u=-0.445048-0.401866I$ $a=-0.184660+1.394420I$ $b=-0.642554+0.546377I$	$1.01499-1.04142I$	0
$u=0.079057+0.565866I$ $a=-0.254159+0.764745I$ $b=0.452836+0.083361I$	$-0.513730-1.280700I$	0
$u=0.079057-0.565866I$ $a=-0.254159-0.764745I$ $b=0.452836-0.083361I$	$-0.513730+1.280700I$	0
$u=-0.530557+0.081357I$ $a=0.07376+1.79161I$ $b=0.184894+0.944550I$	$-0.04537-2.31418I$	0
$u=-0.530557-0.081357I$ $a=0.07376-1.79161I$ $b=0.184894-0.944550I$	$-0.04537+2.31418I$	0
$u=-1.29444+0.91899I$ $a=-0.059482-1.047590I$ $b=-1.03972-1.30139I$	$-7.1554+18.5968I$	0
$u=-1.29444-0.91899I$ $a=-0.059482+1.047590I$ $b=-1.03972+1.30139I$	$-7.1554-18.5968I$	0
$u=-1.30733+0.91344I$ $a=0.076070+1.022580I$ $b=1.03351+1.26737I$	$-5.82110+12.79620I$	0
$u=-1.30733-0.91344I$ $a=0.076070-1.022580I$ $b=1.03351-1.26737I$	$-5.82110-12.79620I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.31965 + 0.94989I$ $a = -0.009169 - 0.979688I$ $b = -0.94269 - 1.28413I$	$-12.4391 + 11.8677I$	0
$u = -1.31965 - 0.94989I$ $a = -0.009169 + 0.979688I$ $b = -0.94269 + 1.28413I$	$-12.4391 - 11.8677I$	0
$u = -1.36530 + 0.94019I$ $a = 0.052407 + 0.903121I$ $b = 0.92065 + 1.18375I$	$-7.44660 + 9.43936I$	0
$u = -1.36530 - 0.94019I$ $a = 0.052407 - 0.903121I$ $b = 0.92065 - 1.18375I$	$-7.44660 - 9.43936I$	0
$u = -1.37313 + 0.98630I$ $a = 0.016734 - 0.861988I$ $b = -0.82720 - 1.20013I$	$-9.66748 + 4.61526I$	0
$u = -1.37313 - 0.98630I$ $a = 0.016734 + 0.861988I$ $b = -0.82720 + 1.20013I$	$-9.66748 - 4.61526I$	0
$u = -1.58176 + 0.75718I$ $a = 0.318816 + 0.640437I$ $b = 0.989214 + 0.771613I$	$0.26052 + 9.55635I$	0
$u = -1.58176 - 0.75718I$ $a = 0.318816 - 0.640437I$ $b = 0.989214 - 0.771613I$	$0.26052 - 9.55635I$	0
$u = -1.67866 + 0.73710I$ $a = -0.323543 - 0.544420I$ $b = -0.944411 - 0.675412I$	$0.62354 + 3.38801I$	0
$u = -1.67866 - 0.73710I$ $a = -0.323543 + 0.544420I$ $b = -0.944411 + 0.675412I$	$0.62354 - 3.38801I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.91638 + 1.89680I$ $a = -0.306375 + 0.043826I$ $b = -0.197627 + 0.621294I$	$-4.94081 - 9.75847I$	0
$u = -0.91638 - 1.89680I$ $a = -0.306375 - 0.043826I$ $b = -0.197627 - 0.621294I$	$-4.94081 + 9.75847I$	0
$u = -1.66153 + 1.30418I$ $a = -0.074448 + 0.424186I$ $b = 0.429519 + 0.801889I$	$-8.50425 + 5.60885I$	0
$u = -1.66153 - 1.30418I$ $a = -0.074448 - 0.424186I$ $b = 0.429519 - 0.801889I$	$-8.50425 - 5.60885I$	0
$u = -1.43142 + 1.78513I$ $a = -0.217267 + 0.216904I$ $b = 0.076202 + 0.698329I$	$-10.59290 - 2.39404I$	0
$u = -1.43142 - 1.78513I$ $a = -0.217267 - 0.216904I$ $b = 0.076202 - 0.698329I$	$-10.59290 + 2.39404I$	0
$u = -0.94045 + 2.13875I$ $a = 0.233463 - 0.037102I$ $b = 0.140206 - 0.534212I$	$-3.38165 - 3.78335I$	0
$u = -0.94045 - 2.13875I$ $a = 0.233463 + 0.037102I$ $b = 0.140206 + 0.534212I$	$-3.38165 + 3.78335I$	0
$u = -1.97234 + 1.58931I$ $a = 0.040698 - 0.256368I$ $b = -0.327178 - 0.570325I$	$-5.52208 + 0.87397I$	0
