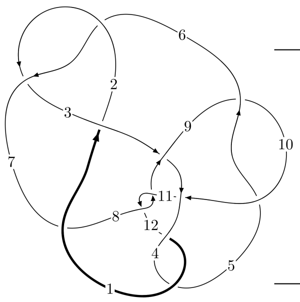
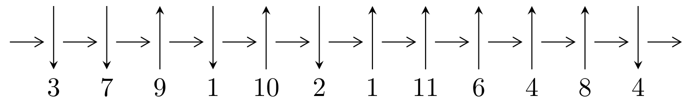
$12n_{0587}$ ($K12n_{0587}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -66u^{31} - 537u^{30} + \cdots + 4b - 972,\ -243u^{31} - 1923u^{30} + \cdots + 16a - 3048,$$
$$u^{32} + 9u^{31} + \cdots + 128u + 16\rangle$$
$$I_2^u = \langle -1.75141 \times 10^{21}a^7u^5 + 4.76671 \times 10^{21}a^6u^5 + \cdots + 1.01718 \times 10^{23}a - 3.39686 \times 10^{22},$$
$$-a^7u^5 + 2a^6u^5 + \cdots - 7a - 3,\ u^6 - u^5 - u^4 + 2u^3 - u + 1\rangle$$
$$I_3^u = \langle -5u^{21} - 4u^{20} + \cdots + b + 7,\ -7u^{21} - 10u^{20} + \cdots + 2a + 17,\ u^{22} - 6u^{20} + \cdots - u + 2\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 102 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. $I^u_1 = \langle -66u^{31} - 537u^{30} + \cdots + 4b - 972,\ -243u^{31} - 1923u^{30} + \cdots + 16a - 3048,\ u^{32} + 9u^{31} + \cdots + 128u + 16\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}15.1875u^{31} + 120.188u^{30} + \cdots + 1410.75u + 190.500\\ \frac{33}{2}u^{31} + \frac{537}{4}u^{30} + \cdots + \frac{3507}{2}u + 243\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-\frac{79}{16}u^{31} - \frac{605}{16}u^{30} + \cdots - \frac{619}{2}u - 38\\ -\frac{53}{8}u^{31} - \frac{423}{8}u^{30} + \cdots - 593u - 79\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^2 + 1\\ -u^4\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}7.43750u^{31} + 64.9375u^{30} + \cdots + 1101.75u + 154.500\\ \frac{35}{4}u^{31} + 79u^{30} + \cdots + \frac{2889}{2}u + 207\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-3.87500u^{31} - 41.7500u^{30} + \cdots - 1002.75u - 142.500\\ \frac{121}{8}u^{31} + \frac{865}{8}u^{30} + \cdots + \frac{709}{2}u + 30\end{pmatrix}$$
$$a_5 = \begin{pmatrix}\frac{43}{16}u^{31} + \frac{369}{16}u^{30} + \cdots + \frac{599}{2}u + 41\\ \frac{35}{8}u^{31} + \frac{305}{8}u^{30} + \cdots + 583u + 81\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^5 - 2u^3 + u\\ u^7 - u^5 + u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}4.37500u^{31} + 25.7500u^{30} + \cdots - 213.250u - 35.5000\\ \frac{75}{8}u^{31} + \frac{527}{8}u^{30} + \cdots + \frac{379}{2}u + 16\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{19}{2}u^{31} - \frac{149}{2}u^{30} + \cdots - 710u - 78$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{32} + 15u^{31} + \cdots + 1152u + 256$
c_2, c_6	$u^{32} - 9u^{31} + \cdots - 128u + 16$
c_3, c_5, c_9	$u^{32} + 8u^{30} + \cdots + 2u + 1$
c_4, c_{12}	$u^{32} + 21u^{30} + \cdots + u + 1$
c_7	$u^{32} - 27u^{31} + \cdots - 128512u + 13840$
c_8, c_{11}	$u^{32} + 15u^{31} + \cdots + 544u + 64$
c_{10}	$u^{32} + u^{31} + \cdots - 24u + 10$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{32} + 5y^{31} + \cdots + 843776y + 65536$
c_2, c_6	$y^{32} - 15y^{31} + \cdots - 1152y + 256$
