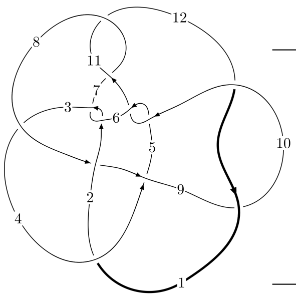
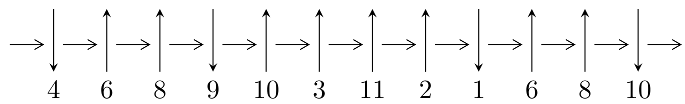
$12n_{0739}$ ($K12n_{0739}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -207u^{14} - 5485u^{13} + \cdots + 7505b + 493,\ 207u^{14} + 5485u^{13} + \cdots + 7505a + 7012, \\
& u^{15} + u^{14} + 2u^{13} - u^{12} + 5u^{11} + u^{10} + 3u^9 - 10u^8 - 3u^7 - 5u^6 + 2u^5 + u^4 + 5u^3 + 4u^2 + 2u + 1\rangle \\
I_2^u = \langle & -u^8 + 2u^7 - 5u^6 + 4u^5 - 6u^4 - 2u^2 + b - 2u - 1,\ u^8 - 2u^7 + 5u^6 - 4u^5 + 6u^4 + 2u^2 + a + 2u + 2, \\
& u^9 - 2u^8 + 5u^7 - 4u^6 + 6u^5 + 2u^3 + 3u^2 + u + 1\rangle \\
I_3^u = \langle & -2u^{13} - 15u^{12} + \cdots + 13b - 30,\ 7u^{13} + 7u^{12} + \cdots + 13a + 66, \\
& u^{14} - 5u^{13} + 11u^{12} - 14u^{11} + 14u^{10} - 15u^9 + 14u^8 - 4u^7 - 10u^6 + 16u^5 - 9u^4 - u^3 + 5u^2 - 3u + 1\rangle \\
I_4^u = \langle & -76424u^{13} - 364211u^{12} + \cdots + 631945b - 2212876, \\
& -4229u^{13} + 600365u^{12} + \cdots + 1390279a + 2943530, \\
& u^{14} + 3u^{13} + 7u^{12} + 10u^{11} + 18u^{10} + 23u^9 + 42u^8 + 42u^7 + 66u^6 + 52u^5 + 73u^4 + 49u^3 + 53u^2 + 25u + 11\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 52 representations.

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I_1^u = \langle -207u^{14} - 5485u^{13} + \cdots + 7505b + 493,\ 207u^{14} + 5485u^{13} + \cdots + 7505a + 7012,\ u^{15} + u^{14} + \cdots + 2u + 1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0275816u^{14} - 0.730846u^{13} + \cdots - 1.43198u - 0.934310 \\ 0.0275816u^{14} + 0.730846u^{13} + \cdots + 1.43198u - 0.0656895 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.469420u^{14} - 0.646236u^{13} + \cdots - 1.43411u - 1.70326 \\ -0.114457u^{14} + 0.107262u^{13} + \cdots + 0.820919u - 0.592139 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -1 \\ 0.0275816u^{14} + 0.730846u^{13} + \cdots + 1.43198u - 0.0656895 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ 0.703264u^{14} + 0.233844u^{13} + \cdots + 0.879147u - 0.0275816 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.469420u^{14} + 0.646236u^{13} + \cdots + 1.43411u + 1.70326 \\ 0.526449u^{14} + 0.384410u^{13} + \cdots + 0.114724u + 0.441839 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.956163u^{14} + 1.00266u^{13} + \cdots + 1.30859u + 1.05610 \\ 1.60773u^{14} + 1.71686u^{13} + \cdots + 3.41186u + 1.48981 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.956163u^{14} - 1.00266u^{13} + \cdots - 1.30859u - 1.05610 \\ -1.28408u^{14} - 1.24717u^{13} + \cdots - 2.22212u - 2.05290 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1.29167u^{14} - 2.15856u^{13} + \cdots - 2.76136u - 2.23771 \\ -2.06236u^{14} - 2.95670u^{13} + \cdots - 5.58534u - 3.93844 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{35}{79}u^{14} + \frac{171}{79}u^{13} + \frac{116}{79}u^{12} + \frac{181}{79}u^{11} - \frac{11}{79}u^{10} + \frac{938}{79}u^9 - \frac{137}{79}u^8 + \frac{16}{79}u^7 - \frac{1203}{79}u^6 + \frac{527}{79}u^5 - \frac{733}{79}u^4 - \frac{134}{79}u^3 + \frac{108}{79}u^2 + \frac{589}{79}u + \frac{878}{79}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9, c_{12}	$u^{15} - u^{14} + \cdots + 2u - 1$
