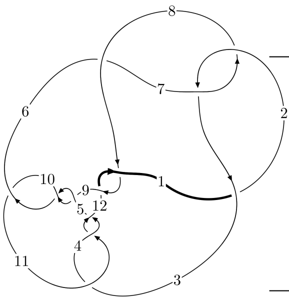
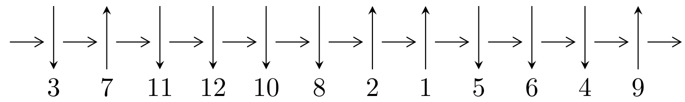
$12a_{0683}$ $(K12a_{0683})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 4u^{29} - 7u^{28} + \cdots + b + 7,\ -7u^{30} + 21u^{29} + \cdots + 2a + 16,\ u^{31} - 3u^{30} + \cdots + 2u + 2\rangle$$
$$I_2^u = \langle -u^{18} - u^{17} + \cdots + b - 1,\ -u^{18}a - u^{18} + \cdots - a - 1,\ u^{19} + u^{18} + \cdots + 2u - 1\rangle$$
$$I_3^u = \langle -u^2 + b - u - 1,\ u^3 + 2a - u - 2,\ u^4 + u^2 + 2\rangle$$
$$I_4^u = \langle b + u,\ a + 1,\ u^2 + 1\rangle$$
$$I_5^u = \langle u^3 + u^2 + b - 1,\ u^3 + u^2 + a + u,\ u^4 + 1\rangle$$

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

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 80 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. $I_1^u = \langle 4u^{29} - 7u^{28} + \cdots + b + 7,\ -7u^{30} + 21u^{29} + \cdots + 2a + 16,\ u^{31} - 3u^{30} + \cdots + 2u + 2\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{7}{2}u^{30} - \frac{21}{2}u^{29} + \cdots - 13u - 8 \\ -4u^{29} + 7u^{28} + \cdots - 15u - 7 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}u^{30} + \frac{1}{2}u^{29} + \cdots + u^2 + u \\ -u^{30} + 2u^{29} + \cdots + 2u + 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^8 - u^6 - u^4 + 1 \\ -u^{10} - 2u^8 - 3u^6 - 2u^4 - u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{5}{2}u^{30} - \frac{15}{2}u^{29} + \cdots - 9u - 5 \\ -3u^{29} + 5u^{28} + \cdots - 11u - 5 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{3}{2}u^{30} - \frac{5}{2}u^{29} + \cdots + \frac{15}{2}u^3 + u^2 \\ u^{30} - 2u^{29} + \cdots - u - 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^{13} + 2u^{11} + 3u^9 + 2u^7 - u \\ u^{15} + 3u^{13} + 6u^{11} + 7u^9 + 6u^7 + 4u^5 + 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -2u^{30} + 8u^{29} - 18u^{28} + 42u^{27} - 66u^{26} + 130u^{25} - 152u^{24} + 264u^{23} - 238u^{22} + 400u^{21} - 254u^{20} + 478u^{19} - 184u^{18} + 486u^{17} - 50u^{16} + 466u^{15} + 62u^{14} + 410u^{13} + 144u^{12} + 350u^{11} + 186u^{10} + 252u^9 + 162u^8 + 174u^7 + 138u^6 + 104u^5 + 80u^4 + 36u^3 + 40u^2 + 34u + 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{31} + 11u^{30} + \cdots - 28u - 4$
c_2, c_7	$u^{31} + 3u^{30} + \cdots + 2u - 2$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$u^{31} + u^{30} + \cdots + 2u + 1$
c_8, c_{12}	$u^{31} - 15u^{30} + \cdots + 3142u - 314$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{31} + 19y^{30} + \cdots - 336y - 16$
c_2, c_7	$y^{31} + 11y^{30} + \cdots - 28y - 4$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$y^{31} - 41y^{30} + \cdots + 6y - 1$
c_8, c_{12}	$y^{31} + 23y^{30} + \cdots - 1185660y - 98596$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.834590 + 0.582027I$ $a = -1.21990 + 2.11129I$ $b = -2.24694 + 1.05205I$	$-12.7225 - 9.0086I$	$-8.83881 + 3.40935I$
$u = 0.834590 - 0.582027I$ $a = -1.21990 - 2.11129I$ $b = -2.24694 - 1.05205I$	$-12.7225 + 9.0086I$	$-8.83881 - 3.40935I$