c_3, c_5, c_9	$y^{32} + 16y^{31} + \cdots + 4y + 1$
c_4, c_{12}	$y^{32} + 42y^{31} + \cdots - 21y + 1$
c_7	$y^{32} + 5y^{31} + \cdots - 1955321984y + 191545600$
c_8, c_{11}	$y^{32} + 15y^{31} + \cdots + 23552y + 4096$
c_{10}	$y^{32} - 29y^{31} + \cdots - 2956y + 100$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.353223 + 0.914504I$ $a = 0.944290 - 0.963381I$ $b = -0.547471 - 1.203850I$	$1.14278 - 11.08640I$	$1.04376 + 6.11578I$
$u = -0.353223 - 0.914504I$ $a = 0.944290 + 0.963381I$ $b = -0.547471 + 1.203850I$	$1.14278 + 11.08640I$	$1.04376 - 6.11578I$
$u = -0.695104 + 0.783443I$ $a = -1.016910 - 0.357438I$ $b = -0.986887 + 0.548231I$	$5.02104 + 1.18323I$	$4.63011 - 3.73174I$
$u = -0.695104 - 0.783443I$ $a = -1.016910 + 0.357438I$ $b = -0.986887 - 0.548231I$	$5.02104 - 1.18323I$	$4.63011 + 3.73174I$
$u = -0.971427 + 0.423273I$ $a = 1.30738 - 0.94887I$ $b = 0.86839 - 1.47514I$	$-0.29798 + 3.82056I$	$0.73357 - 6.52529I$
$u = -0.971427 - 0.423273I$ $a = 1.30738 + 0.94887I$ $b = 0.86839 + 1.47514I$	$-0.29798 - 3.82056I$	$0.73357 + 6.52529I$
$u = -0.319145 + 0.868644I$ $a = -1.069240 + 0.753126I$ $b = 0.312955 + 1.169150I$	$2.75461 - 4.44216I$	$3.37878 + 2.54361I$
$u = -0.319145 - 0.868644I$ $a = -1.069240 - 0.753126I$ $b = 0.312955 - 1.169150I$	$2.75461 + 4.44216I$	$3.37878 - 2.54361I$
$u = -0.041796 + 0.911678I$ $a = 0.708186 - 0.291456I$ $b = -0.236115 - 0.657820I$	$-4.79614 - 1.53152I$	$1.62395 + 4.66418I$
$u = -0.041796 - 0.911678I$ $a = 0.708186 + 0.291456I$ $b = -0.236115 + 0.657820I$	$-4.79614 + 1.53152I$	$1.62395 - 4.66418I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.720598 + 0.879414I$ $a = 0.761879 + 0.617760I$ $b = 1.092280 - 0.224850I$	$3.47851 + 6.82150I$	$-0.20982 - 8.20349I$
$u = -0.720598 - 0.879414I$ $a = 0.761879 - 0.617760I$ $b = 1.092280 + 0.224850I$	$3.47851 - 6.82150I$	$-0.20982 + 8.20349I$
$u = 0.802808 + 0.175070I$ $a = -0.250305 - 0.176055I$ $b = 0.170125 + 0.185160I$	$-1.38436 - 0.59539I$	$-4.63872 + 0.87070I$
$u = 0.802808 - 0.175070I$ $a = -0.250305 + 0.176055I$ $b = 0.170125 - 0.185160I$	$-1.38436 + 0.59539I$	$-4.63872 - 0.87070I$
$u = -0.967071 + 0.715806I$ $a = 0.056661 - 0.893739I$ $b = -0.584948 - 0.904868I$	$4.22303 + 4.44069I$	$3.22085 + 0.12023I$
$u = -0.967071 - 0.715806I$ $a = 0.056661 + 0.893739I$ $b = -0.584948 + 0.904868I$	$4.22303 - 4.44069I$	$3.22085 - 0.12023I$
$u = 1.229680 + 0.226268I$ $a = -0.293850 - 0.315256I$ $b = 0.290008 + 0.454153I$	$-2.37206 + 1.13232I$	$-1.58887 - 1.12287I$
$u = 1.229680 - 0.226268I$ $a = -0.293850 + 0.315256I$ $b = 0.290008 - 0.454153I$	$-2.37206 - 1.13232I$	$-1.58887 + 1.12287I$
$u = -0.994634 + 0.800004I$ $a = 0.411302 + 0.751543I$ $b = 1.010330 + 0.418467I$	$2.67500 - 0.65003I$	$-3.51745 + 3.19613I$
