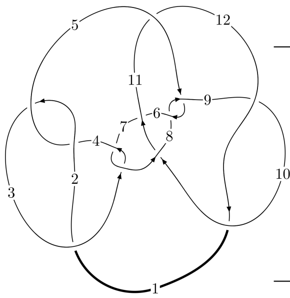
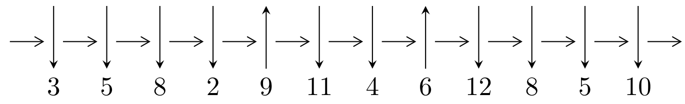
$12n_{0228}$ ($K12n_{0228}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-9861446311968u^{17} + 13967634545632u^{16} + \cdots + 5212485204695b - 26164458415624,\\
&-35356917620792u^{17} + 9192459205168u^{16} + \cdots + 5212485204695a + 53817437592104,\\
&u^{18} - u^{17} + \cdots - u - 1\rangle\\
I_2^u = \langle &u^8 + u^6 + 2u^4 + u^2 + b + u,\ u^8 + u^7 + 3u^6 + u^5 + 4u^4 + u^3 + 4u^2 + a + 2,\\
&u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1\rangle\\
I_3^u = \langle &-1.81728 \times 10^{21}u^{17} + 1.12182 \times 10^{21}u^{16} + \cdots + 3.70892 \times 10^{24}b - 2.85100 \times 10^{23},\\
&6.07558 \times 10^{21}u^{17} - 6.65651 \times 10^{21}u^{16} + \cdots + 3.70892 \times 10^{24}a - 7.70911 \times 10^{24},\\
&u^{18} - u^{17} + \cdots - 1024u + 512\rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v = \langle &a,\ 16726v^8 + 41423v^7 + \cdots + 11959b + 26601,\\
&v^9 + 3v^8 - 2v^7 + 6v^6 + 25v^5 + 11v^4 - 9v^3 - 2v^2 + 3v + 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 54 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.

$\boldsymbol{I_1^u = \langle -9.86\times 10^{12}u^{17}+1.40\times 10^{13}u^{16}+\cdots+5.21\times 10^{12}b-2.62\times 10^{13},\ -3.54\times 10^{13}u^{17}+9.19\times 10^{12}u^{16}+\cdots+5.21\times 10^{12}a+5.38\times 10^{13},\ u^{18}-u^{17}+\cdots-u-1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 6.78312u^{17} - 1.76355u^{16} + \cdots - 14.7181u - 10.3247 \\ 1.89189u^{17} - 2.67965u^{16} + \cdots + 10.8027u + 5.01957 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -5.01957u^{17} + 3.12769u^{16} + \cdots + 3.54160u - 5.78312 \\ 0.787760u^{17} + 0.523498u^{16} + \cdots - 6.91146u - 1.89189 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -4.23181u^{17} + 3.65118u^{16} + \cdots - 3.36987u - 7.67501 \\ 0.787760u^{17} + 0.523498u^{16} + \cdots - 6.91146u - 1.89189 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 8.67501u^{17} - 4.44320u^{16} + \cdots - 3.91541u - 5.30514 \\ 0.580631u^{17} - 1.87796u^{16} + \cdots + 11.9068u + 4.23181 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.182502u^{17} - 1.66573u^{16} + \cdots + 14.4199u + 6.60470 \\ -0.872414u^{17} + 0.452638u^{16} + \cdots + 1.36048u - 0.117197 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 9.81987u^{17} - 10.3086u^{16} + \cdots + 26.3092u + 18.8999 \\ -2.15014u^{17} - 0.0100325u^{16} + \cdots + 10.2859u + 1.01350 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 8.04847u^{17} - 1.60224u^{16} + \cdots - 21.8507u - 13.9296 \\ 2.27885u^{17} - 3.00234u^{16} + \cdots + 11.9846u + 5.66748 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.307849u^{17} + 0.749387u^{16} + \cdots - 5.26730u - 4.18442 \\ 0.509570u^{17} - 