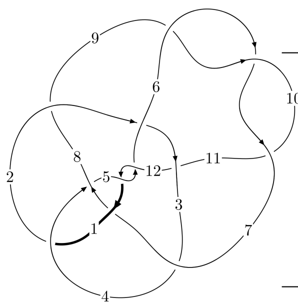
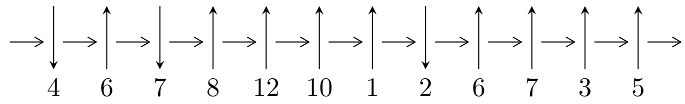
$12n_{0742}$ ($K12n_{0742}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 54417405u^{24} + 534792001u^{23} + \cdots + 33311573b + 3681796776, \\
& 32555757366u^{24} + 426906642534u^{23} + \cdots + 2831483705a + 4024705159097, \\
& u^{25} + 14u^{24} + \cdots + 802u + 85 \rangle \\
I_2^u = \langle & 26555u^{18} - 198357u^{17} + \cdots + 36185b - 144112, \\
& 163099u^{18} - 1122706u^{17} + \cdots + 36185a - 527630,\ u^{19} - 7u^{18} + \cdots - 7u + 1 \rangle \\
I_3^u = \langle & 1445734u^6a^5 - 1807249u^6a^4 + \cdots - 3844804a + 2844990,\ u^6a^5 - 2u^6a^4 + \cdots - 37a + 3, \\
& u^7 - 2u^6 + 2u^5 + u^4 - 2u^3 + 3u^2 - 2u + 1 \rangle \\
I_4^u = \langle & a^5 - 5a^4 + 5a^3 + 5a^2 + 7b - 10a - 2,\ a^6 - a^5 - a^4 + 4a^3 + 3a^2 - 1,\ u + 1 \rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b^3 + b^2 - 1,\ v - 1 \rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 95 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. $I^u_1 = \langle 5.44\times10^{7}u^{24}+5.35\times10^{8}u^{23}+\cdots+3.33\times10^{7}b+3.68\times10^{9},\ 3.26\times10^{10}u^{24}+4.27\times10^{11}u^{23}+\cdots+2.83\times10^{9}a+4.02\times10^{12},\ u^{25}+14u^{24}+\cdots+802u+85\rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

$$a_3 = \begin{pmatrix}-11.4978u^{24}-150.771u^{23}+\cdots-10908.2u-1421.41\\-1.63359u^{24}-16.0542u^{23}+\cdots-598.744u-110.526\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}-1.30031u^{24}-16.5707u^{23}+\cdots-3108.43u-444.101\\-3.38147u^{24}-53.3166u^{23}+\cdots-6600.19u-838.456\end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix}6.05270u^{24}+79.5081u^{23}+\cdots+5244.89u+673.380\\2.36945u^{24}+27.1163u^{23}+\cdots+502.162u+69.9568\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-9.86418u^{24}-134.717u^{23}+\cdots-10309.5u-1310.89\\-1.63359u^{24}-16.0542u^{23}+\cdots-598.744u-110.526\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-4.83382u^{24}-68.1991u^{23}+\cdots-7333.97u-961.507\\-3.85589u^{24}-51.6884u^{23}+\cdots-3026.16u-368.196\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-3.32745u^{24}-47.7352u^{23}+\cdots-3929.81u-486.742\\-3.53542u^{24}-41.2464u^{23}+\cdots-561.643u-67.3117\end{pmatrix}$$

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

$$a_8 = \begin{pmatrix}4.06599u^{24}+56.5411u^{23}+\cdots+7053.62u+949.032\\5.22968u^{24}+70.3553u^{23}+\cdots+4181.88u+514.479\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{989445234}{33311573}u^{24}+\frac{12906576392}{33311573}u^{23}+\cdots+\frac{940441773198}{33311573}u+\frac{123998150314}{33311573}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{25} - 24u^{24} + \cdots - 1246u + 85$
c_2, c_{11}	$u^{25} + 18u^{23} + \cdots + 10u + 1$
c_3, c_8	$u^{25} - 15u^{23} + \cdots - u - 1$
c_4, c_7	$u^{25} - u^{24} + \cdots + u - 1$
c_5, c_{12}	$u^{25} - 15u^{24} + \cdots - 768u + 64$
c_6, c_9, c_{10}	$u^{25} - 14u^{24} + \cdots + 802u - 85$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{25} - 12y^{24} + \cdots - 5534y - 7225$