$u = -0.994634 - 0.800004I$ $a = 0.411302 - 0.751543I$ $b = 1.010330 - 0.418467I$	$2.67500 + 0.65003I$	$-3.51745 - 3.19613I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.283860 + 0.162995I$ $a = 0.258937 + 0.394634I$ $b = -0.268116 - 0.548861I$	$-4.52901 + 7.74803I$	$-4.31211 - 4.99223I$
$u = 1.283860 - 0.162995I$ $a = 0.258937 - 0.394634I$ $b = -0.268116 + 0.548861I$	$-4.52901 - 7.74803I$	$-4.31211 + 4.99223I$
$u = -1.170100 + 0.596807I$ $a = 1.63919 - 0.72952I$ $b = 1.48263 - 1.83190I$	$0.19538 + 9.84539I$	$0. - 6.14820I$
$u = -1.170100 - 0.596807I$ $a = 1.63919 + 0.72952I$ $b = 1.48263 + 1.83190I$	$0.19538 - 9.84539I$	$0. + 6.14820I$
$u = -1.172780 + 0.623036I$ $a = -1.77974 + 0.55524I$ $b = -1.74130 + 1.76001I$	$-1.3469 + 16.7119I$	$-1.47549 - 9.48564I$
$u = -1.172780 - 0.623036I$ $a = -1.77974 - 0.55524I$ $b = -1.74130 - 1.76001I$	$-1.3469 - 16.7119I$	$-1.47549 + 9.48564I$
$u = -1.251720 + 0.492171I$ $a = -1.122650 + 0.775593I$ $b = -1.02352 + 1.52336I$	$-8.47765 + 6.52307I$	$0. - 9.62472I$
$u = -1.251720 - 0.492171I$ $a = -1.122650 - 0.775593I$ $b = -1.02352 - 1.52336I$	$-8.47765 - 6.52307I$	$0. + 9.62472I$
$u = 1.286480 + 0.428514I$ $a = 0.229293 + 0.227589I$ $b = -0.197456 - 0.391044I$	$-8.94178 - 3.23445I$	0
$u = 1.286480 - 0.428514I$ $a = 0.229293 - 0.227589I$ $b = -0.197456 + 0.391044I$	$-8.94178 + 3.23445I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.445223+0.386227I$ $a=-1.53443+0.10941I$ $b=-0.640907+0.641353I$	$1.140960-0.214496I$	$8.54432+0.39190I$
$u=-0.445223-0.386227I$ $a=-1.53443-0.10941I$ $b=-0.640907-0.641353I$	$1.140960+0.214496I$	$8.54432-0.39190I$

II. $\boldsymbol{I_2^u = \langle -1.75 \times 10^{21} a^7 u^5 + 4.77 \times 10^{21} a^6 u^5 + \cdots + 1.02 \times 10^{23} a - 3.40 \times 10^{22},\ -a^7 u^5 + 2a^6 u^5 + \cdots - 7a - 3,\ u^6 - u^5 - u^4 + 2u^3 - u + 1 \rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} a \\ 0.0448967a^7u^5 - 0.122193a^6u^5 + \cdots - 2.60750a + 0.870772 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0464052a^7u^5 + 0.165108a^6u^5 + \cdots - 0.295632a + 2.29477 \\ -0.0396494a^7u^5 + 0.0414630a^6u^5 + \cdots - 1.01369a + 2.96480 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.00659432a^7u^5 - 0.0344612a^6u^5 + \cdots - 1.43280a + 1.87590 \\ 0.0514910a^7u^5 - 0.156654a^6u^5 + \cdots - 5.04030a + 2.74667 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0418578a^7u^5 + 0.290122a^6u^5 + \cdots + 1.67460a + 2.21502 \\ -0.0967619a^7u^5 + 0.233461a^6u^5 + \cdots + 2.80716a + 0.179361 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0205988a^7u^5 - 0.0387646a^6u^5 + \cdots + 0.613393a + 0.382177 \\ 0.00837862a^7u^5 - 0.0176083a^6u^5 + \cdots + 0.996366a + 1.27350 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^5 - 2u^3 + u \\ u^5 - u^4 - 2u^3 + u^2 + u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0555186a^7u^5 - 0.206112a^6u^5 + \cdots - 0.522508a - 1.82114 \\ 0.0445458a^7u^5 - 