0.575614u^{16} + \cdots + 2.09902u + 1.31126 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 7.61379u^{17} - 7.71164u^{16} + \cdots + 21.1440u + 12.3571 \\ -1.42846u^{17} + 0.0464712u^{16} + \cdots + 7.41181u + 0.689913 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{33036266987992}{5212485204695}u^{17} - \frac{83885068578828}{5212485204695}u^{16} + \cdots + \frac{600947759550584}{5212485204695}u - \frac{154008499337594}{5212485204695}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} + 11u^{17} + \cdots + 3u + 1$
c_2, c_4, c_9 c_{12}	$u^{18} - 7u^{17} + \cdots - u + 1$
c_3, c_6, c_7	$u^{18} + u^{17} + \cdots + u - 1$
c_5, c_8	$u^{18} + u^{17} + \cdots + 3u - 1$
c_{10}	$u^{18} - 3u^{17} + \cdots + 517u - 1$
c_{11}	$u^{18} - 5u^{17} + \cdots + 77u - 23$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} + 41y^{17} + \cdots - 47y + 1$
c_2, c_4, c_9 c_{12}	$y^{18} - 11y^{17} + \cdots - 3y + 1$
c_3, c_6, c_7	$y^{18} + 21y^{17} + \cdots - 7y + 1$
c_5, c_8	$y^{18} + 13y^{17} + \cdots - 43y + 1$
c_{10}	$y^{18} + 29y^{17} + \cdots - 268915y + 1$
c_{11}	$y^{18} + y^{17} + \cdots - 5331y + 529$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.557323 + 0.726879I$ $a = -0.078908 - 0.132094I$ $b = 0.467481 - 0.634184I$	$-5.49927 + 7.93492I$	$-11.8455 - 13.1993I$
$u = -0.557323 - 0.726879I$ $a = -0.078908 + 0.132094I$ $b = 0.467481 + 0.634184I$	$-5.49927 - 7.93492I$	$-11.8455 + 13.1993I$
$u = -0.781322 + 0.060789I$ $a = -1.67426 - 2.33250I$ $b = -0.456133 - 1.317030I$	$-3.91966 - 2.10303I$	$-13.59813 + 2.08848I$
$u = -0.781322 - 0.060789I$ $a = -1.67426 + 2.33250I$ $b = -0.456133 + 1.317030I$	$-3.91966 + 2.10303I$	$-13.59813 - 2.08848I$
$u = 0.136626 + 0.709955I$ $a = 0.134891 + 0.049791I$ $b = -0.211757 - 0.707953I$	$0.64686 - 2.83787I$	$0.86568 + 9.86296I$
$u = 0.136626 - 0.709955I$ $a = 0.134891 - 0.049791I$ $b = -0.211757 + 0.707953I$	$0.64686 + 2.83787I$	$0.86568 - 9.86296I$
$u = 0.367491 + 0.554636I$ $a = -0.073321 + 0.530685I$ $b = -0.571171 - 0.676106I$	$-0.53975 - 1.77290I$	$-3.88757 + 3.00933I$
$u = 0.367491 - 0.554636I$ $a = -0.073321 - 0.530685I$ $b = -0.571171 + 0.676106I$	$-0.53975 + 1.77290I$	$-3.88757 - 3.00933I$
$u = 0.344494 + 0.511075I$ $a = 2.56907 - 7.38757I$ $b = 1.89070 + 1.44645I$	$-5.78192 + 0.83339I$	$-4.3200 + 13.4737I$
$u = 0.344494 - 0.511075I$ $a = 2.56907 + 7.38757I$ $b = 1.89070 - 1.44645I$	$-5.78192 - 0.83339I$	$-4.3200 - 13.4737I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.604129$ $a = 1.66056$ $b = 0.00192836$	-1.09450	-7.23730
$u = -0.318928$ $a = -11.2006$ $b = -0.820343$	-3.03100	-72.2820
$u = 0.74883 + 1.97520I$ $a = 0.448418 - 0.789734I$ $b = 0.08933 + 1.98953I$	$9.51613 - 3.71804I$	$-9.22156 + 1.51475I$
$u = 0.74883 - 1.97520I$ $a = 0.448418 + 0.789734I$ $b = 0.08933 - 1.98953I$	$9.51613 + 3.71804I$	$-9.22156 - 1.51475I$