c_2, c_{11}	$y^{25} + 36y^{24} + \cdots + 36y - 1$
c_3, c_8	$y^{25} - 30y^{24} + \cdots + 15y - 1$
c_4, c_7	$y^{25} + 9y^{24} + \cdots + 3y - 1$
c_5, c_{12}	$y^{25} + 13y^{24} + \cdots + 30720y - 4096$
c_6, c_9, c_{10}	$y^{25} - 8y^{24} + \cdots + 28824y - 7225$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.150840 + 0.071771I$ $a = -0.388264 + 0.151015I$ $b = 0.994844 - 0.281020I$	$3.73403 + 0.45497I$	$9.6713 - 10.3747I$
$u = 1.150840 - 0.071771I$ $a = -0.388264 - 0.151015I$ $b = 0.994844 + 0.281020I$	$3.73403 - 0.45497I$	$9.6713 + 10.3747I$
$u = -0.485653 + 0.637254I$ $a = 0.238682 - 1.222900I$ $b = 0.134188 - 0.806451I$	$0.04540 - 2.20353I$	$6.08023 + 5.72200I$
$u = -0.485653 - 0.637254I$ $a = 0.238682 + 1.222900I$ $b = 0.134188 + 0.806451I$	$0.04540 + 2.20353I$	$6.08023 - 5.72200I$
$u = -1.170090 + 0.293084I$ $a = -0.088746 + 0.564255I$ $b = -0.211593 - 0.098690I$	$0.536147 - 0.634353I$	$11.05095 - 0.92711I$
$u = -1.170090 - 0.293084I$ $a = -0.088746 - 0.564255I$ $b = -0.211593 + 0.098690I$	$0.536147 + 0.634353I$	$11.05095 + 0.92711I$
$u = -1.30739$ $a = 0.650104$ $b = -0.261258$	2.40793	2.92560
$u = 1.275970 + 0.445097I$ $a = 0.185309 - 0.188647I$ $b = -0.799684 + 0.217507I$	$0.48601 + 6.98392I$	$7.58735 - 2.98209I$
$u = 1.275970 - 0.445097I$ $a = 0.185309 + 0.188647I$ $b = -0.799684 - 0.217507I$	$0.48601 - 6.98392I$	$7.58735 + 2.98209I$
$u = 0.022372 + 0.589385I$ $a = -0.859515 - 0.602687I$ $b = -0.650024 + 0.333678I$	$-2.78859 - 2.82391I$	$3.91126 + 3.02621I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.022372 - 0.589385I$ $a = -0.859515 + 0.602687I$ $b = -0.650024 - 0.333678I$	$-2.78859 + 2.82391I$	$3.91126 - 3.02621I$
$u = -0.547968 + 0.005640I$ $a = 0.882270 - 1.038890I$ $b = 0.219128 - 0.256889I$	$1.078030 - 0.317833I$	$10.34199 + 2.86675I$
$u = -0.547968 - 0.005640I$ $a = 0.882270 + 1.038890I$ $b = 0.219128 + 0.256889I$	$1.078030 + 0.317833I$	$10.34199 - 2.86675I$
$u = -0.90468 + 1.23994I$ $a = 0.366520 + 0.971389I$ $b = -0.37973 + 1.94506I$	$-12.68230 - 6.03173I$	0
$u = -0.90468 - 1.23994I$ $a = 0.366520 - 0.971389I$ $b = -0.37973 - 1.94506I$	$-12.68230 + 6.03173I$	0
$u = -1.10702 + 1.09764I$ $a = -0.598281 - 1.082670I$ $b = 0.79280 - 1.97341I$	$-13.8057 - 16.2441I$	0
$u = -1.10702 - 1.09764I$ $a = -0.598281 + 1.082670I$ $b = 0.79280 + 1.97341I$	$-13.8057 + 16.2441I$	0
$u = -1.07816 + 1.16839I$ $a = 0.771238 + 0.692967I$ $b = 0.05163 + 1.92956I$	$-13.9765 + 8.0107I$	0
$u = -1.07816 - 1.16839I$ $a = 0.771238 - 0.692967I$ $b = 0.05163 - 1.92956I$	$-13.9765 - 8.0107I$	0
$u = -1.16562 + 1.12611I$ $a = 0.578628 + 0.852161I$ $b = -0.65543 + 1.78358I$	$-8.04349 - 10.14930I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.16562-1.12611I$ $a=\ \ 0.578628-0.852161I$ $b=-0.65543-1.78358I$	$-8.04349+10.14930I$	0
$u=-1.05000+1.24515I$ $a=-0.549717-0.744389I$ $b=\ \ 0.19613-1.86795I$	$-8.47813+1.61102I$	0
$u=-1.05000-1.24515I$ $a=-0.549717+0.744389I$ $b=\ \ 0.19613+1.86795I$	$-8.47813-1.61102I$	0
$u=-1.28631+1.03268I$ $a=-0.739647-0.587900I$ $b=\ \ 0.43837-1.61163I$	$-11.46130-2.25746I$	0