0.178610a^6u^5 + \cdots - 1.10562a - 0.819014 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{421828933103293801 0964}{3900969482842813211 3233} a^7 u^5 - \frac{881458935488935727072}{39009694828428132113233} a^6 u^5 + \cdots - \frac{4571978326894309216933 44}{39009694828428132113233} a + \frac{2134577196522288468026 66}{39009694828428132113233}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^6+3u^5+5u^4+4u^3+2u^2+u+1)^8$
c_2, c_6	$(u^6+u^5-u^4-2u^3+u+1)^8$
c_3, c_5, c_9	$u^{48}-u^{47}+\cdots+1188u+891$
c_4, c_{12}	$u^{48}-3u^{47}+\cdots+2288u+457$
c_8, c_{11}	$(u^4-u^3+u^2+1)^{12}$
c_{10}	$u^{48}-u^{47}+\cdots-56112u+5549$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)^8$
c_2, c_6	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^8$
c_3, c_5, c_9	$y^{48} + 27y^{47} + \cdots + 36823248y + 793881$
c_4, c_{12}	$y^{48} + 15y^{47} + \cdots - 4710308y + 208849$
c_8, c_{11}	$(y^4 + y^3 + 3y^2 + 2y + 1)^{12}$
c_{10}	$y^{48} + 3y^{47} + \cdots - 1819227006y + 30791401$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.002190 + 0.295542I$ $a = 0.507592 + 0.582683I$ $b = 0.937656 - 1.013070I$	$-7.03641 + 2.33941I$	$-7.54346 - 5.70297I$
$u = -1.002190 + 0.295542I$ $a = 1.135000 - 0.676144I$ $b = 0.680912 + 0.433947I$	$-7.03641 + 2.33941I$	$-7.54346 - 5.70297I$
$u = -1.002190 + 0.295542I$ $a = -0.59164 + 1.37928I$ $b = 0.352015 + 0.153786I$	$-7.03641 - 0.49080I$	$-7.54346 + 4.11452I$
$u = -1.002190 + 0.295542I$ $a = 0.281512 + 0.236466I$ $b = -0.18530 + 1.55716I$	$-7.03641 - 0.49080I$	$-7.54346 + 4.11452I$
$u = -1.002190 + 0.295542I$ $a = -1.02156 + 1.37764I$ $b = -1.36997 + 1.97493I$	$-0.03467 - 2.23966I$	$-3.88998 + 1.77057I$
$u = -1.002190 + 0.295542I$ $a = 1.38666 - 1.35941I$ $b = 1.47255 - 1.58489I$	$-0.03467 + 4.08827I$	$-3.88998 - 3.35903I$
$u = -1.002190 + 0.295542I$ $a = 1.78082 - 1.05627I$ $b = 0.98793 - 1.77221I$	$-0.03467 + 4.08827I$	$-3.88998 - 3.35903I$
$u = -1.002190 + 0.295542I$ $a = -1.79224 + 1.44209I$ $b = -0.61665 + 1.68258I$	$-0.03467 - 2.23966I$	$-3.88998 + 1.77057I$
$u = -1.002190 - 0.295542I$ $a = 0.507592 - 0.582683I$ $b = 0.937656 + 1.013070I$	$-7.03641 - 2.33941I$	$-7.54346 + 5.70297I$
$u = -1.002190 - 0.295542I$ $a = 1.135000 + 0.676144I$ $b = 0.680912 - 0.433947I$	$-7.03641 - 2.33941I$	$-7.54346 + 5.70297I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.002190-0.295542I$ $a=-0.59164-1.37928I$ $b=0.352015-0.153786I$	$-7.03641+0.49080I$	$-7.54346-4.11452I$
$u=-1.002190-0.295542I$ $a=0.281512-0.236466I$ $b=-0.18530-1.55716I$	$-7.03641+0.49080I$	$-7.54346-4.11452I$
$u=-1.002190-0.295542I$ $a=-1.02156-1.37764I$ $b=-1.36997-1.97493I$	$-0.03467+2.23966I$	$-3.88998-1.77057I$
$u=-1.002190-0.295542I$ $a=1.38666+1.35941I$ $b=1.47255+1.58489I$	$-0.03467-4.08827I$	$-3.88998+3.35903I$
$u=-1.002190-0.295542I$ $a=1.78082+1.05627I$ $b=0.98793+1.77221I$	$-0.03467-4.08827I$	$-3.88998+3.35903I$