$u = -0.83783 + 2.05810I$ $a = -0.421019 - 0.873213I$ $b = -0.68580 + 2.47962I$	$13.3797 + 9.0997I$	$-6.48039 - 4.12934I$
$u = -0.83783 - 2.05810I$ $a = -0.421019 + 0.873213I$ $b = -0.68580 - 2.47962I$	$13.3797 - 9.0997I$	$-6.48039 + 4.12934I$
$u = 0.93643 + 2.07951I$ $a = 0.365142 - 0.919671I$ $b = 1.38656 + 2.51311I$	$9.0651 - 14.3484I$	$-9.75296 + 6.52825I$
$u = 0.93643 - 2.07951I$ $a = 0.365142 + 0.919671I$ $b = 1.38656 - 2.51311I$	$9.0651 + 14.3484I$	$-9.75296 - 6.52825I$

II. $\boldsymbol{I_2^u = \langle u^8 + u^6 + 2u^4 + u^2 + b + u,\ u^8 + u^7 + 3u^6 + u^5 + 4u^4 + u^3 + 4u^2 + a + 2,\ u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^8 - u^7 - 3u^6 - u^5 - 4u^4 - u^3 - 4u^2 - 2 \\ -u^8 - u^6 - 2u^4 - u^2 - u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^8 - u^7 - 3u^6 - u^5 - 4u^4 - u^3 - 4u^2 - 2 \\ -u^8 - u^6 - 2u^4 - u^2 - u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^8 + u^6 + u^4 - 1 \\ u^8 + u^7 + u^6 + 2u^5 + u^4 + 2u^3 + 2u - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^8 - u^7 - 3u^6 - u^5 - 5u^4 - u^3 - 5u^2 - 3 \\ -u^8 - u^6 - 3u^4 - u^2 - u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^4 - u^2 - 1 \\ -u^4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^8 + 5u^6 + u^5 + 9u^4 + 5u^2 + 4u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_7	u^9
c_4	$(u+1)^9$
c_5	$u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1$
c_6	$u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1$
c_8	$u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1$
c_9	$u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1$
c_{10}	$u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1$
c_{11}	$u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1$
c_{12}	$u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_7	y^9
c_5, c_8	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_6, c_{10}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_9, c_{12}	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_{11}	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.140343 + 0.966856I$ $a = 0.483566 + 0.305056I$ $b = -0.525305 - 0.147929I$	$0.13850 - 2.09337I$	$-6.02684 + 1.69698I$
$u = 0.140343 - 0.966856I$ $a = 0.483566 - 0.305056I$ $b = -0.525305 + 0.147929I$	$0.13850 + 2.09337I$	$-6.02684 - 1.69698I$
$u = 0.628449 + 0.875112I$ $a = -1.022450 + 0.246780I$ $b = 0.107759 - 1.216140I$	$-2.26187 - 2.45442I$	$-8.53903 + 2.82066I$
$u = 0.628449 - 0.875112I$ $a = -1.022450 - 0.246780I$ $b = 0.107759 + 1.216140I$	$-2.26187 + 2.45442I$	$-8.53903 - 2.82066I$
$u = -0.796005 + 0.733148I$ $a = 1.23246 + 1.62704I$ $b = 2.01751 - 1.28212I$	$-6.01628 - 1.33617I$	$-16.4774 + 4.4812I$
$u = -0.796005 - 0.733148I$ $a = 1.23246 - 1.62704I$ $b = 2.01751 + 1.28212I$	$-6.01628 + 1.33617I$	$-16.4774 - 4.4812I$
