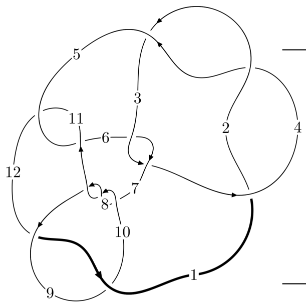
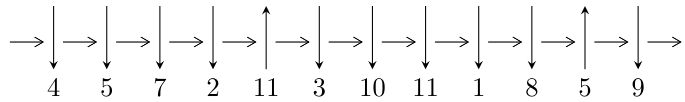
$12n_{0682}$ ($K12n_{0682}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & u^{12} + 2u^{11} - 4u^{10} - 8u^9 + 6u^8 + 9u^7 - 6u^6 + u^5 + 5u^4 - 6u^3 - 2u^2 + 2b + 3u, \\
& 3u^{12} + 9u^{11} - 22u^9 - 16u^8 + 5u^7 + 5u^6 + 11u^5 + 20u^4 + 9u^3 - 2u^2 + 2a - 3u - 1, \\
& u^{13} + 3u^{12} - u^{11} - 10u^{10} - 4u^9 + 9u^8 + 3u^7 + 8u^5 - 7u^3 - u^2 + u - 1\rangle \\
I_2^u = \langle & 2.01428 \times 10^{42} u^{43} + 5.41774 \times 10^{42} u^{42} + \cdots + 7.34448 \times 10^{41} b - 8.38901 \times 10^{41}, \\
& 8.61708 \times 10^{41} u^{43} + 1.60924 \times 10^{42} u^{42} + \cdots + 7.34448 \times 10^{41} a - 4.49822 \times 10^{43},\ u^{44} + 4u^{43} + \cdots + 116u - \\
I_3^u = \langle & b,\ -3u^2 + a - 5u - 4,\ u^3 + u^2 - 1\rangle \\
I_4^u = \langle & -4a^2 + 23b - 33a - 3,\ a^3 + 8a^2 + 3a + 7,\ u - 1\rangle \\
I_5^u = \langle & b + u,\ a + u,\ u^2 + u - 1\rangle \\
I_6^u = \langle & b - u - 1,\ a + 2,\ u^2 + u - 1\rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 67 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.

$$\boldsymbol{I_1^u = \langle u^{12}+2u^{11}+\cdots+2b+3u,\ 3u^{12}+9u^{11}+\cdots+2a-1,\ u^{13}+3u^{12}+\cdots+u-1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-\frac{3}{2}u^{12}-\frac{9}{2}u^{11}+\cdots+\frac{3}{2}u+\frac{1}{2}\\-\frac{1}{2}u^{12}-u^{11}+\cdots+u^2-\frac{3}{2}u\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-u^{12}-\frac{7}{2}u^{11}+\cdots+3u+\frac{1}{2}\\-\frac{1}{2}u^{12}-u^{11}+\cdots+u^2-\frac{3}{2}u\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-\frac{1}{2}u^{12}-2u^{11}+\cdots+\frac{3}{2}u+1\\u^3-u\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-u^{11}-2u^{10}+2u^9+6u^8+u^7-3u^6-2u^5-3u^4-3u^3+2u+1\\\frac{1}{2}u^{12}+\frac{1}{2}u^{11}+\cdots-\frac{1}{2}u-\frac{1}{2}\end{pmatrix}$$

$$a_6 = \begin{pmatrix}\frac{1}{2}u^{12}-3u^{10}+\cdots+\frac{3}{2}u-1\\\frac{3}{2}u^{12}+\frac{7}{2}u^{11}+\cdots+\frac{7}{2}u-\frac{3}{2}\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-\frac{1}{2}u^{12}-\frac{5}{2}u^{11}+\cdots+\frac{1}{2}u+\frac{1}{2}\\\frac{1}{2}u^{12}+\frac{1}{2}u^{11}+\cdots-\frac{1}{2}u-\frac{1}{2}\end{pmatrix}$$

$$a_7 = \begin{pmatrix}\frac{1}{2}u^{11}+u^{10}+\cdots-u+\frac{3}{2}\\-u^{11}-u^{10}+4u^9+3u^8-6u^7-u^6+3u^5-4u^4+u^3+3u^2-u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -3u^{12}-18u^{11}-24u^{10}+32u^9+80u^8+9u^7-34u^6+5u^5-47u^4-70u^3+6u^2+11u-18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4 c_7, c_8, c_{10}	$u^{13} - 3u^{12} - u^{11} + 10u^{10} - 4u^9 - 9u^8 + 3u^7 + 8u^5 - 7u^3 + u^2 + u + 1$