$u=-1.002190-0.295542I$ $a=-1.79224-1.44209I$ $b=-0.61665-1.68258I$	$-0.03467+2.23966I$	$-3.88998-1.77057I$
$u=0.428243+0.664531I$ $a=-0.818193+0.122997I$ $b=-0.51591-1.51973I$	$3.74655+4.08827I$	$3.54346-3.35903I$
$u=0.428243+0.664531I$ $a=0.597673-0.407666I$ $b=0.74823+1.23067I$	$3.74655-2.23966I$	$3.54346+1.77057I$
$u=0.428243+0.664531I$ $a=-0.682635-1.191630I$ $b=0.70891-1.33525I$	$-3.25520+2.33941I$	$-0.11002-5.70297I$
$u=0.428243+0.664531I$ $a=0.12918+1.52416I$ $b=-0.648527+1.032200I$	$-3.25520-0.49080I$	$-0.11002+4.11452I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.428243 + 0.664531I$ $a = -0.65313 - 1.39681I$ $b = 0.957528 - 0.738558I$	$-3.25520 - 0.49080I$	$-0.11002 + 4.11452I$
$u = 0.428243 + 0.664531I$ $a = -1.82121 - 0.04768I$ $b = -0.526856 - 0.222592I$	$3.74655 - 2.23966I$	$3.54346 + 1.77057I$
$u = 0.428243 + 0.664531I$ $a = 0.93397 + 1.66866I$ $b = -0.499539 + 0.963939I$	$-3.25520 + 2.33941I$	$-0.11002 - 5.70297I$
$u = 0.428243 + 0.664531I$ $a = 1.96937 + 0.49277I$ $b = 0.432121 + 0.491042I$	$3.74655 + 4.08827I$	$3.54346 - 3.35903I$
$u = 0.428243 - 0.664531I$ $a = -0.818193 - 0.122997I$ $b = -0.51591 + 1.51973I$	$3.74655 - 4.08827I$	$3.54346 + 3.35903I$
$u = 0.428243 - 0.664531I$ $a = 0.597673 + 0.407666I$ $b = 0.74823 - 1.23067I$	$3.74655 + 2.23966I$	$3.54346 - 1.77057I$
$u = 0.428243 - 0.664531I$ $a = -0.682635 + 1.191630I$ $b = 0.70891 + 1.33525I$	$-3.25520 - 2.33941I$	$-0.11002 + 5.70297I$
$u = 0.428243 - 0.664531I$ $a = 0.12918 - 1.52416I$ $b = -0.648527 - 1.032200I$	$-3.25520 + 0.49080I$	$-0.11002 - 4.11452I$
$u = 0.428243 - 0.664531I$ $a = -0.65313 + 1.39681I$ $b = 0.957528 + 0.738558I$	$-3.25520 + 0.49080I$	$-0.11002 - 4.11452I$
$u = 0.428243 - 0.664531I$ $a = -1.82121 + 0.04768I$ $b = -0.526856 + 0.222592I$	$3.74655 + 2.23966I$	$3.54346 - 1.77057I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.428243 - 0.664531I$ $a = 0.93397 - 1.66866I$ $b = -0.499539 - 0.963939I$	$-3.25520 - 2.33941I$	$-0.11002 + 5.70297I$
$u = 0.428243 - 0.664531I$ $a = 1.96937 - 0.49277I$ $b = 0.432121 - 0.491042I$	$3.74655 - 4.08827I$	$3.54346 + 3.35903I$
$u = 1.073950 + 0.558752I$ $a = 0.263523 + 0.901679I$ $b = 0.32755 + 1.80005I$	$1.85594 - 2.52906I$	$-0.17326 + 2.94577I$
$u = 1.073950 + 0.558752I$ $a = -0.660126 - 1.071870I$ $b = -0.74546 - 2.12446I$	$1.85594 - 8.85698I$	$-0.17326 + 8.07537I$
$u = 1.073950 + 0.558752I$ $a = -0.92630 - 1.19417I$ $b = 0.220804 - 1.115600I$	$1.85594 - 2.52906I$	$-0.17326 + 2.94577I$
$u = 1.073950 + 0.558752I$ $a = 1.69735 - 0.19586I$ $b = 1.96152 + 1.09909I$	$-5.14581 - 4.27792I$	$-3.82674 + 0.60183I$
$u = 1.073950 + 0.558752I$ $a = -1.78478 - 0.33884I$ $b = -2.08469 - 1.42090I$	$-5.14581 - 7.10813I$	$-3.82674 + 10.41931I$
$u = 1.073950 + 0.558752I$ $a = -1.85640 - 0.05757I$ $b = -1.93230 - 0.73805I$	$-5.14581 - 4.27792I$	$-3.82674 + 0.60183I$