$u = -0.728966 + 0.986295I$ $a = -0.411691 + 0.129409I$ $b = 0.367799 + 0.534872I$	$-5.24306 + 7.08493I$	$-9.02021 - 2.94778I$
$u = -0.728966 - 0.986295I$ $a = -0.411691 - 0.129409I$ $b = 0.367799 - 0.534872I$	$-5.24306 - 7.08493I$	$-9.02021 + 2.94778I$
$u = 0.512358$ $a = -3.56378$ $b = -0.935531$	-2.84338	-3.87310

III. $I_3^u = \langle -1.82 \times 10^{21}u^{17} + 1.12 \times 10^{21}u^{16} + \cdots + 3.71 \times 10^{24}b - 2.85 \times 10^{23},\ 6.08 \times 10^{21}u^{17} - 6.66 \times 10^{21}u^{16} + \cdots + 3.71 \times 10^{24}a - 7.71 \times 10^{24},\ u^{18} - u^{17} + \cdots - 1024u + 512 \rangle$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.00163810u^{17} + 0.00179473u^{16} + \cdots - 2.49995u + 2.07853 \\ 0.000489974u^{17} - 0.000302464u^{16} + \cdots - 1.00081u + 0.0768688 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -0.000647148u^{17} + 0.00137895u^{16} + \cdots - 2.62281u - 0.193950 \\ -0.000380983u^{17} + 0.000549244u^{16} + \cdots - 1.73916u + 0.608978 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.00102813u^{17} + 0.00192819u^{16} + \cdots - 4.36197u + 0.415028 \\ -0.000380983u^{17} + 0.000549244u^{16} + \cdots - 1.73916u + 0.608978 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.00322523u^{17} + 0.00350611u^{16} + \cdots - 2.41456u + 1.38902 \\ -0.0000152880u^{17} + 0.000660040u^{16} + \cdots - 2.70270u + 0.0251916 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.00137194u^{17} + 0.000914778u^{16} + \cdots + 3.57480u - 0.897464 \\ -0.000606358u^{17} + 0.000539657u^{16} + \cdots + 0.359893u - 0.400830 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.00177283u^{17} + 0.00280042u^{16} + \cdots - 7.34159u + 0.997270 \\ -0.000412612u^{17} + 0.000733802u^{16} + \cdots - 2.73715u + 0.865009 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.000957173u^{17} + 0.00142033u^{16} + \cdots - 4.42822u + 2.32273 \\ 0.000900583u^{17} - 0.000630850u^{16} + \cdots - 1.88345u + 0.230042 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.00197317u^{17} - 0.00315915u^{16} + \cdots + 8.61298u - 1.34243 \\ 0.000666946u^{17} - 0.000742761u^{16} + \cdots + 3.18723u - 1.06981 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.00115375u^{17} + 0.00192948u^{16} + \cdots - 2.60407u + 0.0364046 \\ -0.000390462u^{17} + 0.000755167u^{16} + \cdots - 1.28059u + 0.391978 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{335010846082545701}{542874601956974270032}u^{17} + \frac{62587569732089869}{434299681565579416025 6}u^{16} + \cdots + \frac{240047666391711939473}{67859325244621783754}u - \frac{317868067795007140580}{33929662622310891877}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} - 10u^{17} + \cdots + 18u + 1$
c_2, c_4, c_9 c_{12}	$u^{18} - 4u^{17} + \cdots - 9u^2 + 1$