$u = 0.722502 + 0.621547I$ $a = 1.250200 - 0.565257I$ $b = 1.254610 + 0.368661I$	$0.64783 - 2.08671I$	$-2.33564 + 4.90914I$
$u = 0.722502 - 0.621547I$ $a = 1.250200 + 0.565257I$ $b = 1.254610 - 0.368661I$	$0.64783 + 2.08671I$	$-2.33564 - 4.90914I$
$u = -0.011192 + 1.055950I$ $a = -0.403491 - 0.377694I$ $b = 0.403341 - 0.421839I$	$-4.70000 - 1.40560I$	$-10.10684 + 4.97569I$
$u = -0.011192 - 1.055950I$ $a = -0.403491 + 0.377694I$ $b = 0.403341 + 0.421839I$	$-4.70000 + 1.40560I$	$-10.10684 - 4.97569I$
$u = -0.660425 + 0.655957I$ $a = 0.095218 - 0.222295I$ $b = 0.082932 + 0.209267I$	$0.242168 - 0.690936I$	$-4.10470 + 4.18335I$
$u = -0.660425 - 0.655957I$ $a = 0.095218 + 0.222295I$ $b = 0.082932 - 0.209267I$	$0.242168 + 0.690936I$	$-4.10470 - 4.18335I$
$u = -0.317662 + 1.028560I$ $a = -0.763693 + 0.390412I$ $b = -0.158967 - 0.909525I$	$-12.44600 - 3.27738I$	$-13.9945 + 3.6592I$
$u = -0.317662 - 1.028560I$ $a = -0.763693 - 0.390412I$ $b = -0.158967 + 0.909525I$	$-12.44600 + 3.27738I$	$-13.9945 - 3.6592I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.688487 + 0.854024I$ $a = -1.32554 + 1.02312I$ $b = -1.78639 - 0.42763I$	$3.47574 + 2.64776I$	$2.40040 - 3.76300I$
$u = 0.688487 - 0.854024I$ $a = -1.32554 - 1.02312I$ $b = -1.78639 + 0.42763I$	$3.47574 - 2.64776I$	$2.40040 + 3.76300I$
$u = 0.806865 + 0.777962I$ $a = -0.57745 - 2.39117I$ $b = 1.39431 - 2.37858I$	$-5.26559 - 1.70254I$	$-7.93225 + 0.49720I$
$u = 0.806865 - 0.777962I$ $a = -0.57745 + 2.39117I$ $b = 1.39431 + 2.37858I$	$-5.26559 + 1.70254I$	$-7.93225 - 0.49720I$
$u = -0.772524 + 0.407584I$ $a = 0.357260 + 0.680444I$ $b = -0.553330 - 0.380046I$	$-13.7371 - 5.6675I$	$-9.37862 + 3.30798I$
$u = -0.772524 - 0.407584I$ $a = 0.357260 - 0.680444I$ $b = -0.553330 + 0.380046I$	$-13.7371 + 5.6675I$	$-9.37862 - 3.30798I$
$u = -0.062033 + 1.149980I$ $a = 1.032410 + 0.353539I$ $b = -0.470604 + 1.165310I$	$-19.0694 - 7.7866I$	$-15.0141 + 3.7811I$
$u = -0.062033 - 1.149980I$ $a = 1.032410 - 0.353539I$ $b = -0.470604 - 1.165310I$	$-19.0694 + 7.7866I$	$-15.0141 - 3.7811I$
$u = -0.655738 + 0.995207I$ $a = -0.016249 + 0.192084I$ $b = -0.180508 - 0.142129I$	$-0.76854 - 4.47807I$	$-5.49078 + 0.99191I$
$u = -0.655738 - 0.995207I$ $a = -0.016249 - 0.192084I$ $b = -0.180508 + 0.142129I$	$-0.76854 + 4.47807I$	$-5.49078 - 0.99191I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.663735 + 1.013080I$ $a = 0.869119 - 1.080960I$ $b = 1.67196 + 0.16301I$	$-0.50643 + 7.41412I$	$-4.69631 - 9.68387I$
$u = 0.663735 - 1.013080I$ $a = 0.869119 + 1.080960I$ $b = 1.67196 - 0.16301I$	$-0.50643 - 7.41412I$	$-4.69631 + 9.68387I$
$u = 0.755579 + 0.953754I$ $a = 2.25812 + 0.93449I$ $b = 0.81492 + 2.85977I$	$-5.80221 + 7.55915I$	$-8.80311 - 5.88769I$
$u = 0.755579 - 0.953754I$ $a = 2.25812 - 0.93449I$ $b = 0.81492 - 2.85977I$	$-5.80221 - 7.55915I$	$-8.80311 + 5.88769I$