$u=-1.28631-1.03268I$ $a=-0.739647+0.587900I$ $b=\ \ 0.43837+1.61163I$	$-11.46130+2.25746I$	0

II. $\boldsymbol{I_2^u = \langle 26555u^{18} - 198357u^{17} + \cdots + 36185b - 144112,\ 1.63\times10^5u^{18} - 1.12\times10^6u^{17} + \cdots + 3.62\times10^4a - 5.28\times10^5,\ u^{19} - 7u^{18} + \cdots - 7u + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

$$a_3 = \begin{pmatrix}-4.50736u^{18} + 31.0268u^{17} + \cdots - 73.3920u + 14.5815\\-0.733868u^{18} + 5.48175u^{17} + \cdots - 17.8044u + 3.98264\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}-3.98264u^{18} + 27.1446u^{17} + \cdots - 56.4219u + 10.0741\\-0.869393u^{18} + 5.81719u^{17} + \cdots - 15.8157u + 3.77350\end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix}-5.19580u^{18} + 34.7581u^{17} + \cdots - 69.3087u + 9.04523\\-1.23542u^{18} + 8.41895u^{17} + \cdots - 20.2338u + 3.58332\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-3.77350u^{18} + 25.5451u^{17} + \cdots - 55.5876u + 10.5988\\-0.733868u^{18} + 5.48175u^{17} + \cdots - 17.8044u + 3.98264\end{pmatrix}$$

$$a_1 = \begin{pmatrix}1.43106u^{18} - 8.75258u^{17} + \cdots - 3.21879u + 5.32624\\1.34440u^{18} - 8.49272u^{17} + \cdots + 13.2778u - 1.56476\end{pmatrix}$$

$$a_5 = \begin{pmatrix}3.37262u^{18} - 24.2115u^{17} + \cdots + 81.5293u - 19.2865\\-0.115700u^{18} + 0.302081u^{17} + \cdots + 6.21904u - 2.96929\end{pmatrix}$$

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

$$a_8 = \begin{pmatrix}-6.03238u^{18} + 40.1547u^{17} + \cdots - 80.8073u + 11.4943\\-1.61249u^{18} + 10.9103u^{17} + \cdots - 26.3254u + 5.19580\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{175307}{36185}u^{18} + \frac{1123384}{36185}u^{17} + \cdots - \frac{2188741}{36185}u + \frac{386871}{36185}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{19} - 11u^{18} + \cdots - 575u + 125$
c_2, c_{11}	$u^{19} + u^{18} + \cdots + 3u + 1$
c_3, c_8	$u^{19} + u^{18} + \cdots + 2u + 1$
c_4, c_7	$u^{19} + 4u^{17} + \cdots + 4u + 1$
c_5	$u^{19} + 3u^{18} + \cdots - 30u - 7$
c_6	$u^{19} - 7u^{18} + \cdots - 7u + 1$
c_9, c_{10}	$u^{19} + 7u^{18} + \cdots - 7u - 1$
c_{12}	$u^{19} - 3u^{18} + \cdots - 30u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{19} - 9y^{18} + \cdots + 103125y - 15625$
c_2, c_{11}	$y^{19} + 15y^{18} + \cdots + 7y - 1$
c_3, c_8	$y^{19} - 19y^{18} + \cdots - 6y - 1$
c_4, c_7	$y^{19} + 8y^{18} + \cdots + 22y - 1$
c_5, c_{12}	$y^{19} + 13y^{18} + \cdots - 206y - 49$
c_6, c_9, c_{10}	$y^{19} - 9y^{18} + \cdots - y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.030941 + 1.036600I$ $a = -0.057572 - 0.720594I$ $b = 0.733161 - 0.814685I$	$-4.91601 - 3.49525I$	$-0.97939 + 3.44758I$
$u = -0.030941 - 1.036600I$ $a = -0.057572 + 0.720594I$ $b = 0.733161 + 0.814685I$	$-4.91601 + 3.49525I$	$-0.97939 - 3.44758I$
$u = -1.11948$ $a = -0.394977$ $b = 0.937170$	3.52860	4.95410
$u = 0.404942 + 0.627084I$ $a = 0.12194 + 1.73383I$ $b = -0.129374 + 1.114130I$	$-1.79745 + 4.35854I$	$-0.0010 - 6.03173I$
$u = 0.404942 - 0.627084I$ $a = 0.12194 - 1.73383I$ $b = -0.129374 - 1.114130I$	$-1.79745 - 4.35854I$	$-0.0010 + 6.03173I$