c_3, c_6, c_7	$u^{18} + u^{17} + \cdots + 1024u + 512$
c_5, c_8	$(u^9 + u^8 + 4u^7 + 3u^6 + 5u^5 + 3u^4 - 3u - 1)^2$
c_{10}	$u^{18} + 4u^{17} + \cdots + 1179u - 199$
c_{11}	$u^{18} - 3u^{17} + \cdots + 3241u + 1303$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} + 38y^{17} + \cdots - 206y + 1$
c_2, c_4, c_9 c_{12}	$y^{18} + 10y^{17} + \cdots - 18y + 1$
c_3, c_6, c_7	$y^{18} + 39y^{17} + \cdots - 262144y + 262144$
c_5, c_8	$(y^9 + 7y^8 + 20y^7 + 25y^6 + y^5 - 31y^4 - 24y^3 + 6y^2 + 9y - 1)^2$
c_{10}	$y^{18} + 40y^{17} + \cdots - 5352529y + 39601$
c_{11}	$y^{18} + 33y^{17} + \cdots - 7027677y + 1697809$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.595275 + 1.147110I$ $a = -0.404894 - 0.038279I$ $b = -1.081020 + 0.780899I$	$0.11314 + 3.86354I$	$-7.87583 - 4.20503I$
$u = \quad 0.595275 - 1.147110I$ $a = -0.404894 + 0.038279I$ $b = -1.081020 - 0.780899I$	$0.11314 - 3.86354I$	$-7.87583 + 4.20503I$
$u = -1.015350 + 0.875548I$ $a = -0.464440 - 0.716594I$ $b = -1.196010 + 0.177321I$	$-4.49282 - 1.55423I$	$-10.08319 + 1.78109I$
$u = -1.015350 - 0.875548I$ $a = -0.464440 + 0.716594I$ $b = -1.196010 - 0.177321I$	$-4.49282 + 1.55423I$	$-10.08319 - 1.78109I$
$u = \quad 0.606622$ $a = \quad 1.43188$ $b = \quad 0.0937213$	-1.08370	-8.12940
$u = -0.200843 + 0.459012I$ $a = -0.29240 - 2.26629I$ $b = \quad 0.647304 - 0.435564I$	$-4.49282 - 1.55423I$	$-10.08319 + 1.78109I$
$u = -0.200843 - 0.459012I$ $a = -0.29240 + 2.26629I$ $b = \quad 0.647304 + 0.435564I$	$-4.49282 + 1.55423I$	$-10.08319 - 1.78109I$
$u = \quad 0.433195$ $a = \quad 2.00512$ $b = -0.230345$	-1.08370	-8.12940
$u = -0.96197 + 1.32057I$ $a = \quad 0.120599 + 0.165555I$ $b = \quad 1.28388 + 0.87865I$	3.85626	$-3.50861 + 0.I$
$u = -0.96197 - 1.32057I$ $a = \quad 0.120599 - 0.165555I$ $b = \quad 1.28388 - 0.87865I$	3.85626	$-3.50861 + 0.I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.52260 + 1.29705I$ $a = 0.082950 + 0.249345I$ $b = -1.52738 + 1.63332I$	$0.11314 - 3.86354I$	$-7.87583 + 4.20503I$
$u = 1.52260 - 1.29705I$ $a = 0.082950 - 0.249345I$ $b = -1.52738 - 1.63332I$	$0.11314 + 3.86354I$	$-7.87583 - 4.20503I$
$u = 0.15107 + 2.32872I$ $a = 0.021091 + 0.902669I$ $b = -0.76230 - 2.19908I$	$10.52390 - 4.99486I$	$-8.55415 + 3.07435I$
$u = 0.15107 - 2.32872I$ $a = 0.021091 - 0.902669I$ $b = -0.76230 + 2.19908I$	$10.52390 + 4.99486I$	$-8.55415 - 3.07435I$
$u = -0.12400 + 2.50290I$ $a = 0.042253 + 0.852894I$ $b = 0.38934 - 2.85319I$	14.5478	$-5.33565 + 0.I$
$u = -0.12400 - 2.50290I$ $a = 0.042253 - 0.852894I$ $b = 0.38934 + 2.85319I$	14.5478	$-5.33565 + 0.I$
$u = 0.01330 + 2.66058I$ $a = -0.073656 + 0.788510I$ $b = 0.31450 - 3.25798I$	$10.52390 + 4.99486I$	$-8.55415 - 3.07435I$
$u = 0.01330 - 2.66058I$ $a = -0.073656 - 0.788510I$ $b = 0.31450 + 3.25798I$	$10.52390 - 4.99486I$	$-8.55415 + 3.07435I$

IV.