$u = 1.073950 + 0.558752I$ $a = 1.35622 + 1.27256I$ $b = 0.11003 + 1.51998I$	$1.85594 - 8.85698I$	$-0.17326 + 8.07537I$
$u = 1.073950 + 0.558752I$ $a = 2.06935 + 0.24643I$ $b = 1.72743 + 1.36115I$	$-5.14581 - 7.10813I$	$-3.82674 + 10.41931I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.073950 - 0.558752I$ $a = 0.263523 - 0.901679I$ $b = 0.32755 - 1.80005I$	$1.85594 + 2.52906I$	$-0.17326 - 2.94577I$
$u = 1.073950 - 0.558752I$ $a = -0.660126 + 1.071870I$ $b = -0.74546 + 2.12446I$	$1.85594 + 8.85698I$	$-0.17326 - 8.07537I$
$u = 1.073950 - 0.558752I$ $a = -0.92630 + 1.19417I$ $b = 0.220804 + 1.115600I$	$1.85594 + 2.52906I$	$-0.17326 - 2.94577I$
$u = 1.073950 - 0.558752I$ $a = 1.69735 + 0.19586I$ $b = 1.96152 - 1.09909I$	$-5.14581 + 4.27792I$	$-3.82674 - 0.60183I$
$u = 1.073950 - 0.558752I$ $a = -1.78478 + 0.33884I$ $b = -2.08469 + 1.42090I$	$-5.14581 + 7.10813I$	$-3.82674 - 10.41931I$
$u = 1.073950 - 0.558752I$ $a = -1.85640 + 0.05757I$ $b = -1.93230 + 0.73805I$	$-5.14581 + 4.27792I$	$-3.82674 - 0.60183I$
$u = 1.073950 - 0.558752I$ $a = 1.35622 - 1.27256I$ $b = 0.11003 - 1.51998I$	$1.85594 + 8.85698I$	$-0.17326 - 8.07537I$
$u = 1.073950 - 0.558752I$ $a = 2.06935 - 0.24643I$ $b = 1.72743 - 1.36115I$	$-5.14581 + 7.10813I$	$-3.82674 - 10.41931I$

III. $\boldsymbol{I_3^u =}$
$\boldsymbol{\langle -5u^{21}-4u^{20}+\cdots+b+7,\ -7u^{21}-10u^{20}+\cdots+2a+17,\ u^{22}-6u^{20}+\cdots-u+2\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix}\frac{7}{2}u^{21}+5u^{20}+\cdots+2u-\frac{17}{2}\\5u^{21}+4u^{20}+\cdots-5u-7\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-\frac{3}{2}u^{21}-u^{20}+\cdots+5u+\frac{7}{2}\\-u^{21}+6u^{19}+\cdots+u+3\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-u^2+1\\-u^4\end{pmatrix}$$

$$a_6 = \begin{pmatrix}u\\u\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}\frac{7}{2}u^{21}+4u^{20}+\cdots-2u-\frac{13}{2}\\5u^{21}+3u^{20}+\cdots-9u-5\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}\frac{5}{2}u^{21}+2u^{20}+\cdots-2u+\frac{3}{2}\\3u^{21}+3u^{20}+\cdots+u-5\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-\frac{3}{2}u^{21}+9u^{19}+\cdots+6u+\frac{1}{2}\\-u^{21}+u^{20}+\cdots+2u+1\end{pmatrix}$$

$$a_8 = \begin{pmatrix}u^5-2u^3+u\\u^7-u^5+u\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}\frac{5}{2}u^{21}+2u^{20}+\cdots-2u-\frac{1}{2}\\2u^{21}+2u^{20}+\cdots+4u-5\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -12u^{21}-5u^{20}+65u^{19}+29u^{18}-189u^{17}-87u^{16}+341u^{15}+140u^{14}-435u^{13}-105u^{12}+395u^{11}-41u^{10}-271u^{9}+192u^{8}+121u^{7}-220u^{6}-4u^{5}+158u^{4}-42u^{3}-66u^{2}+23u+18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} - 12u^{21} + \cdots - 33u + 4$
c_2	$u^{22} - 6u^{20} + \cdots - u + 2$
c_3, c_9	$u^{22} + 9u^{20} + \cdots - u + 1$