$u = -1.97234 - 1.58931I$ $a = 0.040698 + 0.256368I$ $b = -0.327178 + 0.570325I$	$-5.52208 - 0.87397I$	0

II. $\boldsymbol{I_2^u = \langle -3.50 \times 10^{97} a^{27} u^2 + 1.27 \times 10^{97} a^{26} u^2 + \cdots - 3.33 \times 10^{97} a - 9.43 \times 10^{94},\ a^{27} u^2 - 5a^{26} u^2 + \cdots + 285596a + 148877,\ u^3 - u^2 + 1 \rangle}$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} a \\ 10.2657a^{27}u^2 - 3.73064a^{26}u^2 + \cdots + 9.74846a + 0.0276474 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -10.2657a^{27}u^2 + 3.73064a^{26}u^2 + \cdots - 8.74846a - 0.0276474 \\ 17.0710a^{27}u^2 - 5.63123a^{26}u^2 + \cdots - 1.53110a - 0.821207 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a^2u \\ -2.14419a^{27}u^2 - 3.82791a^{26}u^2 + \cdots + 14.6111a + 5.85525 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -10.2657a^{27}u^2 + 3.73064a^{26}u^2 + \cdots - 8.74846a - 0.0276474 \\ 10.2657a^{27}u^2 - 3.73064a^{26}u^2 + \cdots + 9.74846a + 0.0276474 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 3.13258a^{27}u^2 + 1.11366a^{26}u^2 + \cdots + 8.60740a + 4.83529 \\ -2.20805a^{27}u^2 + 3.25415a^{26}u^2 + \cdots + 6.88820a - 1.57925 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -17.2876a^{27}u^2 + 3.16256a^{26}u^2 + \cdots - 22.6088a - 10.3492 \\ 3.39639a^{27}u^2 - 2.26539a^{26}u^2 + \cdots - 5.45361a + 4.59514 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -5.04547a^{27}u^2 + 8.36584a^{26}u^2 + \cdots + 5.97337a + 0.330067 \\ 7.18966a^{27}u^2 - 4.53793a^{26}u^2 + \cdots - 20.5845a - 6.18532 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -5.05099a^{27}u^2 - 0.537079a^{26}u^2 + \cdots + 17.4477a + 3.50841 \\ -13.3963a^{27}u^2 + 8.75813a^{26}u^2 + \cdots - 5.43958a - 4.39989 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2.77771a^{27}u^2 - 7.24386a^{26}u^2 + \cdots + 19.9178a + 0.0502453 \\ -16.1715a^{27}u^2 + 19.3292a^{26}u^2 + \cdots - 8.66336a - 1.90620 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 135.121a^{27}u^2 - 4.70834a^{26}u^2 + \cdots - 47.4051a - 38.0609$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6, c_8	$(u^{14} + 5u^{13} + \cdots + 3u + 1)^6$
c_2, c_7	$(u^{14} - u^{13} + \cdots + u + 1)^6$
c_3, c_5, c_{10} c_{11}	$u^{84} - u^{83} + \cdots - 36600u + 3721$
c_4, c_{12}	$u^{84} - 3u^{83} + \cdots - 16116u + 6737$
c_9	$(u^3 + u^2 - 1)^{28}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_8	$(y^{14} + 9y^{13} + \cdots + 15y + 1)^6$
c_2, c_7	$(y^{14} + 5y^{13} + \cdots + 3y + 1)^6$
c_3, c_5, c_{10} c_{11}	$y^{84} - 69y^{83} + \cdots + 118923160y + 13845841$
c_4, c_{12}	$y^{84} + 23y^{83} + \cdots + 2095745328y + 45387169$
c_9	$(y^3 - y^2 + 2y - 1)^{28}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.120006 - 0.991776I$ $b = 0.72497 - 1.60540I$	$-3.10096 + 0.58459I$	$-6.59625 + 0.35429I$