c_3, c_6, c_9 c_{12}	$u^{13} + u^{12} + \cdots + 5u + 1$
c_5, c_{11}	$u^{13} + 5u^{12} + \cdots - 8u - 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_7, c_8, c_{10}	$y^{13} - 11y^{12} + \cdots - y - 1$
c_3, c_6, c_9 c_{12}	$y^{13} - 3y^{12} + \cdots + 7y - 1$
c_5, c_{11}	$y^{13} - 5y^{12} + \cdots + 96y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.920255$ $a = -7.53293$ $b = -0.375392$	-2.84609	-65.8580
$u = 0.217488 + 0.883339I$ $a = 0.447419 - 0.357015I$ $b = 1.079610 + 0.670263I$	$2.14237 - 5.68500I$	$-7.77978 + 6.07128I$
$u = 0.217488 - 0.883339I$ $a = 0.447419 + 0.357015I$ $b = 1.079610 - 0.670263I$	$2.14237 + 5.68500I$	$-7.77978 - 6.07128I$
$u = -0.795282 + 0.405757I$ $a = -0.416083 + 0.498754I$ $b = -0.175698 + 0.846144I$	$1.52283 + 3.56370I$	$-3.66796 - 8.41026I$
$u = -0.795282 - 0.405757I$ $a = -0.416083 - 0.498754I$ $b = -0.175698 - 0.846144I$	$1.52283 - 3.56370I$	$-3.66796 + 8.41026I$
$u = 1.266340 + 0.164860I$ $a = -1.095680 + 0.368409I$ $b = -0.352007 + 0.886032I$	$-3.86762 - 1.80054I$	$-11.65148 + 0.61379I$
$u = 1.266340 - 0.164860I$ $a = -1.095680 - 0.368409I$ $b = -0.352007 - 0.886032I$	$-3.86762 + 1.80054I$	$-11.65148 - 0.61379I$
$u = -1.38670 + 0.37744I$ $a = 1.155750 + 0.361386I$ $b = 1.132190 - 0.771142I$	$-10.71940 + 7.71547I$	$-15.7360 - 5.7316I$
$u = -1.38670 - 0.37744I$ $a = 1.155750 - 0.361386I$ $b = 1.132190 + 0.771142I$	$-10.71940 - 7.71547I$	$-15.7360 + 5.7316I$
$u = 0.240304 + 0.377267I$ $a = 1.36715 + 1.11084I$ $b = -0.640664 - 0.285334I$	$-0.98403 - 1.11558I$	$-8.69395 + 6.01211I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.240304 - 0.377267I$ $a = 1.36715 - 1.11084I$ $b = -0.640664 + 0.285334I$	$-0.98403 + 1.11558I$	$-8.69395 - 6.01211I$
$u = -1.50228 + 0.43298I$ $a = -1.69209 - 0.37137I$ $b = -1.35574 + 0.89152I$	$-8.8777 + 15.5620I$	$-14.5417 - 7.8795I$
$u = -1.50228 - 0.43298I$ $a = -1.69209 + 0.37137I$ $b = -1.35574 - 0.89152I$	$-8.8777 - 15.5620I$	$-14.5417 + 7.8795I$

II. $I^u_2 =$
$\langle 2.01\times10^{42}u^{43}+5.42\times10^{42}u^{42}+\cdots+7.34\times10^{41}b-8.39\times10^{41},\ 8.62\times10^{41}u^{43}+1.61\times10^{42}u^{42}+\cdots+7.34\times10^{41}a-4.50\times10^{43},\ u^{44}+4u^{43}+\cdots+116u-1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-1.17327u^{43}-2.19108u^{42}+\cdots-439.275u+61.2463\\-2.74257u^{43}-7.37661u^{42}+\cdots-201.685u+1.14222\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1.56930u^{43}+5.18553u^{42}+\cdots-237.590u+60.1040\\-2.74257u^{43}-7.37661u^{42}+\cdots-201.685u+1.14222\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}3.61816u^{43}+9.27065u^{42}+\cdots+182.489u+32.8026\\4.49904u^{43}+11.8002u^{42}+\cdots+312.338u-3.00702\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1.96942u^{43}+5.25944u^{42}+\cdots+65.5876u+33.8026\\2.07745u^{43}+5.75738u^{42}+\cdots+127.873u-1.42316\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1.07148u^{43}+2.89399u^{42}+\cdots+59.4605u+9.96375\\1.37364u^{43}+3.38028u^{42}+\cdots+86.1371u-0.830453\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1.70871u^{43}+4.01744u^{42}+\cdots+60.7021u+31.6372\\2.07745u^{43}+5.75738u^{42}+\cdots+127.873u-1.42316\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1.78926u^{43}+4.62600u^{42}+\cdots+163.701u-11.9689\\-1.22781u^{43}-2.74973u^{42}+\cdots-70.8975u+0.701920\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.60530u^{43}-11.0854u^{42}+\cdots+553.011u-13.5461$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4 c_7, c_8, c_{10}	$u^{44} - 4u^{43} + \cdots - 116u - 1$
c_3, c_6, c_9 c_{12}	$u^{44} + 3u^{43} + \cdots - 44u + 8$
c_5, c_{11}	$(u^{22} - u^{21} + \cdots - 9u - 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_7, c_8, c_{10}	$y^{44} - 40y^{43} + \cdots - 12428y + 1$
c_3, c_6, c_9 c_{12}	$y^{44} - 21y^{43} + \cdots - 7760y + 64$
c_5, c_{11}	$(y^{22} - 15y^{21} + \cdots - 113y + 4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.090540 + 0.022158I$ $a = -3.21063 - 2.07089I$ $b = -0.729158 - 0.031613I$	$-2.83824 + 0.14755I$	$-2.77483 - 4.21375I$
$u = 1.090540 - 0.022158I$ $a = -3.21063 + 2.07089I$ $b = -0.729158 + 0.031613I$	$-2.83824 - 0.14755I$	$-2.77483 + 4.21375I$
$u = 0.109119 + 0.888646I$ $a = -0.410159 - 0.255099I$ $b = 1.061150 + 0.336334I$	$-5.93215 - 3.14286I$	$-14.6418 + 3.7109I$
$u = 0.109119 - 0.888646I$ $a = -0.410159 + 0.255099I$ $b = 1.061150 - 0.336334I$	$-5.93215 + 3.14286I$	$-14.6418 - 3.7109I$
$u = 0.344224 + 1.065750I$ $a = -0.392445 + 0.502444I$ $b = -1.174950 - 0.756583I$	$-3.01557 - 10.18830I$	$-12.15400 + 6.99410I$
$u = 0.344224 - 1.065750I$ $a = -0.392445 - 0.502444I$ $b = -1.174950 + 0.756583I$	$-3.01557 + 10.18830I$	$-12.15400 - 6.99410I$
$u = -1.134110 + 0.122816I$ $a = -0.077142 + 0.931712I$ $b = 0.03859 + 1.46465I$	$1.18895 + 3.23778I$	$-15.5021 - 9.5411I$
$u = -1.134110 - 0.122816I$ $a = -0.077142 - 0.931712I$ $b = 0.03859 - 1.46465I$	$1.18895 - 3.23778I$	$-15.5021 + 9.5411I$
$u = 1.036890 + 0.519128I$ $a = 0.495432 - 0.747200I$ $b = 0.705965 - 0.517769I$	$-0.357526 + 0.716312I$	$-8.85937 - 2.91987I$