$u = -1.297110 + 0.232714I$ $a = 0.062267 - 0.224578I$ $b = 0.005685 + 0.709074I$	$-0.109284 - 0.792626I$	$-1.36200 + 1.44719I$
$u = -1.297110 - 0.232714I$ $a = 0.062267 + 0.224578I$ $b = 0.005685 - 0.709074I$	$-0.109284 + 0.792626I$	$-1.36200 - 1.44719I$
$u = 1.360490 + 0.283318I$ $a = -0.530378 + 0.419990I$ $b = 0.422327 + 0.086336I$	$0.10891 + 7.90490I$	$4.83691 - 9.16857I$
$u = 1.360490 - 0.283318I$ $a = -0.530378 - 0.419990I$ $b = 0.422327 - 0.086336I$	$0.10891 - 7.90490I$	$4.83691 + 9.16857I$
$u = -0.191568 + 0.560311I$ $a = 1.06731 + 1.40164I$ $b = -0.994805 + 0.947251I$	$-5.82927 - 1.11371I$	$-3.17634 + 1.02276I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.191568 - 0.560311I$ $a = 1.06731 - 1.40164I$ $b = -0.994805 - 0.947251I$	$-5.82927 + 1.11371I$	$-3.17634 - 1.02276I$
$u = 1.42423 + 0.16239I$ $a = 0.746131 + 0.085376I$ $b = -0.405505 - 0.273306I$	$2.38680 - 1.23386I$	$2.53593 + 6.06239I$
$u = 1.42423 - 0.16239I$ $a = 0.746131 - 0.085376I$ $b = -0.405505 + 0.273306I$	$2.38680 + 1.23386I$	$2.53593 - 6.06239I$
$u = 0.97747 + 1.08905I$ $a = 0.509235 - 1.105650I$ $b = -0.53468 - 1.86527I$	$-10.59590 + 5.86698I$	$3.20212 - 2.48946I$
$u = 0.97747 - 1.08905I$ $a = 0.509235 + 1.105650I$ $b = -0.53468 + 1.86527I$	$-10.59590 - 5.86698I$	$3.20212 + 2.48946I$
$u = 1.14236 + 1.02230I$ $a = -0.807801 + 0.694310I$ $b = 0.19902 + 1.67365I$	$-10.09310 + 1.89591I$	$3.41811 - 1.70053I$
$u = 1.14236 - 1.02230I$ $a = -0.807801 - 0.694310I$ $b = 0.19902 - 1.67365I$	$-10.09310 - 1.89591I$	$3.41811 + 1.70053I$
$u = 0.269868 + 0.223025I$ $a = 1.08636 - 4.55418I$ $b = 0.735580 - 1.012370I$	$-5.46263 + 6.62471I$	$-0.45143 - 4.04109I$
$u = 0.269868 - 0.223025I$ $a = 1.08636 + 4.55418I$ $b = 0.735580 + 1.012370I$	$-5.46263 - 6.62471I$	$-0.45143 + 4.04109I$

III. $\boldsymbol{I_3^u = \langle 1.45\times 10^6 a^5u^6 - 1.81\times 10^6 a^4u^6 + \cdots - 3.84\times 10^6 a + 2.84\times 10^6,\ u^6a^5 - 2u^6a^4 + \cdots - 37a + 3,\ u^7 - 2u^6 + 2u^5 + u^4 - 2u^3 + 3u^2 - 2u + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} a \\ -0.209331a^5u^6 + 0.261676a^4u^6 + \cdots + 0.556698a - 0.411933 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 0.209331a^5u^6 - 0.261676a^4u^6 + \cdots + 0.443302a + 0.411933 \\ 0.0993729a^5u^6 - 0.219734a^4u^6 + \cdots + 0.219607a + 0.321828 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -0.0322938a^5u^6 + 0.0201516a^4u^6 + \cdots - 1.50291a - 0.470480 \\ -0.0322938a^5u^6 + 0.0201516a^4u^6 + \cdots - 1.50291a + 0.529520 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.209331a^5u^6 - 0.261676a^4u^6 + \cdots + 0.443302a + 0.411933 \\ -0.209331a^5u^6 + 0.261676a^4u^6 + \cdots + 0.556698a - 0.411933 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.00106654a^5u^6 - 0.272359a^4u^6 + \cdots + 1.67095a - 1.26789 \\ -0.00910831a^5u^6 + 0.0943514a^4u^6 + \cdots - 2.00070a + 2.42464 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.0637385a^5u^6 + 0.118112a^4u^6 + \cdots - 0.00769021a + 1.73068 \\ -0.0231855a^5u^6 - 0.0741997a^4u^6 + \cdots + 0.497788a - 2.89512 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -0.0322938a^5u^6 + 0.0201516a^4u^6 + \cdots - 1.50291a - 0.470480 \\ 0.0322938a^5u^6 - 0.0201516a^4u^6 + \cdots + 1.50291a + 0.470480 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{251624}{6906439}u^6a^5 - \frac{2606528}{6906439}u^6a^4 + \cdots + \frac{55270856}{6906439}a + \frac{8988269}{6906439}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^7+3u^6+3u^5-2u^4-6u^3-3u^2+3u+2)^6$