c_2, c_6, c_7 c_{11}	$u^{15} - u^{14} + \cdots + 2u - 1$
c_3, c_5, c_{10}	$u^{15} - 19u^{13} + \cdots + 17u - 19$
c_4	$u^{15} - 17u^{14} + \cdots + 1568u - 192$
c_8	$u^{15} - 4u^{13} + \cdots + 19u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^{15} + 3y^{14} + \cdots - 4y - 1$
c_2, c_6, c_7 c_{11}	$y^{15} - 25y^{14} + \cdots - 6y - 1$
c_3, c_5, c_{10}	$y^{15} - 38y^{14} + \cdots - 1383y - 361$
c_4	$y^{15} - 7y^{14} + \cdots + 13312y - 36864$
c_8	$y^{15} - 8y^{14} + \cdots + 429y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.024810 + 0.188590I$ $a = -0.520621 + 0.399007I$ $b = -0.479379 - 0.399007I$	$-3.38414 - 1.11532I$	$-1.09725 + 5.91782I$
$u = 1.024810 - 0.188590I$ $a = -0.520621 - 0.399007I$ $b = -0.479379 + 0.399007I$	$-3.38414 + 1.11532I$	$-1.09725 - 5.91782I$
$u = -0.616853 + 0.694024I$ $a = 1.43371 + 1.08009I$ $b = -2.43371 - 1.08009I$	$17.2214 + 1.0755I$	$8.97418 - 5.44707I$
$u = -0.616853 - 0.694024I$ $a = 1.43371 - 1.08009I$ $b = -2.43371 + 1.08009I$	$17.2214 - 1.0755I$	$8.97418 + 5.44707I$
$u = -0.669725 + 0.976114I$ $a = -0.085207 - 1.287120I$ $b = -0.91479 + 1.28712I$	$5.33694 + 6.98165I$	$12.1571 - 8.1173I$
$u = -0.669725 - 0.976114I$ $a = -0.085207 + 1.287120I$ $b = -0.91479 - 1.28712I$	$5.33694 - 6.98165I$	$12.1571 + 8.1173I$
$u = 0.270838 + 0.767894I$ $a = 0.37558 + 1.44892I$ $b = -1.37558 - 1.44892I$	$3.91615 - 2.51478I$	$13.05838 + 5.04064I$
$u = 0.270838 - 0.767894I$ $a = 0.37558 - 1.44892I$ $b = -1.37558 + 1.44892I$	$3.91615 + 2.51478I$	$13.05838 - 5.04064I$
$u = -0.110943 + 0.581465I$ $a = -0.692244 - 0.824852I$ $b = -0.307756 + 0.824852I$	$0.987465 - 0.742979I$	$8.61024 + 4.51729I$
$u = -0.110943 - 0.581465I$ $a = -0.692244 + 0.824852I$ $b = -0.307756 - 0.824852I$	$0.987465 + 0.742979I$	$8.61024 - 4.51729I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.564042$ $a = -0.0861991$ $b = -0.913801$	1.42193	5.74330
$u = 0.89289 + 1.16102I$ $a = 0.326675 + 0.764222I$ $b = -1.32667 - 0.76422I$	$-2.15203 - 7.07899I$	$8.39813 - 1.67942I$
$u = 0.89289 - 1.16102I$ $a = 0.326675 - 0.764222I$ $b = -1.32667 + 0.76422I$	$-2.15203 + 7.07899I$	$8.39813 + 1.67942I$
$u = -1.00899 + 1.30137I$ $a = 0.20521 - 1.66144I$ $b = -1.20521 + 1.66144I$	$-19.3469 + 12.7789I$	$7.52759 - 4.91540I$
$u = -1.00899 - 1.30137I$ $a = 0.20521 + 1.66144I$ $b = -1.20521 - 1.66144I$	$-19.3469 - 12.7789I$	$7.52759 + 4.91540I$