$u = 0.877439 + 0.744862I$ $a = 0.986237 - 0.087553I$ $b = 0.123059 + 0.619630I$	$-1.91067 + 6.10773I$	$-4.49024 - 4.28133I$
$u = 0.877439 + 0.744862I$ $a = -0.006942 - 0.989783I$ $b = 0.96956 - 1.57337I$	$-6.55340 - 5.59559I$	$-9.90787 + 6.19322I$
$u = 0.877439 + 0.744862I$ $a = 0.084543 - 0.980700I$ $b = 1.15049 - 1.52825I$	$-1.91067 - 11.76400I$	$-4.49024 + 10.24022I$
$u = 0.877439 + 0.744862I$ $a = 0.954989 + 0.177300I$ $b = -0.023799 + 0.748491I$	$-6.55340 - 0.06065I$	$-9.90787 - 0.23433I$
$u = 0.877439 + 0.744862I$ $a = 0.929113 + 0.489507I$ $b = -0.162423 + 0.898869I$	$-3.10096 - 6.24083I$	$-6.59625 + 5.60461I$
$u = 0.877439 + 0.744862I$ $a = -0.075925 + 0.944213I$ $b = -1.12272 + 1.45979I$	$-0.72038 - 6.24083I$	$-2.38424 + 5.60461I$
$u = 0.877439 + 0.744862I$ $a = -0.345086 + 1.036840I$ $b = -0.452684 + 0.317394I$	$2.73205 - 0.06065I$	$0.927378 - 0.234326I$
$u = 0.877439 + 0.744862I$ $a = 0.178079 + 0.886248I$ $b = -0.58485 + 1.35446I$	$-1.93349 - 4.20582I$	$-5.37614 + 7.10152I$
$u = 0.877439 + 0.744862I$ $a = -0.633327 - 0.629672I$ $b = 0.343438 - 0.886961I$	$-1.93349 - 1.45042I$	$-5.37614 - 1.14262I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.873175 + 0.094296I$ $b = -0.063434 - 0.555802I$	$-0.720385 + 0.584589I$	$-2.38424 + 0.35429I$
$u = 0.877439 + 0.744862I$ $a = 0.095249 + 0.871209I$ $b = -0.77182 + 1.33732I$	$-1.88785 - 4.20582I$	$-3.60435 + 7.10152I$
$u = 0.877439 + 0.744862I$ $a = 0.271240 + 0.780595I$ $b = 0.086688 + 1.024240I$	$-1.93349 - 1.45042I$	$-5.37614 - 1.14262I$
$u = 0.877439 + 0.744862I$ $a = 0.297573 - 1.147490I$ $b = 0.527326 - 0.393396I$	$2.73205 - 5.59559I$	$0.92738 + 6.19322I$
$u = 0.877439 + 0.744862I$ $a = -0.397833 - 0.686701I$ $b = -0.450625 - 1.121570I$	$-3.10096 - 6.24083I$	$-6.59625 + 5.60461I$
$u = 0.877439 + 0.744862I$ $a = -0.601889 - 0.410389I$ $b = 0.317647 - 0.754765I$	$-1.88785 - 1.45042I$	$-3.60435 - 1.14262I$
$u = 0.877439 + 0.744862I$ $a = -0.374205 - 1.225980I$ $b = 0.503878 - 0.910272I$	$-1.93349 - 4.20582I$	$-5.37614 + 7.10152I$
$u = 0.877439 + 0.744862I$ $a = 0.213993 + 0.678532I$ $b = 0.222438 + 0.808416I$	$-1.88785 - 1.45042I$	$-3.60435 - 1.14262I$
$u = 0.877439 + 0.744862I$ $a = -0.240729 - 1.319760I$ $b = 0.565355 - 0.835380I$	$-1.88785 - 4.20582I$	$-3.60435 + 7.10152I$
$u = 0.877439 + 0.744862I$ $a = -0.405098 - 0.509151I$ $b = -0.705881 - 0.866905I$	$-6.55340 - 0.06065I$	$-9.90787 - 0.23433I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.877439 + 0.744862I$ $a = -0.128081 + 0.557074I$ $b = -1.115820 + 0.785201I$	$2.73205 - 5.59559I$	$0.92738 + 6.19322I$
$u = \quad 0.877439 + 0.744862I$ $a = -0.429915 - 0.341224I$ $b = -0.930577 - 0.657788I$	$-1.91067 + 6.10773I$	$-4.49024 - 4.28133I$
$u = \quad 0.877439 + 0.744862I$ $a = \quad 0.354532 + 0.332473I$ $b = \quad 0.836395 + 0.567656I$	$-0.720385 + 0.584589I$	$-2.38424 + 0.35429I$