c_2, c_{11}	$u^{42}-3u^{41}+\cdots+3904u-211$
c_3, c_8	$u^{42}-24u^{40}+\cdots-18828u+2079$
c_4, c_7	$u^{42}+6u^{40}+\cdots-824u+37$
c_5, c_{12}	$(u^3+u^2+2u+1)^{14}$
c_6, c_9, c_{10}	$(u^7+2u^6+2u^5-u^4-2u^3-3u^2-2u-1)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^7 - 3y^6 + 9y^5 - 16y^4 + 30y^3 - 37y^2 + 21y - 4)^6$
c_2, c_{11}	$y^{42} + 49y^{41} + \cdots + 2545240y + 44521$
c_3, c_8	$y^{42} - 48y^{41} + \cdots - 47845242y + 4322241$
c_4, c_7	$y^{42} + 12y^{41} + \cdots - 687930y + 1369$
c_5, c_{12}	$(y^3 + 3y^2 + 2y - 1)^{14}$
c_6, c_9, c_{10}	$(y^7 + 4y^5 - y^4 - 6y^3 - 3y^2 - 2y - 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.17019$ $a=\ 0.868891$ $b=-0.539106$	2.29929	1.30030
$u=-1.17019$ $a=-0.528273+0.353145I$ $b=-0.596628+0.748519I$	$-1.83829-2.82812I$	$-5.22897+2.97945I$
$u=-1.17019$ $a=-0.528273-0.353145I$ $b=-0.596628-0.748519I$	$-1.83829+2.82812I$	$-5.22897-2.97945I$
$u=-1.17019$ $a=\ 0.556064$ $b=\ 0.255326$	2.29929	1.30030
$u=-1.17019$ $a=-1.12804+1.05290I$ $b=\ 0.926482-1.028530I$	$-1.83829-2.82812I$	$-5.22897+2.97945I$
$u=-1.17019$ $a=-1.12804-1.05290I$ $b=\ 0.926482+1.028530I$	$-1.83829+2.82812I$	$-5.22897-2.97945I$
$u=-0.011299+0.825523I$ $a=\ 0.714686-0.336755I$ $b=\ 2.48991-0.29670I$	$-6.79883-5.36696I$	$-4.37320+4.79030I$
$u=-0.011299+0.825523I$ $a=-0.31540+1.38661I$ $b=-0.43610+2.25720I$	$-6.79883+0.28928I$	$-4.37320-1.16859I$
$u=-0.011299+0.825523I$ $a=\ 0.28834-1.57933I$ $b=\ 0.376827-1.210580I$	$-2.66125-2.53884I$	$2.15607+1.81085I$
$u=-0.011299+0.825523I$ $a=-1.59987-0.21472I$ $b=\ 0.0550300+0.0998932I$	$-6.79883+0.28928I$	$-4.37320-1.16859I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.011299 + 0.825523I$ $a = 0.171890 + 0.180445I$ $b = -1.186770 - 0.129718I$	$-2.66125 - 2.53884I$	$2.15607 + 1.81085I$
$u = -0.011299 + 0.825523I$ $a = 0.13070 + 2.41689I$ $b = -0.225961 + 1.055410I$	$-6.79883 - 5.36696I$	$-4.37320 + 4.79030I$
$u = -0.011299 - 0.825523I$ $a = 0.714686 + 0.336755I$ $b = 2.48991 + 0.29670I$	$-6.79883 + 5.36696I$	$-4.37320 - 4.79030I$
$u = -0.011299 - 0.825523I$ $a = -0.31540 - 1.38661I$ $b = -0.43610 - 2.25720I$	$-6.79883 - 0.28928I$	$-4.37320 + 1.16859I$
$u = -0.011299 - 0.825523I$ $a = 0.28834 + 1.57933I$ $b = 0.376827 + 1.210580I$	$-2.66125 + 2.53884I$	$2.15607 - 1.81085I$
$u = -0.011299 - 0.825523I$ $a = -1.59987 + 0.21472I$ $b = 0.0550300 - 0.0998932I$	$-6.79883 - 0.28928I$	$-4.37320 + 1.16859I$
$u = -0.011299 - 0.825523I$ $a = 0.171890 - 0.180445I$ $b = -1.186770 + 0.129718I$	$-2.66125 + 2.53884I$	$2.15607 - 1.81085I$
$u = -0.011299 - 0.825523I$ $a = 0.13070 - 2.41689I$ $b = -0.225961 - 1.055410I$	$-6.79883 + 5.36696I$	$-4.37320 - 4.79030I$