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

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^8 + 2u^7 - 5u^6 + 4u^5 - 6u^4 - 2u^2 - 2u - 2 \\ u^8 - 2u^7 + 5u^6 - 4u^5 + 6u^4 + 2u^2 + 2u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 + u^2 - u - 1 \\ u^8 - 2u^7 + 5u^6 - 5u^5 + 7u^4 - 2u^3 + 2u^2 + u + 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -1 \\ u^8 - 2u^7 + 5u^6 - 4u^5 + 6u^4 + 2u^2 + 2u + 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ -u^2 + u - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^3 - u^2 + u + 1 \\ u^4 - 2u^3 + 3u^2 - 2u + 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^8 + 2u^7 - 4u^6 + 2u^5 - 2u^4 - 2u^3 - 2u - 1 \\ u^7 - 3u^6 + 7u^5 - 9u^4 + 10u^3 - 7u^2 + 4u - 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^8 - 2u^7 + 4u^6 - 2u^5 + 2u^4 + 2u^3 + 2u + 1 \\ -2u^8 + 5u^7 - 12u^6 + 13u^5 - 17u^4 + 9u^3 - 8u^2 - 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ -3u^8 + 8u^7 - 21u^6 + 26u^5 - 36u^4 + 22u^3 - 21u^2 + 2u - 5 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^8 + 3u^7 - 9u^6 - 2u^5 - 5u^4 - 9u^3 - 2u^2 - 3u + 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^9 + 6y^8 + 21y^7 + 48y^6 + 70y^5 + 62y^4 + 24y^3 - 5y^2 - 5y - 1$
c_2, c_6, c_7 c_{11}	$y^9 - 10y^8 + 21y^7 - 27y^6 + 34y^5 - 35y^4 + 19y^3 - 4y^2 + y - 1$
c_3, c_5, c_{10}	$y^9 - 15y^8 + 35y^7 - 2y^6 - 19y^5 - 50y^4 + 20y^3 - 4y^2 + 4y - 1$
c_4	$y^9 - 7y^8 + 15y^7 - 27y^6 + 28y^5 - 80y^4 + 79y^3 - 37y^2 - 14y - 1$
c_8	$y^9 - y^8 - 6y^7 - 18y^6 - 23y^5 - 35y^4 - 24y^3 - 18y^2 + 8y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.004662 + 1.194450I$ $a = -0.992070 + 0.357253I$ $b = -0.007930 - 0.357253I$	$8.02017 + 1.95166I$	$14.1693 - 3.5989I$
$u = 0.004662 - 1.194450I$ $a = -0.992070 - 0.357253I$ $b = -0.007930 + 0.357253I$	$8.02017 - 1.95166I$	$14.1693 + 3.5989I$
$u = 0.550956 + 1.082030I$ $a = -0.075345 + 0.348116I$ $b = -0.924655 - 0.348116I$	$0.27958 - 4.93472I$	$9.47602 + 5.23959I$
$u = 0.550956 - 1.082030I$ $a = -0.075345 - 0.348116I$ $b = -0.924655 + 0.348116I$	$0.27958 + 4.93472I$	$9.47602 - 5.23959I$
$u = -0.625063$ $a = -3.22490$ $b = 2.22490$	17.5031	10.0010
$u = -0.157854 + 0.553845I$ $a = -1.63380 - 1.11606I$ $b = 0.633803 + 1.116060I$	$3.35250 - 1.52704I$	$7.69508 - 0.35030I$
$u = -0.157854 - 0.553845I$ $a = -1.63380 + 1.11606I$ $b = 0.633803 - 1.116060I$	$3.35250 + 1.52704I$	$7.69508 + 0.35030I$
$u = 0.91477 + 1.20682I$ $a = 0.313669 + 0.680564I$ $b = -1.31367 - 0.68056I$	$-2.30953 - 7.37195I$	$-3.8408 + 19.6853I$
$u = 0.91477 - 1.20682I$ $a = 0.313669 - 0.680564I$ $b = -1.31367 + 0.68056I$	$-2.30953 + 7.37195I$	$-3.8408 - 19.6853I$