$u = \quad 0.877439 + 0.744862I$ $a = \quad 0.121375 - 0.464764I$ $b = \quad 1.075100 - 0.652723I$	$2.73205 - 0.06065I$	$0.927378 - 0.234326I$
$u = \quad 0.877439 + 0.744862I$ $a = \quad 0.42250 + 1.47099I$ $b = -0.633438 + 0.959610I$	$-3.10096 + 0.58459I$	0
$u = \quad 0.877439 + 0.744862I$ $a = -0.07716 - 1.59819I$ $b = \quad 0.769927 - 0.771935I$	$-0.72038 - 6.24083I$	0
$u = \quad 0.877439 + 0.744862I$ $a = \quad 0.24248 + 1.58730I$ $b = -0.731161 + 0.873645I$	$-6.55340 - 5.59559I$	0
$u = \quad 0.877439 + 0.744862I$ $a = \quad 0.09727 + 1.65915I$ $b = -0.804668 + 0.797531I$	$-1.91067 - 11.76400I$	0
$u = \quad 0.877439 - 0.744862I$ $a = -0.120006 + 0.991776I$ $b = \quad 0.72497 + 1.60540I$	$-3.10096 - 0.58459I$	$-6.59625 - 0.35429I$
$u = \quad 0.877439 - 0.744862I$ $a = \quad 0.986237 + 0.087553I$ $b = \quad 0.123059 - 0.619630I$	$-1.91067 - 6.10773I$	$-4.49024 + 4.28133I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 - 0.744862I$ $a = -0.006942 + 0.989783I$ $b = 0.96956 + 1.57337I$	$-6.55340 + 5.59559I$	$-9.90787 - 6.19322I$
$u = 0.877439 - 0.744862I$ $a = 0.084543 + 0.980700I$ $b = 1.15049 + 1.52825I$	$-1.91067 + 11.76400I$	$-4.49024 - 10.24022I$
$u = 0.877439 - 0.744862I$ $a = 0.954989 - 0.177300I$ $b = -0.023799 - 0.748491I$	$-6.55340 + 0.06065I$	$-9.90787 + 0.23433I$
$u = 0.877439 - 0.744862I$ $a = 0.929113 - 0.489507I$ $b = -0.162423 - 0.898869I$	$-3.10096 + 6.24083I$	$-6.59625 - 5.60461I$
$u = 0.877439 - 0.744862I$ $a = -0.075925 - 0.944213I$ $b = -1.12272 - 1.45979I$	$-0.72038 + 6.24083I$	$-2.38424 - 5.60461I$
$u = 0.877439 - 0.744862I$ $a = -0.345086 - 1.036840I$ $b = -0.452684 - 0.317394I$	$2.73205 + 0.06065I$	$0.927378 + 0.234326I$
$u = 0.877439 - 0.744862I$ $a = 0.178079 - 0.886248I$ $b = -0.58485 - 1.35446I$	$-1.93349 + 4.20582I$	$-5.37614 - 7.10152I$
$u = 0.877439 - 0.744862I$ $a = -0.633327 + 0.629672I$ $b = 0.343438 + 0.886961I$	$-1.93349 + 1.45042I$	$-5.37614 + 1.14262I$
$u = 0.877439 - 0.744862I$ $a = -0.873175 - 0.094296I$ $b = -0.063434 + 0.555802I$	$-0.720385 - 0.584589I$	$-2.38424 - 0.35429I$
$u = 0.877439 - 0.744862I$ $a = 0.095249 - 0.871209I$ $b = -0.77182 - 1.33732I$	$-1.88785 + 4.20582I$	$-3.60435 - 7.10152I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 - 0.744862I$ $a = 0.271240 - 0.780595I$ $b = 0.086688 - 1.024240I$	$-1.93349 + 1.45042I$	$-5.37614 + 1.14262I$
$u = 0.877439 - 0.744862I$ $a = 0.297573 + 1.147490I$ $b = 0.527326 + 0.393396I$	$2.73205 + 5.59559I$	$0.92738 - 6.19322I$
$u = 0.877439 - 0.744862I$ $a = -0.397833 + 0.686701I$ $b = -0.450625 + 1.121570I$	$-3.10096 + 6.24083I$	$-6.59625 - 5.60461I$
$u = 0.877439 - 0.744862I$ $a = -0.601889 + 0.410389I$ $b = 0.317647 + 0.754765I$	$-1.88785 + 1.45042I$	$-3.60435 + 1.14262I$
$u = 0.877439 - 0.744862I$ $a = -0.374205 + 1.225980I$ $b = 0.503878 + 0.910272I$	$-1.93349 + 4.20582I$	$-5.37614 - 7.10152I$
$u = 0.877439 - 0.744862I$ $a = 0.213993 - 0.678532I$ $b = 0.222438 - 0.808416I$	$-1.88785 + 1.45042I$	$-3.60435 + 1.14262I$