$u = 1.036890 - 0.519128I$ $a = 0.495432 + 0.747200I$ $b = 0.705965 + 0.517769I$	$-0.357526 - 0.716312I$	$-8.85937 + 2.91987I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.748799+0.898808I$ $a=-0.318628-0.160414I$ $b=-0.598618+0.291695I$	$1.18895+3.23778I$	$-15.5021-9.5411I$
$u=-0.748799-0.898808I$ $a=-0.318628+0.160414I$ $b=-0.598618-0.291695I$	$1.18895-3.23778I$	$-15.5021+9.5411I$
$u=\ \ 0.238284+0.726491I$ $a=-0.590561-1.081680I$ $b=-0.583355+1.078870I$	$-1.09298-3.55787I$	$-9.79859+4.38747I$
$u=\ \ 0.238284-0.726491I$ $a=-0.590561+1.081680I$ $b=-0.583355-1.078870I$	$-1.09298+3.55787I$	$-9.79859-4.38747I$
$u=\ \ 0.736176$ $a=\ \ 0.801410$ $b=\ \ 0.0947175$	-1.10346	-8.70720
$u=-0.164222+0.700108I$ $a=\ \ 0.889479+0.479637I$ $b=\ \ 0.576121-0.856265I$	3.71629	$-3.80483+0.I$
$u=-0.164222-0.700108I$ $a=\ \ 0.889479-0.479637I$ $b=\ \ 0.576121+0.856265I$	3.71629	$-3.80483+0.I$
$u=\ \ 1.243520+0.352072I$ $a=\ \ 0.852793-1.120250I$ $b=\ \ 1.274130+0.140265I$	$-9.47192-1.36166I$	0
$u=\ \ 1.243520-0.352072I$ $a=\ \ 0.852793+1.120250I$ $b=\ \ 1.274130-0.140265I$	$-9.47192+1.36166I$	0
$u=\ \ 0.643688+0.282110I$ $a=-2.22845+4.03294I$ $b=-0.062262-0.456825I$	$-2.83824-0.14755I$	$-2.77483+4.21375I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.643688 - 0.282110I$ $a = -2.22845 - 4.03294I$ $b = -0.062262 + 0.456825I$	$-2.83824 + 0.14755I$	$-2.77483 - 4.21375I$
$u = 1.047760 + 0.864022I$ $a = -0.255518 + 0.521043I$ $b = -1.055110 + 0.486781I$	$-5.02280 + 3.68716I$	0
$u = 1.047760 - 0.864022I$ $a = -0.255518 - 0.521043I$ $b = -1.055110 - 0.486781I$	$-5.02280 - 3.68716I$	0
$u = -1.351490 + 0.160264I$ $a = -1.139470 - 0.246938I$ $b = -0.991832 + 0.785748I$	$-5.93215 + 3.14286I$	0
$u = -1.351490 - 0.160264I$ $a = -1.139470 + 0.246938I$ $b = -0.991832 - 0.785748I$	$-5.93215 - 3.14286I$	0
$u = -1.347140 + 0.234013I$ $a = -2.04959 - 0.19598I$ $b = -1.55821 + 0.42887I$	$-5.02280 + 3.68716I$	0
$u = -1.347140 - 0.234013I$ $a = -2.04959 + 0.19598I$ $b = -1.55821 - 0.42887I$	$-5.02280 - 3.68716I$	0
$u = 1.358520 + 0.282419I$ $a = 1.96744 - 0.07093I$ $b = 0.937408 + 0.526012I$	$-1.09298 - 3.55787I$	0
$u = 1.358520 - 0.282419I$ $a = 1.96744 + 0.07093I$ $b = 0.937408 - 0.526012I$	$-1.09298 + 3.55787I$	0
$u = 0.117503 + 0.569726I$ $a = -0.457122 - 0.216490I$ $b = -1.007210 - 0.504052I$	$-0.357526 - 0.716312I$	$-8.85937 + 2.91987I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.117503 - 0.569726I$ $a = -0.457122 + 0.216490I$ $b = -1.007210 + 0.504052I$	$-0.357526 + 0.716312I$	$-8.85937 - 2.91987I$
$u = -1.42436$ $a = 2.09618$ $b = 2.01618$	-16.0009	0