III. $\boldsymbol{I_3^u = \langle -2u^{13} - 15u^{12} + \cdots + 13b - 30,\ 7u^{13} + 7u^{12} + \cdots + 13a + 66,\ u^{14} - 5u^{13} + \cdots - 3u + 1 \rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} -0.538462u^{13} - 0.538462u^{12} + \cdots + 9.38462u - 5.07692 \\ 0.153846u^{13} + 1.15385u^{12} + \cdots - 3.53846u + 2.30769 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 2u^{13} - 11u^{12} + \cdots + 15u - 6 \\ 1.53846u^{13} - 5.46154u^{12} + \cdots + 0.615385u + 0.0769231 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.384615u^{13} + 0.615385u^{12} + \cdots + 5.84615u - 2.76923 \\ 0.153846u^{13} + 1.15385u^{12} + \cdots - 3.53846u + 2.30769 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1.53846u^{13} - 10.4615u^{12} + \cdots + 16.6154u - 5.92308 \\ -2.30769u^{13} + 9.69231u^{12} + \cdots - 4.92308u + 2.38462 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1.84615u^{13} - 10.1538u^{12} + \cdots + 8.53846u - 1.30769 \\ -3.84615u^{13} + 15.1538u^{12} + \cdots - 7.53846u + 2.30769 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.538462u^{13} - 3.53846u^{12} + \cdots + 18.3846u - 11.0769 \\ -3.92308u^{13} + 15.0769u^{12} + \cdots - 7.76923u + 3.15385 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -2.38462u^{13} + 12.6154u^{12} + \cdots - 16.1538u + 8.23077 \\ -1.92308u^{13} + 9.07692u^{12} + \cdots - 4.76923u + 2.15385 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 8.15385u^{13} - 39.8462u^{12} + \cdots + 32.4615u - 5.69231 \\ -5.30769u^{13} + 20.6923u^{12} + \cdots - 10.9231u + 2.38462 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{14}{13}u^{13} + \frac{53}{13}u^{12} - \frac{269}{13}u^{11} + \frac{439}{13}u^{10} - \frac{368}{13}u^9 + 31u^8 - \frac{493}{13}u^7 + \frac{366}{13}u^6 + \frac{223}{13}u^5 - \frac{557}{13}u^4 + \frac{432}{13}u^3 + \frac{69}{13}u^2 - \frac{179}{13}u + \frac{223}{13}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9	$u^{14} - 5u^{13} + \cdots - 3u + 1$
c_2, c_7	$u^{14} + 2u^{13} + \cdots + 5u + 1$
c_3, c_5	$u^{14} + 4u^{13} + \cdots + 11u^2 + 1$
c_4	$(u^7 + 4u^6 + 8u^5 + 8u^4 + 3u^3 - 2u^2 - 2u - 1)^2$
c_6, c_{11}	$u^{14} - 2u^{13} + \cdots - 5u + 1$
c_8	$u^{14} - 4u^{13} + \cdots + 2u + 1$
c_{10}	$u^{14} - 4u^{13} + \cdots + 11u^2 + 1$
c_{12}	$u^{14} + 5u^{13} + \cdots + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^{14} - 3y^{13} + \cdots + y + 1$
c_2, c_6, c_7 c_{11}	$y^{14} - 12y^{12} + \cdots + 9y + 1$
c_3, c_5, c_{10}	$y^{14} - 2y^{13} + \cdots + 22y + 1$
c_4	$(y^7 + 6y^5 - 4y^4 + 17y^3 - 1)^2$
c_8	$y^{14} - 6y^{13} + \cdots - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.824621 + 0.598672I$ $a = 0.235195 - 0.772341I$ $b = 0.88008 + 1.25705I$	$4.69297 - 5.82963I$	$8.36406 + 2.54601I$
$u = 0.824621 - 0.598672I$ $a = 0.235195 + 0.772341I$ $b = 0.88008 - 1.25705I$	$4.69297 + 5.82963I$	$8.36406 - 2.54601I$