$u = 0.877439 - 0.744862I$ $a = -0.240729 + 1.319760I$ $b = 0.565355 + 0.835380I$	$-1.88785 + 4.20582I$	$-3.60435 - 7.10152I$
$u = 0.877439 - 0.744862I$ $a = -0.405098 + 0.509151I$ $b = -0.705881 + 0.866905I$	$-6.55340 + 0.06065I$	$-9.90787 + 0.23433I$
$u = 0.877439 - 0.744862I$ $a = -0.128081 - 0.557074I$ $b = -1.115820 - 0.785201I$	$2.73205 + 5.59559I$	$0.92738 - 6.19322I$
$u = 0.877439 - 0.744862I$ $a = -0.429915 + 0.341224I$ $b = -0.930577 + 0.657788I$	$-1.91067 - 6.10773I$	$-4.49024 + 4.28133I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 - 0.744862I$ $a = 0.354532 - 0.332473I$ $b = 0.836395 - 0.567656I$	$-0.720385 - 0.584589I$	$-2.38424 - 0.35429I$
$u = 0.877439 - 0.744862I$ $a = 0.121375 + 0.464764I$ $b = 1.075100 + 0.652723I$	$2.73205 + 0.06065I$	$0.927378 + 0.234326I$
$u = 0.877439 - 0.744862I$ $a = 0.42250 - 1.47099I$ $b = -0.633438 - 0.959610I$	$-3.10096 - 0.58459I$	0
$u = 0.877439 - 0.744862I$ $a = -0.07716 + 1.59819I$ $b = 0.769927 + 0.771935I$	$-0.72038 + 6.24083I$	0
$u = 0.877439 - 0.744862I$ $a = 0.24248 - 1.58730I$ $b = -0.731161 - 0.873645I$	$-6.55340 + 5.59559I$	0
$u = 0.877439 - 0.744862I$ $a = 0.09727 - 1.65915I$ $b = -0.804668 - 0.797531I$	$-1.91067 + 11.76400I$	0
$u = -0.754878$ $a = 0.023468 + 0.988160I$ $b = -1.70900 + 1.25529I$	$-10.69100 + 2.76747I$	$-16.4371 - 3.2138I$
$u = -0.754878$ $a = 0.023468 - 0.988160I$ $b = -1.70900 - 1.25529I$	$-10.69100 - 2.76747I$	$-16.4371 + 3.2138I$
$u = -0.754878$ $a = -0.351285 + 0.840493I$ $b = 1.41371 + 0.90881I$	$-6.02544 - 1.37770I$	$-10.13361 + 4.12207I$
$u = -0.754878$ $a = -0.351285 - 0.840493I$ $b = 1.41371 - 0.90881I$	$-6.02544 + 1.37770I$	$-10.13361 - 4.12207I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.754878$ $a = \ \ 0.010172 + 1.172770I$ $b = -1.59712 + 1.49891I$	$-6.04826 + 8.93586I$	$-11.01951 - 7.26077I$
$u = -0.754878$ $a = \ \ 0.010172 - 1.172770I$ $b = -1.59712 - 1.49891I$	$-6.04826 - 8.93586I$	$-11.01951 + 7.26077I$
$u = -0.754878$ $a = -0.082088 + 1.172510I$ $b = \ \ 1.50842 + 1.44210I$	$-4.85797 - 3.41271I$	$-8.91351 + 2.62516I$
$u = -0.754878$ $a = -0.082088 - 1.172510I$ $b = \ \ 1.50842 - 1.44210I$	$-4.85797 + 3.41271I$	$-8.91351 - 2.62516I$
$u = -0.754878$ $a = \ \ 0.039321 + 0.722074I$ $b = -1.82506 + 0.91144I$	$-7.23855 - 3.41271I$	$-13.12551 + 2.62516I$
$u = -0.754878$ $a = \ \ 0.039321 - 0.722074I$ $b = -1.82506 - 0.91144I$	$-7.23855 + 3.41271I$	$-13.12551 - 2.62516I$
$u = -0.754878$ $a = -0.377459 + 0.576451I$ $b = \ \ 1.48695 + 0.62139I$	$-6.07108 - 1.37770I$	$-11.90541 + 4.12207I$
$u = -0.754878$ $a = -0.377459 - 0.576451I$ $b = \ \ 1.48695 - 0.62139I$	$-6.07108 + 1.37770I$	$-11.90541 - 4.12207I$
$u = -0.754878$ $a = -0.70608 + 1.61550I$ $b = \ \ 0.64975 + 1.28372I$	$-1.40553 - 2.76747I$	0