$u = -1.39535 + 0.29610I$ $a = -0.197837 - 0.800968I$ $b = -0.58639 - 1.50954I$	$-6.28468 + 7.27868I$	0
$u = -1.39535 - 0.29610I$ $a = -0.197837 + 0.800968I$ $b = -0.58639 + 1.50954I$	$-6.28468 - 7.27868I$	0
$u = -1.40825 + 0.36939I$ $a = 1.88459 + 0.34782I$ $b = 1.39293 - 0.68109I$	$-3.01557 + 10.18830I$	0
$u = -1.40825 - 0.36939I$ $a = 1.88459 - 0.34782I$ $b = 1.39293 + 0.68109I$	$-3.01557 - 10.18830I$	0
$u = -1.45462 + 0.06689I$ $a = 0.830038 - 0.316230I$ $b = 0.720926 + 0.858306I$	$-9.47192 + 1.36166I$	0
$u = -1.45462 - 0.06689I$ $a = 0.830038 + 0.316230I$ $b = 0.720926 - 0.858306I$	$-9.47192 - 1.36166I$	0
$u = 0.521744$ $a = -2.11947$ $b = 1.64818$	-9.78452	30.1490
$u = 1.57069 + 0.28000I$ $a = -1.52006 + 0.01103I$ $b = -1.152160 - 0.610789I$	$-6.28468 - 7.27868I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.57069 - 0.28000I$ $a = -1.52006 - 0.01103I$ $b = -1.152160 + 0.610789I$	$-6.28468 + 7.27868I$	0
$u = -1.63226$ $a = 1.82053$ $b = 0.616211$	-9.78452	0
$u = -1.80378$ $a = -1.14737$ $b = -1.21054$	-16.0009	0
$u = 0.00897213$ $a = 57.4044$ $b = -0.580690$	-1.10346	-8.70720

III. $I_3^u = \langle b,\ -3u^2 + a - 5u - 4,\ u^3 + u^2 - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 21u^2 + 45u + 27$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^3 - y^2 + 2y - 1$
c_3, c_6	$y^3 + 3y^2 + 2y - 1$
c_5, c_{11}	$y^3 - 5y^2 + 10y - 1$
c_7, c_8, c_{10}	$(y-1)^3$
c_9, c_{12}	y^3

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.258045 - 0.197115I$ $b = 0$	$1.37919 + 2.82812I$	$-7.96807 + 6.06881I$
$u = -0.877439 - 0.744862I$ $a = 0.258045 + 0.197115I$ $b = 0$	$1.37919 - 2.82812I$	$-7.96807 - 6.06881I$
$u = 0.754878$ $a = 9.48391$ $b = 0$	-2.75839	72.9360

IV. $\boldsymbol{I_4^u = \langle -4a^2 + 23b - 33a - 3,\ a^3 + 8a^2 + 3a + 7,\ u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ \frac{4}{23}a^2 + \frac{33}{23}a + \frac{3}{23} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{4}{23}a^2 - \frac{10}{23}a - \frac{3}{23} \\ \frac{4}{23}a^2 + \frac{33}{23}a + \frac{3}{23} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{23}a^2 + \frac{9}{23}a + \frac{51}{23} \\ \frac{1}{23}a^2 + \frac{14}{23}a + \frac{41}{23} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{2}{23}a^2 - \frac{5}{23}a + \frac{10}{23} \\ \frac{1}{23}a^2 + \frac{14}{23}a + \frac{41}{23} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ \frac{5}{23}a^2 + \frac{47}{23}a + \frac{67}{23} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{23}a^2 + \frac{9}{23}a + \frac{5}{23} \\ \frac{1}{23}a^2 + \frac{14}{23}a + \frac{41}{23} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ \frac{5}{23}a^2 + \frac{47}{23}a + \frac{67}{23} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{51}{23}a^2 + \frac{162}{23}a - \frac{117}{23}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^3$