c_4	$u^{22} + 2u^{20} + \cdots - 2u + 1$
c_5	$u^{22} + 9u^{20} + \cdots + u + 1$
c_6	$u^{22} - 6u^{20} + \cdots + u + 2$
c_7	$u^{22} + 2u^{20} + \cdots + u + 2$
c_8	$u^{22} + 4u^{21} + \cdots + 9u^2 + 1$
c_{10}	$u^{22} + u^{21} + \cdots + 161u + 208$
c_{11}	$u^{22} - 4u^{21} + \cdots + 9u^2 + 1$
c_{12}	$u^{22} + 2u^{20} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} + 4y^{21} + \cdots - 17y + 16$
c_2, c_6	$y^{22} - 12y^{21} + \cdots - 33y + 4$
c_3, c_5, c_9	$y^{22} + 18y^{21} + \cdots - 5y + 1$
c_4, c_{12}	$y^{22} + 4y^{21} + \cdots - 10y + 1$
c_7	$y^{22} + 4y^{21} + \cdots - 33y + 4$
c_8, c_{11}	$y^{22} + 14y^{21} + \cdots + 18y + 1$
c_{10}	$y^{22} + y^{21} + \cdots - 79169y + 43264$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.961848 + 0.296339I$ $a = -2.00016 - 1.79386I$ $b = -1.39226 - 2.31814I$	$0.56453 - 4.62883I$	$5.59956 + 11.73591I$
$u = 0.961848 - 0.296339I$ $a = -2.00016 + 1.79386I$ $b = -1.39226 + 2.31814I$	$0.56453 + 4.62883I$	$5.59956 - 11.73591I$
$u = -1.002840 + 0.352792I$ $a = 0.468251 - 0.558052I$ $b = -0.272706 + 0.724834I$	$-6.83956 + 0.45717I$	$-4.57919 - 4.81225I$
$u = -1.002840 - 0.352792I$ $a = 0.468251 + 0.558052I$ $b = -0.272706 - 0.724834I$	$-6.83956 - 0.45717I$	$-4.57919 + 4.81225I$
$u = -0.843470 + 0.703506I$ $a = -0.034848 - 0.250819I$ $b = 0.205846 + 0.187042I$	$3.60508 + 5.33056I$	$-0.09464 - 5.51436I$
$u = -0.843470 - 0.703506I$ $a = -0.034848 + 0.250819I$ $b = 0.205846 - 0.187042I$	$3.60508 - 5.33056I$	$-0.09464 + 5.51436I$
$u = 0.173815 + 0.853261I$ $a = -0.694604 - 0.751121I$ $b = 0.520170 - 0.723235I$	$-5.80927 + 0.76774I$	$-5.23209 + 0.08222I$
$u = 0.173815 - 0.853261I$ $a = -0.694604 + 0.751121I$ $b = 0.520170 + 0.723235I$	$-5.80927 - 0.76774I$	$-5.23209 - 0.08222I$
$u = 0.817172 + 0.275112I$ $a = 1.64987 + 2.09307I$ $b = 0.77240 + 2.16430I$	$1.11933 + 2.14001I$	$6.11579 - 0.86458I$
$u = 0.817172 - 0.275112I$ $a = 1.64987 - 2.09307I$ $b = 0.77240 - 2.16430I$	$1.11933 - 2.14001I$	$6.11579 + 0.86458I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.918631 + 0.703076I$ $a = 0.215399 + 0.106652I$ $b = -0.272856 + 0.053468I$	$3.37208 + 0.07368I$	$2.57677 - 1.78560I$
$u = -0.918631 - 0.703076I$ $a = 0.215399 - 0.106652I$ $b = -0.272856 - 0.053468I$	$3.37208 - 0.07368I$	$2.57677 + 1.78560I$
$u = 0.544682 + 0.641471I$ $a = 0.35849 + 1.75353I$ $b = -0.92958 + 1.18508I$	$-3.74937 + 1.02775I$	$-3.94340 - 0.09185I$
$u = 0.544682 - 0.641471I$ $a = 0.35849 - 1.75353I$ $b = -0.92958 - 1.18508I$	$-3.74937 - 1.02775I$	$-3.94340 + 0.09185I$
$u = 1.047900 + 0.563172I$ $a = -2.02559 + 0.01283I$ $b = -2.12984 - 1.12732I$	$-5.29588 - 5.77472I$	$-4.89114 + 4.98759I$
$u = 1.047900 - 0.563172I$ $a = -2.02559 - 0.01283I$ $b = -2.12984 + 1.12732I$	$-5.29588 + 5.77472I$	$-4.89114 - 4.98759I$
$u = -0.782222 + 0.186398I$ $a = 0.296177 - 0.982955I$ $b = -0.048455 + 0.824096I$	$-5.78836 + 2.01747I$	$0.74667 - 4.58846I$