$u = -0.754878$ $a = -0.70608 - 1.61550I$ $b = \ \ 0.64975 - 1.28372I$	$-1.40553 + 2.76747I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.754878$ $a = 0.86074 + 1.70056I$ $b = -0.533004 + 1.219510I$	$-1.40553 - 2.76747I$	0
$u = -0.754878$ $a = 0.86074 - 1.70056I$ $b = -0.533004 - 1.219510I$	$-1.40553 + 2.76747I$	0
$u = -0.754878$ $a = 1.96979 + 0.82317I$ $b = -0.284936 + 0.435150I$	$-6.07108 - 1.37770I$	0
$u = -0.754878$ $a = 1.96979 - 0.82317I$ $b = -0.284936 - 0.435150I$	$-6.07108 + 1.37770I$	0
$u = -0.754878$ $a = 1.87277 + 1.20392I$ $b = -0.265177 + 0.634469I$	$-6.02544 - 1.37770I$	0
$u = -0.754878$ $a = 1.87277 - 1.20392I$ $b = -0.265177 - 0.634469I$	$-6.02544 + 1.37770I$	0
$u = -0.754878$ $a = -2.41769 + 1.20740I$ $b = 0.029682 + 0.545077I$	$-7.23855 - 3.41271I$	0
$u = -0.754878$ $a = -2.41769 - 1.20740I$ $b = 0.029682 - 0.545077I$	$-7.23855 + 3.41271I$	0
$u = -0.754878$ $a = 1.99823 + 1.91037I$ $b = -0.061966 + 0.885098I$	$-4.85797 - 3.41271I$	0
$u = -0.754878$ $a = 1.99823 - 1.91037I$ $b = -0.061966 - 0.885098I$	$-4.85797 + 3.41271I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.754878$ $a = -2.26395 + 1.66291I$ $b = \quad 0.017716 + 0.745940I$	$-10.69100 + 2.76747I$	0
$u = -0.754878$ $a = -2.26395 - 1.66291I$ $b = \quad 0.017716 - 0.745940I$	$-10.69100 - 2.76747I$	0
$u = -0.754878$ $a = -2.11574 + 1.98563I$ $b = \quad 0.007679 + 0.885300I$	$-6.04826 + 8.93586I$	0
$u = -0.754878$ $a = -2.11574 - 1.98563I$ $b = \quad 0.007679 - 0.885300I$	$-6.04826 - 8.93586I$	0

III. $I_3^u = \langle -13u^{22} + 66u^{21} + \cdots + b + 11,\ -11u^{22} + 53u^{21} + \cdots + a + 1,\ u^{23} - 6u^{22} + \cdots - 4u^2 + 1 \rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 11u^{22} - 53u^{21} + \cdots + 8u - 1 \\ 13u^{22} - 66u^{21} + \cdots - u - 11 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 10u^{22} - 54u^{21} + \cdots - 2u - 3 \\ 6u^{22} - 30u^{21} + \cdots + 22u^2 - 4 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{20} + 5u^{19} + \cdots - 2u - 4 \\ -u^{21} + 5u^{20} + \cdots - 2u^2 - 3u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -2u^{22} + 13u^{21} + \cdots + 9u + 10 \\ 13u^{22} - 66u^{21} + \cdots - u - 11 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 2u^{22} - 7u^{21} + \cdots + 6u + 1 \\ 4u^{22} - 20u^{21} + \cdots + 11u^2 - 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -25u^{22} + 128u^{21} + \cdots + 11u + 25 \\ u^{22} + u^{21} + \cdots + 8u + 5 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^{22} + 7u^{21} + \cdots + 6u - 4 \\ u^{22} - 6u^{21} + \cdots + 2u^2 - 3u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -10u^{22} + 58u^{21} + \cdots + 9u + 9 \\ 4u^{22} - 18u^{21} + \cdots + 7u^2 + 6u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -6u^{22} + 34u^{21} + \cdots - u - 1 \\ u^{21} - 3u^{20} + \cdots + 4u + 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -33u^{22} + 164u^{21} - 310u^{20} + 202u^{19} + 165u^{18} - 486u^{17} + 718u^{16} - 847u^{15} + 485u^{14} + 66u^{13} + 52u^{12} - 376u^{11} + 17u^{10} + 267u^9 - 16u^8 + 28u^7 - 185u^6 - 94u^5 + 220u^4 + 15u^3 - 93u^2 - 5u + 12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{23} - 8u^{22} + \cdots - 8u + 1$