$u = 0.542568 + 0.510771I$ $a = 0.001593 + 0.449134I$ $b = -1.304380 - 0.124427I$	$-5.00506 + 1.89516I$	$3.50931 - 6.19343I$
$u = 0.542568 + 0.510771I$ $a = -0.61501 + 1.50358I$ $b = 0.26483 + 1.53096I$	$-0.86748 + 4.72329I$	$10.03858 - 9.17288I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.542568 + 0.510771I$ $a = 0.60283 - 1.61972I$ $b = 0.36969 - 2.21523I$	$-5.00506 + 7.55141I$	$3.50931 - 12.15232I$
$u = 0.542568 + 0.510771I$ $a = -0.56538 - 1.75401I$ $b = 0.148437 - 0.129555I$	$-0.86748 + 4.72329I$	$10.03858 - 9.17288I$
$u = 0.542568 + 0.510771I$ $a = 1.61755 - 1.32277I$ $b = -0.558791 - 1.096730I$	$-5.00506 + 1.89516I$	$3.50931 - 6.19343I$
$u = 0.542568 + 0.510771I$ $a = 0.52210 + 3.07554I$ $b = 0.532763 + 0.178517I$	$-5.00506 + 7.55141I$	$3.50931 - 12.15232I$
$u = 0.542568 - 0.510771I$ $a = 0.001593 - 0.449134I$ $b = -1.304380 + 0.124427I$	$-5.00506 - 1.89516I$	$3.50931 + 6.19343I$
$u = 0.542568 - 0.510771I$ $a = -0.61501 - 1.50358I$ $b = 0.26483 - 1.53096I$	$-0.86748 - 4.72329I$	$10.03858 + 9.17288I$
$u = 0.542568 - 0.510771I$ $a = 0.60283 + 1.61972I$ $b = 0.36969 + 2.21523I$	$-5.00506 - 7.55141I$	$3.50931 + 12.15232I$
$u = 0.542568 - 0.510771I$ $a = -0.56538 + 1.75401I$ $b = 0.148437 + 0.129555I$	$-0.86748 - 4.72329I$	$10.03858 + 9.17288I$
$u = 0.542568 - 0.510771I$ $a = 1.61755 + 1.32277I$ $b = -0.558791 + 1.096730I$	$-5.00506 - 1.89516I$	$3.50931 + 6.19343I$
$u = 0.542568 - 0.510771I$ $a = 0.52210 - 3.07554I$ $b = 0.532763 - 0.178517I$	$-5.00506 - 7.55141I$	$3.50931 + 12.15232I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.05382 + 1.07114I$ $a = -0.636651 + 0.799114I$ $b = 0.05712 + 1.80415I$	$-7.70577 + 3.91715I$	$4.22349 - 3.00324I$
$u = 1.05382 + 1.07114I$ $a = 0.483361 - 1.033770I$ $b = -0.29586 - 1.71294I$	$-11.84340 + 6.74527I$	$-2.30577 - 5.98269I$
$u = 1.05382 + 1.07114I$ $a = 0.949402 - 0.634817I$ $b = 0.33592 - 2.21885I$	$-11.84340 + 1.08902I$	$-2.30577 - 0.02379I$
$u = 1.05382 + 1.07114I$ $a = -0.784649 + 0.847003I$ $b = 0.20283 + 1.45463I$	$-11.84340 + 1.08902I$	$-2.30577 - 0.02379I$
$u = 1.05382 + 1.07114I$ $a = 0.644337 - 0.975137I$ $b = -0.65087 - 1.65072I$	$-7.70577 + 3.91715I$	$4.22349 - 3.00324I$
$u = 1.05382 + 1.07114I$ $a = -0.665982 + 1.230780I$ $b = 1.13741 + 2.12047I$	$-11.84340 + 6.74527I$	$-2.30577 - 5.98269I$
$u = 1.05382 - 1.07114I$ $a = -0.636651 - 0.799114I$ $b = 0.05712 - 1.80415I$	$-7.70577 - 3.91715I$	$4.22349 + 3.00324I$
$u = 1.05382 - 1.07114I$ $a = 0.483361 + 1.033770I$ $b = -0.29586 + 1.71294I$	$-11.84340 - 6.74527I$	$-2.30577 + 5.98269I$
$u = 1.05382 - 1.07114I$ $a = 0.949402 + 0.634817I$ $b = 0.33592 + 2.21885I$	$-11.84340 - 1.08902I$	$-2.30577 + 0.02379I$
$u = 1.05382 - 1.07114I$ $a = -0.784649 - 0.847003I$ $b = 0.20283 - 1.45463I$	$-11.84340 - 1.08902I$	$-2.30577 + 0.02379I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.05382 - 1.07114I$ $a = 0.644337 + 0.975137I$ $b = -0.65087 + 1.65072I$	$-7.70577 - 3.91715I$	$4.22349 + 3.00324I$
$u = 1.05382 - 1.07114I$ $a = -0.665982 - 1.230780I$ $b = 1.13741 - 2.12047I$	$-11.84340 - 6.74527I$	$-2.30577 + 5.98269I$

IV.