c_3, c_6	y^3
c_5, c_{11}	$y^3 - 5y^2 + 10y - 1$
c_7, c_8, c_{10}	$y^3 - y^2 + 2y - 1$
c_9, c_{12}	$y^3 + 3y^2 + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 1.00000$ $a = -0.135484 + 0.941977I$ $b = -0.215080 + 1.307140I$	$1.37919 + 2.82812I$	$-7.96807 + 6.06881I$
$u = \ \ 1.00000$ $a = -0.135484 - 0.941977I$ $b = -0.215080 - 1.307140I$	$1.37919 - 2.82812I$	$-7.96807 - 6.06881I$
$u = \ \ 1.00000$ $a = -7.72903$ $b = -0.569840$	-2.75839	72.9360

V. $I_5^u = \langle b+u,\ a+u,\ u^2+u-1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 1 \\ -u+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u+1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u-1 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -u \\ -u+1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ u-1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -0.618034$ $b = -0.618034$	-1.97392	-20.0000
$u = -1.61803$ $a = 1.61803$ $b = 1.61803$	-17.7653	-20.0000

VI. $I_6^u = \langle b - u - 1,\ a + 2,\ u^2 + u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -65$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_6	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -2.00000$ $b = 1.61803$	-9.86960	-65.0000
$u = -1.61803$ $a = -2.00000$ $b = -0.618034$	-9.86960	-65.0000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7 c_8	$(u-1)^3(u^2+u-1)^2(u^3+u^2-1)$ $\cdot (u^{13}-3u^{12}-u^{11}+10u^{10}-4u^9-9u^8+3u^7+8u^5-7u^3+u^2+u+1)$ $\cdot (u^{44}-4u^{43}+\cdots-116u-1)$
c_3, c_9	$u^3(u^2+u-1)^2(u^3-u^2+2u-1)(u^{13}+u^{12}+\cdots+5u+1)$ $\cdot (u^{44}+3u^{43}+\cdots-44u+8)$
c_4, c_{10}	$(u+1)^3(u^2-u-1)^2(u^3-u^2+1)$ $\cdot (u^{13}-3u^{12}-u^{11}+10u^{10}-4u^9-9u^8+3u^7+8u^5-7u^3+u^2+u+1)$ $\cdot (u^{44}-4u^{43}+\cdots-116u-1)$
c_5, c_{11}	$u^4(u^3-3u^2+2u+1)(u^3+3u^2+2u-1)(u^{13}+5u^{12}+\cdots-8u-4)$ $\cdot (u^{22}-u^{21}+\cdots-9u-2)^2$
c_6, c_{12}	$u^3(u^2-u-1)^2(u^3+u^2+2u+1)(u^{13}+u^{12}+\cdots+5u+1)$ $\cdot (u^{44}+3u^{43}+\cdots-44u+8)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_7, c_8, c_{10}	$((y-1)^3)(y^2-3y+1)^2(y^3-y^2+2y-1)(y^{13}-11y^{12}+\cdots-y-1)$ $\cdot\,(y^{44}-40y^{43}+\cdots-12428y+1)$
c_3, c_6, c_9 c_{12}	$y^3(y^2-3y+1)^2(y^3+3y^2+2y-1)(y^{13}-3y^{12}+\cdots+7y-1)$ $\cdot\,(y^{44}-21y^{43}+\cdots-7760y+64)$
c_5, c_{11}	$y^4(y^3-5y^2+10y-1)^2(y^{13}-5y^{12}+\cdots+96y-16)$ $\cdot\,(y^{22}-15y^{21}+\cdots-113y+4)^2$