$\boldsymbol{I_1^v = \langle a,\ 16726v^8 + 41423v^7 + \cdots + 11959b + 26601,\ v^9 + 3v^8 + \cdots + 3v + 1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0 \\ -1.39861v^8 - 3.46375v^7 + \cdots - 3.94598v - 2.22435 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 1 \\ -1.45213v^8 - 3.82515v^7 + \cdots - 3.73944v - 4.14098 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.45213v^8 - 3.82515v^7 + \cdots - 3.73944v - 3.14098 \\ -1.45213v^8 - 3.82515v^7 + \cdots - 3.73944v - 4.14098 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.39861v^8 - 3.46375v^7 + \cdots - 3.94598v - 2.22435 \\ -1.77239v^8 - 4.70666v^7 + \cdots - 2.34719v - 4.59520 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.240990v^8 - 0.883686v^7 + \cdots + 1.89882v - 1.13396 \\ 1.21114v^8 + 2.94147v^7 + \cdots + 5.63826v + 2.00702 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.920896v^8 + 2.25955v^7 + \cdots + 4.52404v + 1.68885 \\ 2.14408v^8 + 5.73234v^7 + \cdots + 5.36583v + 5.35212 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.759010v^8 - 2.11631v^7 + \cdots + 0.101179v - 1.86604 \\ 0.929844v^8 + 2.02935v^7 + \cdots + 6.16138v + 0.676478 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.45213v^8 + 3.82515v^7 + \cdots + 3.73944v + 3.14098 \\ 1.45213v^8 + 3.82515v^7 + \cdots + 3.73944v + 4.14098 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.531232v^8 - 1.56560v^7 + \cdots + 0.784597v - 1.45213 \\ 0.691947v^8 + 1.90718v^7 + \cdots + 1.62639v + 1.21114 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$$= -\frac{38011}{11959}v^8 - \frac{103132}{11959}v^7 + \frac{110061}{11959}v^6 - \frac{250712}{11959}v^5 - \frac{892353}{11959}v^4 - \frac{104528}{11959}v^3 + \frac{444297}{11959}v^2 - \frac{43711}{11959}v - \frac{188057}{11959}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1$
c_2	$u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1$
c_3	$u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1$
c_4	$u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1$
c_5	$u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1$
c_6	u^9
c_7	$u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1$
c_8	$u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1$
c_9	$(u-1)^9$
c_{10}	$u^9-3u^8+3u^7+2u^6+u^5+9u^4+3u^3+2u+1$
c_{11}	$u^9-2u^8+5u^7-22u^6+52u^5-63u^4+41u^3-10u^2-2u+1$
c_{12}	$(u+1)^9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$
c_2, c_4	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_3, c_7	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_5, c_8	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_6	y^9
c_9, c_{12}	$(y-1)^9$
c_{10}	$y^9 - 3y^8 + 23y^7 + 62y^6 - 13y^5 - 57y^4 + 9y^3 - 6y^2 + 4y - 1$
c_{11}	$y^9 + 6y^8 + \cdots + 24y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -1.022450 + 0.246780I$ $a = 0$ $b = -0.628449 - 0.875112I$	$-2.26187 - 2.45442I$	$-8.53903 + 2.82066I$
$v = -1.022450 - 0.246780I$ $a = 0$ $b = -0.628449 + 0.875112I$	$-2.26187 + 2.45442I$	$-8.53903 - 2.82066I$