$u = -0.598928 + 1.072520I$ $a = 0.297943 - 0.455847I$ $b = 0.310457 + 0.592568I$	$-15.6742 + 0.5629I$	$-12.28287 + 1.51453I$
$u = -0.598928 - 1.072520I$ $a = 0.297943 + 0.455847I$ $b = 0.310457 - 0.592568I$	$-15.6742 - 0.5629I$	$-12.28287 - 1.51453I$
$u = 0.689812 + 1.062820I$ $a = -2.28466 + 0.81265I$ $b = -2.43969 - 1.86761I$	$-14.1718 + 14.7070I$	$-10.75887 - 7.88304I$
$u = 0.689812 - 1.062820I$ $a = -2.28466 - 0.81265I$ $b = -2.43969 + 1.86761I$	$-14.1718 - 14.7070I$	$-10.75887 + 7.88304I$
$u = -0.671467$ $a = -1.07798$ $b = 0.723830$	-9.27702	-8.24970
$u = -0.247335 + 0.431598I$ $a = 0.469701 - 0.366440I$ $b = 0.041981 + 0.293355I$	$-0.139351 - 0.826891I$	$-3.53813 + 8.27499I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.247335 - 0.431598I$		
$a = 0.469701 + 0.366440I$	$-0.139351 + 0.826891I$	$-3.53813 - 8.27499I$
$b = 0.041981 - 0.293355I$		

II.

$$\boldsymbol{I_2^u = \langle -u^{18}-u^{17}+\cdots+b-1,\ -u^{18}a-u^{18}+\cdots-a-1,\ u^{19}+u^{18}+\cdots+2u-1\rangle}$$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a \\ u^{18}+u^{17}+\cdots-u+1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{18}+u^{17}+\cdots-a+2u \\ u^{18}a+u^{17}a+\cdots+u+1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5+u^3+u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^8-u^6-u^4+1 \\ -u^{10}-2u^8-3u^6-2u^4-u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{18}-u^{17}+\cdots+a+1 \\ u^{14}+u^{13}+\cdots-u+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^{18}-u^{17}+\cdots+a-u \\ 2u^{16}+2u^{15}+\cdots-u-1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^{13}+2u^{11}+3u^9+2u^7-u \\ u^{15}+3u^{13}+6u^{11}+7u^9+6u^7+4u^5+2u^3+u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{17}+4u^{16}+12u^{15}+12u^{14}+28u^{13}+24u^{12}+36u^{11}+32u^{10}+36u^9+28u^8+28u^7+28u^6+12u^5+16u^4+12u^3+12u^2-4u-2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$(u^{19} + 7u^{18} + \cdots + 2u - 1)^2$
c_2, c_7	$(u^{19} - u^{18} + \cdots + 2u + 1)^2$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$u^{38} + u^{37} + \cdots + 11u - 16$
c_8, c_{12}	$(u^{19} + 5u^{18} + \cdots + 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$(y^{19} + 11y^{18} + \cdots + 42y - 1)^2$
c_2, c_7	$(y^{19} + 7y^{18} + \cdots + 2y - 1)^2$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$y^{38} - 33y^{37} + \cdots - 153y + 256$
c_8, c_{12}	$(y^{19} + 19y^{18} + \cdots + 10y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.787239 + 0.559366I$ $a = -1.59518 - 1.01906I$ $b = -1.96110 - 0.37239I$	$-5.72757 + 4.39903I$	$-7.06652 - 2.80289I$
$u = -0.787239 + 0.559366I$ $a = 1.43202 + 1.49055I$ $b = 1.82582 - 0.09005I$	$-5.72757 + 4.39903I$	$-7.06652 - 2.80289I$
$u = -0.787239 - 0.559366I$ $a = -1.59518 + 1.01906I$ $b = -1.96110 + 0.37239I$	$-5.72757 - 4.39903I$	$-7.06652 + 2.80289I$
$u = -0.787239 - 0.559366I$ $a = 1.43202 - 1.49055I$ $b = 1.82582 + 0.09005I$	$-5.72757 - 4.39903I$	$-7.06652 + 2.80289I$