c_2	$u^{23} + 4u^{21} + \cdots - 4u^2 - 1$
c_3, c_{10}	$u^{23} - u^{22} + \cdots - u + 1$
c_4, c_{12}	$u^{23} + 3u^{21} + \cdots + 2u^3 - 1$
c_5, c_{11}	$u^{23} + u^{22} + \cdots - u - 1$
c_7	$u^{23} + 4u^{21} + \cdots + 4u^2 + 1$
c_8	$u^{23} + 4u^{21} + \cdots + 7u^2 + 1$
c_9	$u^{23} - 6u^{22} + \cdots - 4u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{23} + 16y^{22} + \cdots - 56y^2 - 1$
c_2, c_7	$y^{23} + 8y^{22} + \cdots - 8y - 1$
c_3, c_5, c_{10} c_{11}	$y^{23} - 23y^{22} + \cdots + 17y - 1$
c_4, c_{12}	$y^{23} + 6y^{22} + \cdots + 2y^2 - 1$
c_8	$y^{23} + 8y^{22} + \cdots - 14y - 1$
c_9	$y^{23} - 6y^{22} + \cdots + 8y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.787420 + 0.529100I$ $a = 0.41407 + 1.37209I$ $b = -0.399927 + 1.299500I$	$-0.434887 + 0.785370I$	$-2.68661 + 0.75939I$
$u = 0.787420 - 0.529100I$ $a = 0.41407 - 1.37209I$ $b = -0.399927 - 1.299500I$	$-0.434887 - 0.785370I$	$-2.68661 - 0.75939I$
$u = 0.736005 + 0.575876I$ $a = -0.573964 - 1.266750I$ $b = 0.307052 - 1.262870I$	$-0.07310 - 4.42137I$	$-0.74349 + 7.07462I$
$u = 0.736005 - 0.575876I$ $a = -0.573964 + 1.266750I$ $b = 0.307052 + 1.262870I$	$-0.07310 + 4.42137I$	$-0.74349 - 7.07462I$
$u = -0.161987 + 0.897096I$ $a = 0.710005 - 0.628569I$ $b = 0.448875 + 0.738762I$	$-4.44482 - 8.70555I$	$-5.21496 + 5.50164I$
$u = -0.161987 - 0.897096I$ $a = 0.710005 + 0.628569I$ $b = 0.448875 - 0.738762I$	$-4.44482 + 8.70555I$	$-5.21496 - 5.50164I$
$u = -0.601154 + 0.655701I$ $a = -0.120426 - 0.898075I$ $b = 0.661263 + 0.460918I$	$-9.35112 - 2.26227I$	$-9.29651 + 0.96913I$
$u = -0.601154 - 0.655701I$ $a = -0.120426 + 0.898075I$ $b = 0.661263 - 0.460918I$	$-9.35112 + 2.26227I$	$-9.29651 - 0.96913I$
$u = 0.980139 + 0.570303I$ $a = 0.024628 + 1.095960I$ $b = -0.600892 + 1.088240I$	$-3.78789 - 3.52111I$	$-11.37828 + 4.82801I$
$u = 0.980139 - 0.570303I$ $a = 0.024628 - 1.095960I$ $b = -0.600892 - 1.088240I$	$-3.78789 + 3.52111I$	$-11.37828 - 4.82801I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.178274 + 1.165150I$ $a = -0.492915 + 0.354316I$ $b = -0.324955 - 0.637483I$	$-3.07900 - 3.10823I$	$-3.91996 + 0.06213I$
$u = -0.178274 - 1.165150I$ $a = -0.492915 - 0.354316I$ $b = -0.324955 + 0.637483I$	$-3.07900 + 3.10823I$	$-3.91996 - 0.06213I$
$u = 0.838487 + 0.908902I$ $a = -0.389816 - 0.648774I$ $b = 0.262816 - 0.898293I$	$-2.26839 - 2.40878I$	$-8.74665 + 6.47811I$
$u = 0.838487 - 0.908902I$ $a = -0.389816 + 0.648774I$ $b = 0.262816 + 0.898293I$	$-2.26839 + 2.40878I$	$-8.74665 - 6.47811I$
$u = 1.202560 + 0.483097I$ $a = -0.374092 + 0.858532I$ $b = -0.864624 + 0.851716I$	$1.30147 - 7.92747I$	$-3.76396 + 6.76222I$