$v = 0.483566 + 0.305056I$ $a = 0$ $b = -0.140343 - 0.966856I$	$0.13850 - 2.09337I$	$-6.02684 + 1.69698I$
$v = 0.483566 - 0.305056I$ $a = 0$ $b = -0.140343 + 0.966856I$	$0.13850 + 2.09337I$	$-6.02684 - 1.69698I$
$v = -0.411691 + 0.129409I$ $a = 0$ $b = 0.728966 - 0.986295I$	$-5.24306 + 7.08493I$	$-9.02021 - 2.94778I$
$v = -0.411691 - 0.129409I$ $a = 0$ $b = 0.728966 + 0.986295I$	$-5.24306 - 7.08493I$	$-9.02021 + 2.94778I$
$v = 1.23246 + 1.62704I$ $a = 0$ $b = 0.796005 - 0.733148I$	$-6.01628 - 1.33617I$	$-16.4774 + 4.4812I$
$v = 1.23246 - 1.62704I$ $a = 0$ $b = 0.796005 + 0.733148I$	$-6.01628 + 1.33617I$	$-16.4774 - 4.4812I$
$v = -3.56378$ $a = 0$ $b = -0.512358$	-2.84338	-3.87310

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^9(u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1)$ $\cdot(u^{18}-10u^{17}+\cdots+18u+1)(u^{18}+11u^{17}+\cdots+3u+1)$
c_2, c_9	$(u-1)^9(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{18}-7u^{17}+\cdots-u+1)(u^{18}-4u^{17}+\cdots-9u^2+1)$
c_3, c_6	$u^9(u^9+u^8+\cdots+u-1)(u^{18}+u^{17}+\cdots+u-1)$ $\cdot(u^{18}+u^{17}+\cdots+1024u+512)$
c_4, c_{12}	$(u+1)^9(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)$ $\cdot(u^{18}-7u^{17}+\cdots-u+1)(u^{18}-4u^{17}+\cdots-9u^2+1)$
c_5	$(u^9+u^8+4u^7+3u^6+5u^5+3u^4-3u-1)^2$ $\cdot(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)^2$ $\cdot(u^{18}+u^{17}+\cdots+3u-1)$
c_7	$u^9(u^9-u^8+\cdots+u+1)(u^{18}+u^{17}+\cdots+u-1)$ $\cdot(u^{18}+u^{17}+\cdots+1024u+512)$
c_8	$(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)^2$ $\cdot((u^9+u^8+\cdots-3u-1)^2)(u^{18}+u^{17}+\cdots+3u-1)$
c_{10}	$(u^9-3u^8+3u^7+2u^6+u^5+9u^4+3u^3+2u+1)$ $\cdot(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(u^{18}-3u^{17}+\cdots+517u-1)(u^{18}+4u^{17}+\cdots+1179u-199)$
c_{11}	$(u^9-2u^8+5u^7-22u^6+52u^5-63u^4+41u^3-10u^2-2u+1)$ $\cdot(u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1)$ $\cdot(u^{18}-5u^{17}+\cdots+77u-23)(u^{18}-3u^{17}+\cdots+3241u+1303)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^9(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^{18}+38y^{17}+\cdots-206y+1)(y^{18}+41y^{17}+\cdots-47y+1)$
c_2, c_4, c_9 c_{12}	$(y-1)^9(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{18}-11y^{17}+\cdots-3y+1)(y^{18}+10y^{17}+\cdots-18y+1)$
c_3, c_6, c_7	$y^9(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{18}+21y^{17}+\cdots-7y+1)(y^{18}+39y^{17}+\cdots-262144y+262144)$
c_5, c_8	$(y^9+7y^8+20y^7+25y^6+y^5-31y^4-24y^3+6y^2+9y-1)^2$ $\cdot(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)^2$ $\cdot(y^{18}+13y^{17}+\cdots-43y+1)$
c_{10}	$(y^9-3y^8+23y^7+62y^6-13y^5-57y^4+9y^3-6y^2+4y-1)$ $\cdot(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{18}+29y^{17}+\cdots-268915y+1)$ $\cdot(y^{18}+40y^{17}+\cdots-5352529y+39601)$
c_{11}	$(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^9+6y^8+\cdots+24y-1)(y^{18}+y^{17}+\cdots-5331y+529)$ $\cdot(y^{18}+33y^{17}+\cdots-7027677y+1697809)$