$\boldsymbol{I^u_4 = \langle a^5 - 5a^4 + 5a^3 + 5a^2 + 7b - 10a - 2,\ a^6 - a^5 - a^4 + 4a^3 + 3a^2 - 1,\ u + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} a \\ -\frac{1}{7}a^5 + \frac{5}{7}a^4 + \cdots + \frac{10}{7}a + \frac{2}{7} \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} \frac{1}{7}a^5 - \frac{5}{7}a^4 + \cdots - \frac{10}{7}a - \frac{2}{7} \\ -\frac{2}{7}a^5 + \frac{10}{7}a^4 + \cdots + \frac{27}{7}a + \frac{4}{7} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{4}{7}a^5 - \frac{6}{7}a^4 + \cdots + \frac{2}{7}a - \frac{8}{7} \\ \frac{4}{7}a^5 - \frac{6}{7}a^4 + \cdots + \frac{2}{7}a - \frac{1}{7} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{7}a^5 - \frac{5}{7}a^4 + \cdots - \frac{3}{7}a - \frac{2}{7} \\ -\frac{1}{7}a^5 + \frac{5}{7}a^4 + \cdots + \frac{10}{7}a + \frac{2}{7} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{7}a^5 - \frac{5}{7}a^4 + \cdots - \frac{3}{7}a - \frac{2}{7} \\ -\frac{1}{7}a^5 + \frac{5}{7}a^4 + \cdots + \frac{10}{7}a + \frac{2}{7} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{2}{7}a^5 + \frac{3}{7}a^4 + \cdots + \frac{6}{7}a + \frac{4}{7} \\ \frac{3}{7}a^5 - \frac{1}{7}a^4 + \cdots + \frac{12}{7}a - \frac{6}{7} \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} \frac{4}{7}a^5 - \frac{6}{7}a^4 + \cdots + \frac{2}{7}a + \frac{6}{7} \\ -\frac{4}{7}a^5 + \frac{6}{7}a^4 + \cdots - \frac{2}{7}a - \frac{6}{7} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{4}{7}a^5 + \frac{20}{7}a^4 - \frac{20}{7}a^3 - \frac{20}{7}a^2 + \frac{40}{7}a + \frac{127}{7}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	u^6
c_2, c_{11}	$(u^3 - u^2 + 1)^2$
c_3, c_4, c_7 c_8	$u^6 - u^5 - u^4 + 4u^3 + 3u^2 - 1$
c_5	$(u^3 - u^2 + 2u - 1)^2$
c_6	$(u + 1)^6$
c_9, c_{10}	$(u - 1)^6$
c_{12}	$(u^3 + u^2 + 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	y^6
c_2, c_{11}	$(y^3 - y^2 + 2y - 1)^2$
c_3, c_4, c_7 c_8	$y^6 - 3y^5 + 15y^4 - 24y^3 + 11y^2 - 6y + 1$
c_5, c_{12}	$(y^3 + 3y^2 + 2y - 1)^2$
c_6, c_9, c_{10}	$(y - 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-1.22142$ $b=\ \ 0.754878$	2.75839	20.0200
$u=-1.00000$ $a=-0.542287+0.460350I$ $b=-0.877439+0.744862I$	$-1.37919-2.82812I$	$13.49024+2.97945I$
$u=-1.00000$ $a=-0.542287-0.460350I$ $b=-0.877439-0.744862I$	$-1.37919+2.82812I$	$13.49024-2.97945I$
$u=-1.00000$ $a=\ \ 0.466540$ $b=\ \ 0.754878$	2.75839	20.0200
$u=-1.00000$ $a=\ \ 1.41973+1.20521I$ $b=-0.877439-0.744862I$	$-1.37919+2.82812I$	$13.49024-2.97945I$
$u=-1.00000$ $a=\ \ 1.41973-1.20521I$ $b=-0.877439+0.744862I$	$-1.37919-2.82812I$	$13.49024+2.97945I$