$u = -0.782222 - 0.186398I$ $a = 0.296177 + 0.982955I$ $b = -0.048455 - 0.824096I$	$-5.78836 - 2.01747I$	$0.74667 + 4.58846I$
$u = -1.226180 + 0.389290I$ $a = -0.269525 + 0.335576I$ $b = 0.199850 - 0.516400I$	$-10.01640 + 3.30562I$	$-9.26157 - 2.61451I$
$u = -1.226180 - 0.389290I$ $a = -0.269525 - 0.335576I$ $b = 0.199850 + 0.516400I$	$-10.01640 - 3.30562I$	$-9.26157 + 2.61451I$

	Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$1.227930+0.530969I$		
$a=$	$1.286540+0.437612I$	$-8.99565-5.89312I$	$-7.53678+2.20155I$
$b=$	$1.34742+1.22047I$		
$u=$	$1.227930-0.530969I$		
$a=$	$1.286540-0.437612I$	$-8.99565+5.89312I$	$-7.53678-2.20155I$
$b=$	$1.34742-1.22047I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^6+3u^5+5u^4+4u^3+2u^2+u+1)^8)(u^{22}-12u^{21}+\cdots-33u+4)$ $\cdot(u^{32}+15u^{31}+\cdots+1152u+256)$
c_2	$((u^6+u^5-u^4-2u^3+u+1)^8)(u^{22}-6u^{20}+\cdots-u+2)$ $\cdot(u^{32}-9u^{31}+\cdots-128u+16)$
c_3, c_9	$(u^{22}+9u^{20}+\cdots-u+1)(u^{32}+8u^{30}+\cdots+2u+1)$ $\cdot(u^{48}-u^{47}+\cdots+1188u+891)$
c_4	$(u^{22}+2u^{20}+\cdots-2u+1)(u^{32}+21u^{30}+\cdots+u+1)$ $\cdot(u^{48}-3u^{47}+\cdots+2288u+457)$
c_5	$(u^{22}+9u^{20}+\cdots+u+1)(u^{32}+8u^{30}+\cdots+2u+1)$ $\cdot(u^{48}-u^{47}+\cdots+1188u+891)$
c_6	$((u^6+u^5-u^4-2u^3+u+1)^8)(u^{22}-6u^{20}+\cdots+u+2)$ $\cdot(u^{32}-9u^{31}+\cdots-128u+16)$
c_7	$((u^6+3u^5+5u^4+4u^3+2u^2+u+1)^8)(u^{22}+2u^{20}+\cdots+u+2)$ $\cdot(u^{32}-27u^{31}+\cdots-128512u+13840)$
c_8	$((u^4-u^3+u^2+1)^{12})(u^{22}+4u^{21}+\cdots+9u^2+1)$ $\cdot(u^{32}+15u^{31}+\cdots+544u+64)$
c_{10}	$(u^{22}+u^{21}+\cdots+161u+208)(u^{32}+u^{31}+\cdots-24u+10)$ $\cdot(u^{48}-u^{47}+\cdots-56112u+5549)$
c_{11}	$((u^4-u^3+u^2+1)^{12})(u^{22}-4u^{21}+\cdots+9u^2+1)$ $\cdot(u^{32}+15u^{31}+\cdots+544u+64)$
c_{12}	$(u^{22}+2u^{20}+\cdots+2u+1)(u^{32}+21u^{30}+\cdots+u+1)$ $\cdot(u^{48}-3u^{47}+\cdots+2288u+457)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^6+y^5+5y^4+6y^2+3y+1)^8)(y^{22}+4y^{21}+\cdots-17y+16)$ $\cdot(y^{32}+5y^{31}+\cdots+843776y+65536)$
c_2, c_6	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^8)(y^{22}-12y^{21}+\cdots-33y+4)$ $\cdot(y^{32}-15y^{31}+\cdots-1152y+256)$
c_3, c_5, c_9	$(y^{22}+18y^{21}+\cdots-5y+1)(y^{32}+16y^{31}+\cdots+4y+1)$ $\cdot(y^{48}+27y^{47}+\cdots+36823248y+793881)$
c_4, c_{12}	$(y^{22}+4y^{21}+\cdots-10y+1)(y^{32}+42y^{31}+\cdots-21y+1)$ $\cdot(y^{48}+15y^{47}+\cdots-4710308y+208849)$
c_7	$((y^6+y^5+5y^4+6y^2+3y+1)^8)(y^{22}+4y^{21}+\cdots-33y+4)$ $\cdot(y^{32}+5y^{31}+\cdots-1955321984y+191545600)$
c_8, c_{11}	$((y^4+y^3+3y^2+2y+1)^{12})(y^{22}+14y^{21}+\cdots+18y+1)$ $\cdot(y^{32}+15y^{31}+\cdots+23552y+4096)$
c_{10}	$(y^{22}+y^{21}+\cdots-79169y+43264)(y^{32}-29y^{31}+\cdots-2956y+100)$ $\cdot(y^{48}+3y^{47}+\cdots-1819227006y+30791401)$