$u = 0.339968 + 0.854890I$ $a = -0.69195 - 1.38631I$ $b = 1.134240 + 0.687214I$	$2.76370 - 1.55495I$	$7.48608 + 1.41640I$
$u = 0.339968 - 0.854890I$ $a = -0.69195 + 1.38631I$ $b = 1.134240 - 0.687214I$	$2.76370 + 1.55495I$	$7.48608 - 1.41640I$
$u = -0.748013 + 0.140438I$ $a = -0.487954 - 0.334328I$ $b = 1.134240 - 0.687214I$	$2.76370 + 1.55495I$	$7.48608 - 1.41640I$
$u = -0.748013 - 0.140438I$ $a = -0.487954 + 0.334328I$ $b = 1.134240 + 0.687214I$	$2.76370 - 1.55495I$	$7.48608 + 1.41640I$
$u = -0.629497 + 1.067390I$ $a = -0.12590 + 1.58483I$ $b = 0.88008 - 1.25705I$	$4.69297 + 5.82963I$	$8.36406 - 2.54601I$
$u = -0.629497 - 1.067390I$ $a = -0.12590 - 1.58483I$ $b = 0.88008 + 1.25705I$	$4.69297 - 5.82963I$	$8.36406 + 2.54601I$
$u = 1.120970 + 0.609039I$ $a = 0.083330 + 0.838972I$ $b = -0.627505$	-4.08865	$-8.17020 + 0.I$
$u = 1.120970 - 0.609039I$ $a = 0.083330 - 0.838972I$ $b = -0.627505$	-4.08865	$-8.17020 + 0.I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.251668 + 0.533254I$ $a = -0.22477 + 3.09190I$ $b = 0.299431 - 0.543268I$	$-2.12248 + 0.90211I$	$8.73496 - 3.41851I$
$u = 0.251668 - 0.533254I$ $a = -0.22477 - 3.09190I$ $b = 0.299431 + 0.543268I$	$-2.12248 - 0.90211I$	$8.73496 + 3.41851I$
$u = 1.34028 + 0.68122I$ $a = -0.287947 - 0.151238I$ $b = 0.299431 + 0.543268I$	$-2.12248 - 0.90211I$	$8.73496 + 3.41851I$
$u = 1.34028 - 0.68122I$ $a = -0.287947 + 0.151238I$ $b = 0.299431 - 0.543268I$	$-2.12248 + 0.90211I$	$8.73496 - 3.41851I$

IV.

$\boldsymbol{I_4^u = \langle -7.64\times10^4u^{13}-3.64\times10^5u^{12}+\cdots+6.32\times10^5b-2.21\times10^6,\ -4229u^{13}+ 6.00\times10^5u^{12}+\cdots+1.39\times10^6a+2.94\times10^6,\ u^{14}+3u^{13}+\cdots+25u+11\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.00304184u^{13} - 0.431831u^{12} + \cdots - 4.05446u - 2.11722 \\ 0.120935u^{13} + 0.576333u^{12} + \cdots + 4.32192u + 3.50169 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.490357u^{13} - 1.61139u^{12} + \cdots - 10.7230u - 3.46605 \\ 0.548984u^{13} + 0.861747u^{12} + \cdots + 2.23327u + 0.194632 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.123976u^{13} + 0.144503u^{12} + \cdots + 0.267462u + 1.38447 \\ 0.120935u^{13} + 0.576333u^{12} + \cdots + 4.32192u + 3.50169 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.178417u^{13} + 0.968921u^{12} + \cdots + 5.51717u + 5.22971 \\ -0.624988u^{13} - 1.57000u^{12} + \cdots - 10.0894u - 3.40664 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.971701u^{13} + 2.51608u^{12} + \cdots + 13.2352u + 3.59349 \\ -0.430484u^{13} + 0.0465183u^{12} + \cdots + 7.00827u + 5.54079 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2.52636u^{13} + 6.53620u^{12} + \cdots + 37.0653u + 15.1615 \\ -1.33212u^{13} - 