V. $I_1^v = \langle a,\ b^3 + b^2 - 1,\ v - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4b + 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = -0.877439 + 0.744862I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$v = 1.00000$ $a = 0$ $b = -0.877439 - 0.744862I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$v = 1.00000$ $a = 0$ $b = 0.754878$	1.11345	9.01950

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^9(u^7+3u^6+3u^5-2u^4-6u^3-3u^2+3u+2)^6$ $\cdot(u^{19}-11u^{18}+\cdots-575u+125)(u^{25}-24u^{24}+\cdots-1246u+85)$
c_2, c_{11}	$((u^3-u^2+1)^2)(u^3+u^2-1)(u^{19}+u^{18}+\cdots+3u+1)$ $\cdot(u^{25}+18u^{23}+\cdots+10u+1)(u^{42}-3u^{41}+\cdots+3904u-211)$
c_3, c_8	$(u^3+u^2-1)(u^6-u^5+\cdots+3u^2-1)(u^{19}+u^{18}+\cdots+2u+1)$ $\cdot(u^{25}-15u^{23}+\cdots-u-1)(u^{42}-24u^{40}+\cdots-18828u+2079)$
c_4, c_7	$(u^3+u^2-1)(u^6-u^5+\cdots+3u^2-1)(u^{19}+4u^{17}+\cdots+4u+1)$ $\cdot(u^{25}-u^{24}+\cdots+u-1)(u^{42}+6u^{40}+\cdots-824u+37)$
c_5	$((u^3-u^2+2u-1)^3)(u^3+u^2+2u+1)^{14}(u^{19}+3u^{18}+\cdots-30u-7)$ $\cdot(u^{25}-15u^{24}+\cdots-768u+64)$
c_6	$u^3(u+1)^6(u^7+2u^6+2u^5-u^4-2u^3-3u^2-2u-1)^6$ $\cdot(u^{19}-7u^{18}+\cdots-7u+1)(u^{25}-14u^{24}+\cdots+802u-85)$
c_9, c_{10}	$u^3(u-1)^6(u^7+2u^6+2u^5-u^4-2u^3-3u^2-2u-1)^6$ $\cdot(u^{19}+7u^{18}+\cdots-7u-1)(u^{25}-14u^{24}+\cdots+802u-85)$
c_{12}	$(u^3-u^2+2u-1)(u^3+u^2+2u+1)^{16}(u^{19}-3u^{18}+\cdots-30u+7)$ $\cdot(u^{25}-15u^{24}+\cdots-768u+64)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^9(y^7 - 3y^6 + 9y^5 - 16y^4 + 30y^3 - 37y^2 + 21y - 4)^6$ $\cdot (y^{19} - 9y^{18} + \cdots + 103125y - 15625)$ $\cdot (y^{25} - 12y^{24} + \cdots - 5534y - 7225)$
c_2, c_{11}	$((y^3 - y^2 + 2y - 1)^3)(y^{19} + 15y^{18} + \cdots + 7y - 1)$ $\cdot (y^{25} + 36y^{24} + \cdots + 36y - 1)(y^{42} + 49y^{41} + \cdots + 2545240y + 44521)$
c_3, c_8	$(y^3 - y^2 + 2y - 1)(y^6 - 3y^5 + 15y^4 - 24y^3 + 11y^2 - 6y + 1)$ $\cdot (y^{19} - 19y^{18} + \cdots - 6y - 1)(y^{25} - 30y^{24} + \cdots + 15y - 1)$ $\cdot (y^{42} - 48y^{41} + \cdots - 47845242y + 4322241)$
c_4, c_7	$(y^3 - y^2 + 2y - 1)(y^6 - 3y^5 + 15y^4 - 24y^3 + 11y^2 - 6y + 1)$ $\cdot (y^{19} + 8y^{18} + \cdots + 22y - 1)(y^{25} + 9y^{24} + \cdots + 3y - 1)$ $\cdot (y^{42} + 12y^{41} + \cdots - 687930y + 1369)$
c_5, c_{12}	$((y^3 + 3y^2 + 2y - 1)^{17})(y^{19} + 13y^{18} + \cdots - 206y - 49)$ $\cdot (y^{25} + 13y^{24} + \cdots + 30720y - 4096)$
c_6, c_9, c_{10}	$y^3(y - 1)^6(y^7 + 4y^5 - y^4 - 6y^3 - 3y^2 - 2y - 1)^6$ $\cdot (y^{19} - 9y^{18} + \cdots - y - 1)(y^{25} - 8y^{24} + \cdots + 28824y - 7225)$