$u = 1.202560 - 0.483097I$ $a = -0.374092 - 0.858532I$ $b = -0.864624 - 0.851716I$	$1.30147 + 7.92747I$	$-3.76396 - 6.76222I$
$u = -0.617636 + 0.146970I$ $a = 1.43119 + 0.59789I$ $b = -0.971827 - 0.158937I$	$-5.39009 - 0.99265I$	$-0.41096 - 2.40382I$
$u = -0.617636 - 0.146970I$ $a = 1.43119 - 0.59789I$ $b = -0.971827 + 0.158937I$	$-5.39009 + 0.99265I$	$-0.41096 + 2.40382I$
$u = -0.575316 + 0.265705I$ $a = -1.16602 - 1.04883I$ $b = 0.949508 + 0.293589I$	$-6.27868 + 3.82032I$	$-4.15429 - 6.73059I$
$u = -0.575316 - 0.265705I$ $a = -1.16602 + 1.04883I$ $b = 0.949508 - 0.293589I$	$-6.27868 - 3.82032I$	$-4.15429 + 6.73059I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.36816$ $a = 0.406059$ $b = -0.555554$	-5.28477	-6.39140
$u = 1.273830 + 0.530353I$ $a = 0.334310 - 0.725242I$ $b = 0.810489 - 0.746535I$	$1.90529 - 2.16291I$	$-1.48866 + 2.24531I$
$u = 1.273830 - 0.530353I$ $a = 0.334310 + 0.725242I$ $b = 0.810489 + 0.746535I$	$1.90529 + 2.16291I$	$-1.48866 - 2.24531I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$((u^{14}+5u^{13}+\cdots+3u+1)^6)(u^{23}-8u^{22}+\cdots-8u+1)$ $\cdot\,(u^{40}+13u^{39}+\cdots+32u+64)$
c_2	$((u^{14}-u^{13}+\cdots+u+1)^6)(u^{23}+4u^{21}+\cdots-4u^2-1)$ $\cdot\,(u^{40}+7u^{39}+\cdots+2u^2+8)$
c_3, c_{10}	$(u^{23}-u^{22}+\cdots-u+1)(u^{40}+u^{39}+\cdots+2u+1)$ $\cdot\,(u^{84}-u^{83}+\cdots-36600u+3721)$
c_4, c_{12}	$(u^{23}+3u^{21}+\cdots+2u^3-1)(u^{40}+3u^{38}+\cdots+3u+1)$ $\cdot\,(u^{84}-3u^{83}+\cdots-16116u+6737)$
c_5, c_{11}	$(u^{23}+u^{22}+\cdots-u-1)(u^{40}+u^{39}+\cdots+2u+1)$ $\cdot\,(u^{84}-u^{83}+\cdots-36600u+3721)$
c_7	$((u^{14}-u^{13}+\cdots+u+1)^6)(u^{23}+4u^{21}+\cdots+4u^2+1)$ $\cdot\,(u^{40}+7u^{39}+\cdots+2u^2+8)$
c_8	$((u^{14}+5u^{13}+\cdots+3u+1)^6)(u^{23}+4u^{21}+\cdots+7u^2+1)$ $\cdot\,(u^{40}-35u^{39}+\cdots-4086976u+307752)$
c_9	$((u^3+u^2-1)^{28})(u^{23}-6u^{22}+\cdots-4u^2+1)$ $\cdot\,(u^{40}-41u^{39}+\cdots-401408u+16384)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^{14} + 9y^{13} + \cdots + 15y + 1)^6)(y^{23} + 16y^{22} + \cdots - 56y^2 - 1)$ $\cdot (y^{40} + 25y^{39} + \cdots - 27136y + 4096)$
c_2, c_7	$((y^{14} + 5y^{13} + \cdots + 3y + 1)^6)(y^{23} + 8y^{22} + \cdots - 8y - 1)$ $\cdot (y^{40} + 13y^{39} + \cdots + 32y + 64)$
c_3, c_5, c_{10} c_{11}	$(y^{23} - 23y^{22} + \cdots + 17y - 1)(y^{40} - 35y^{39} + \cdots + 20y + 1)$ $\cdot (y^{84} - 69y^{83} + \cdots + 118923160y + 13845841)$
c_4, c_{12}	$(y^{23} + 6y^{22} + \cdots + 2y^2 - 1)(y^{40} + 6y^{39} + \cdots + 5y + 1)$ $\cdot (y^{84} + 23y^{83} + \cdots + 2095745328y + 45387169)$
c_8	$((y^{14} + 9y^{13} + \cdots + 15y + 1)^6)(y^{23} + 8y^{22} + \cdots - 14y - 1)$ $\cdot (y^{40} + 17y^{39} + \cdots + 373353571616y + 94711293504)$
c_9	$((y^3 - y^2 + 2y - 1)^{28})(y^{23} - 6y^{22} + \cdots + 8y - 1)$ $\cdot (y^{40} - 7y^{39} + \cdots - 1409286144y + 268435456)$