0.597770u^{12} + \cdots + 9.52228u + 12.5691 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2.71551u^{13} + 6.94732u^{12} + \cdots + 41.5292u + 15.0912 \\ -1.26225u^{13} + 0.181940u^{12} + \cdots + 15.6077u + 14.8873 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -7.25391u^{13} - 14.2592u^{12} + \cdots - 59.7943u - 8.30265 \\ -0.388020u^{13} - 9.21642u^{12} + \cdots - 91.6224u - 59.4716 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{228962}{631945}u^{13} - \frac{1046983}{631945}u^{12} + \cdots - \frac{12407333}{631945}u - \frac{707243}{631945}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9, c_{12}	$u^{14} - 3u^{13} + \cdots - 25u + 11$
c_2, c_6, c_7 c_{11}	$u^{14} - 16u^{12} + \cdots + 129u + 67$
c_3, c_5, c_{10}	$u^{14} + 6u^{13} + \cdots + 1292u + 361$
c_4	$(u^7 - 2u^6 + 2u^5 + u^3 - 2u^2 + 2u - 1)^2$
c_8	$u^{14} + 3u^{12} + \cdots + 1198u + 617$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^{14} + 5y^{13} + \cdots + 541y + 121$
c_2, c_6, c_7 c_{11}	$y^{14} - 32y^{13} + \cdots + 2253y + 4489$
c_3, c_5, c_{10}	$y^{14} - 38y^{13} + \cdots + 94582y + 130321$
c_4	$(y^7 + 6y^5 + 5y^3 - 1)^2$
c_8	$y^{14} + 6y^{13} + \cdots - 369028y + 380689$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.000054 + 1.125940I$ $a = 1.39090 - 1.23779I$ $b = -0.336624 + 0.691909I$	$5.81224 + 1.32363I$	$9.85670 - 0.78636I$
$u = -0.000054 - 1.125940I$ $a = 1.39090 + 1.23779I$ $b = -0.336624 - 0.691909I$	$5.81224 - 1.32363I$	$9.85670 + 0.78636I$
$u = 0.630623 + 0.982226I$ $a = -0.226353 - 0.728957I$ $b = 0.756475 + 0.682867I$	$0.20654 - 2.41511I$	$5.45272 + 4.26386I$
$u = 0.630623 - 0.982226I$ $a = -0.226353 + 0.728957I$ $b = 0.756475 - 0.682867I$	$0.20654 + 2.41511I$	$5.45272 - 4.26386I$
$u = -0.615301 + 1.127030I$ $a = 1.19053 - 2.45478I$ $b = -1.05621 + 1.05857I$	$18.6867 + 3.8928I$	$7.94167 - 2.18375I$
$u = -0.615301 - 1.127030I$ $a = 1.19053 + 2.45478I$ $b = -1.05621 - 1.05857I$	$18.6867 - 3.8928I$	$7.94167 + 2.18375I$
$u = 0.969804 + 0.887001I$ $a = 0.638279 + 0.996031I$ $b = -0.727290$	-3.35276	$6.49781 + 0.I$
$u = 0.969804 - 0.887001I$ $a = 0.638279 - 0.996031I$ $b = -0.727290$	-3.35276	$6.49781 + 0.I$
$u = -0.614572 + 1.187090I$ $a = 1.084610 + 0.304620I$ $b = -0.336624 - 0.691909I$	$5.81224 - 1.32363I$	$9.85670 + 0.78636I$
$u = -0.614572 - 1.187090I$ $a = 1.084610 - 0.304620I$ $b = -0.336624 + 0.691909I$	$5.81224 + 1.32363I$	$9.85670 - 0.78636I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.379578 + 0.491634I$ $a = 1.115730 + 0.520094I$ $b = 0.756475 - 0.682867I$	$0.20654 + 2.41511I$	$5.45272 - 4.26386I$
$u = -0.379578 - 0.491634I$ $a = 1.115730 - 0.520094I$ $b = 0.756475 + 0.682867I$	$0.20654 - 2.41511I$	$5.45272 + 4.26386I$
$u = -1.49092 + 1.01048I$ $a = 1.124480 + 0.348913I$ $b = -1.05621 - 1.05857I$	$18.6867 - 3.8928I$	$7.94167 + 2.18375I$
$u = -1.49092 - 1.01048I$ $a = 1.124480 - 0.348913I$ $b = -1.05621 + 1.05857I$	$18.6867 + 3.8928I$	$7.94167 - 2.18375I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_9	$(u^9 - 2u^8 + 5u^7 - 4u^6 + 6u^5 + 2u^3 + 3u^2 + u + 1)$ $\cdot (u^{14} - 5u^{13} + \cdots - 3u + 1)(u^{14} - 3u^{13} + \cdots - 25u + 11)$ $\cdot (u^{15} - u^{14} + \cdots + 2u - 1)$
c_2, c_7	$(u^9 - 2u^8 - 3u^7 + u^6 + 4u^5 + u^4 - 3u^3 + u - 1)$ $\cdot (u^{14} - 16u^{12} + \cdots + 129u + 67)(u^{14} + 2u^{13} + \cdots + 5u + 1)$ $\cdot (u^{15} - u^{14} + \cdots + 2u - 1)$
c_3, c_5	$(u^9 + u^8 - 7u^7 + 4u^6 - 3u^5 + 10u^4 - 4u^3 - 2u + 1)$ $\cdot (u^{14} + 4u^{13} + \cdots + 11u^2 + 1)(u^{14} + 6u^{13} + \cdots + 1292u + 361)$ $\cdot (u^{15} - 19u^{13} + \cdots + 17u - 19)$
c_4	$(u^7 - 2u^6 + 2u^5 + u^3 - 2u^2 + 2u - 1)^2$ $\cdot (u^7 + 4u^6 + 8u^5 + 8u^4 + 3u^3 - 2u^2 - 2u - 1)^2$ $\cdot (u^9 - u^8 - 3u^7 + 5u^6 - 2u^5 + 8u^4 - 15u^3 + 9u^2 - 2u + 1)$ $\cdot (u^{15} - 17u^{14} + \cdots + 1568u - 192)$
c_6, c_{11}	$(u^9 + 2u^8 - 3u^7 - u^6 + 4u^5 - u^4 - 3u^3 + u + 1)$ $\cdot (u^{14} - 16u^{12} + \cdots + 129u + 67)(u^{14} - 2u^{13} + \cdots - 5u + 1)$ $\cdot (u^{15} - u^{14} + \cdots + 2u - 1)$
c_8	$(u^9 + u^8 + 4u^6 + u^5 + u^4 + 4u^2 - 4u + 1)$ $\cdot (u^{14} + 3u^{12} + \cdots + 1198u + 617)(u^{14} - 4u^{13} + \cdots + 2u + 1)$ $\cdot (u^{15} - 4u^{13} + \cdots + 19u - 1)$
c_{10}	$(u^9 - u^8 - 7u^7 - 4u^6 - 3u^5 - 10u^4 - 4u^3 - 2u - 1)$ $\cdot (u^{14} - 4u^{13} + \cdots + 11u^2 + 1)(u^{14} + 6u^{13} + \cdots + 1292u + 361)$ $\cdot (u^{15} - 19u^{13} + \cdots + 17u - 19)$
c_{12}	$(u^9 + 2u^8 + 5u^7 + 4u^6 + 6u^5 + 2u^3 - 3u^2 + u - 1)$ $\cdot (u^{14} - 3u^{13} + \cdots - 25u + 11)(u^{14} + 5u^{13} + \cdots + 3u + 1)$ $\cdot (u^{15} - u^{14} + \cdots + 2u - 1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$(y^9+6y^8+21y^7+48y^6+70y^5+62y^4+24y^3-5y^2-5y-1)$ $\cdot(y^{14}-3y^{13}+\cdots+y+1)(y^{14}+5y^{13}+\cdots+541y+121)$ $\cdot(y^{15}+3y^{14}+\cdots-4y-1)$
c_2, c_6, c_7 c_{11}	$(y^9-10y^8+21y^7-27y^6+34y^5-35y^4+19y^3-4y^2+y-1)$ $\cdot(y^{14}-12y^{12}+\cdots+9y+1)(y^{14}-32y^{13}+\cdots+2253y+4489)$ $\cdot(y^{15}-25y^{14}+\cdots-6y-1)$
c_3, c_5, c_{10}	$(y^9-15y^8+35y^7-2y^6-19y^5-50y^4+20y^3-4y^2+4y-1)$ $\cdot(y^{14}-38y^{13}+\cdots+94582y+130321)(y^{14}-2y^{13}+\cdots+22y+1)$ $\cdot(y^{15}-38y^{14}+\cdots-1383y-361)$
c_4	$(y^7+6y^5+5y^3-1)^2(y^7+6y^5-4y^4+17y^3-1)^2$ $\cdot(y^9-7y^8+15y^7-27y^6+28y^5-80y^4+79y^3-37y^2-14y-1)$ $\cdot(y^{15}-7y^{14}+\cdots+13312y-36864)$
c_8	$(y^9-y^8-6y^7-18y^6-23y^5-35y^4-24y^3-18y^2+8y-1)$ $\cdot(y^{14}-6y^{13}+\cdots-4y+1)(y^{14}+6y^{13}+\cdots-369028y+380689)$ $\cdot(y^{15}-8y^{14}+\cdots+429y-1)$