$u = -0.709462 + 0.766103I$ $a = 0.29719 + 1.53619I$ $b = 1.57544 + 1.21787I$	$0.332249 + 0.168160I$	$-1.83171 - 0.91431I$
$u = -0.709462 + 0.766103I$ $a = -0.16941 - 1.89955I$ $b = -1.38773 - 0.86219I$	$0.332249 + 0.168160I$	$-1.83171 - 0.91431I$
$u = -0.709462 - 0.766103I$ $a = 0.29719 - 1.53619I$ $b = 1.57544 - 1.21787I$	$0.332249 - 0.168160I$	$-1.83171 + 0.91431I$
$u = -0.709462 - 0.766103I$ $a = -0.16941 + 1.89955I$ $b = -1.38773 + 0.86219I$	$0.332249 - 0.168160I$	$-1.83171 + 0.91431I$
$u = 0.588600 + 0.865037I$ $a = 1.55445 - 0.80251I$ $b = 2.17659 + 0.04078I$	$-2.82151 + 2.32534I$	$-9.72826 - 3.09456I$
$u = 0.588600 + 0.865037I$ $a = 1.20249 - 1.69796I$ $b = 1.60915 + 0.87230I$	$-2.82151 + 2.32534I$	$-9.72826 - 3.09456I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.588600 - 0.865037I$ $a = 1.55445 + 0.80251I$ $b = 2.17659 - 0.04078I$	$-2.82151 - 2.32534I$	$-9.72826 + 3.09456I$
$u = 0.588600 - 0.865037I$ $a = 1.20249 + 1.69796I$ $b = 1.60915 - 0.87230I$	$-2.82151 - 2.32534I$	$-9.72826 + 3.09456I$
$u = 0.745489 + 0.500016I$ $a = -0.996497 - 0.309724I$ $b = -1.167150 + 0.064986I$	$-6.12368 + 1.53005I$	$-7.79395 - 2.54963I$
$u = 0.745489 + 0.500016I$ $a = -1.039500 + 0.784391I$ $b = -0.588010 - 0.729160I$	$-6.12368 + 1.53005I$	$-7.79395 - 2.54963I$
$u = 0.745489 - 0.500016I$ $a = -0.996497 + 0.309724I$ $b = -1.167150 - 0.064986I$	$-6.12368 - 1.53005I$	$-7.79395 + 2.54963I$
$u = 0.745489 - 0.500016I$ $a = -1.039500 - 0.784391I$ $b = -0.588010 + 0.729160I$	$-6.12368 - 1.53005I$	$-7.79395 + 2.54963I$
$u = 0.021471 + 1.128170I$ $a = 0.965139 - 0.110361I$ $b = -1.080140 - 0.504142I$	$-11.59750 + 3.11880I$	$-13.58624 - 2.69239I$
$u = 0.021471 + 1.128170I$ $a = -0.464921 + 0.948575I$ $b = 0.145228 + 1.086470I$	$-11.59750 + 3.11880I$	$-13.58624 - 2.69239I$
$u = 0.021471 - 1.128170I$ $a = 0.965139 + 0.110361I$ $b = -1.080140 + 0.504142I$	$-11.59750 - 3.11880I$	$-13.58624 + 2.69239I$
$u = 0.021471 - 1.128170I$ $a = -0.464921 - 0.948575I$ $b = 0.145228 - 1.086470I$	$-11.59750 - 3.11880I$	$-13.58624 + 2.69239I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.167515 + 0.839557I$ $a = -1.53925 - 0.74620I$ $b = 0.085530 + 0.151965I$	$-4.70093 + 1.72326I$	$-11.81965 - 5.18112I$
$u = 0.167515 + 0.839557I$ $a = 0.193624 - 0.063242I$ $b = 0.36863 - 1.41729I$	$-4.70093 + 1.72326I$	$-11.81965 - 5.18112I$
$u = 0.167515 - 0.839557I$ $a = -1.53925 + 0.74620I$ $b = 0.085530 - 0.151965I$	$-4.70093 - 1.72326I$	$-11.81965 + 5.18112I$
$u = 0.167515 - 0.839557I$ $a = 0.193624 + 0.063242I$ $b = 0.36863 + 1.41729I$	$-4.70093 - 1.72326I$	$-11.81965 + 5.18112I$
$u = -0.687512 + 0.928828I$ $a = 1.83316 + 0.24348I$ $b = 1.18697 - 1.80258I$	$-0.16029 - 5.52702I$	$-3.57206 + 7.00248I$
$u = -0.687512 + 0.928828I$ $a = -1.86487 + 0.10244I$ $b = -1.48646 + 1.53530I$	$-0.16029 - 5.52702I$	$-3.57206 + 7.00248I$
$u = -0.687512 - 0.928828I$ $a = 1.83316 - 0.24348I$ $b = 1.18697 + 1.80258I$	$-0.16029 + 5.52702I$	$-3.57206 - 7.00248I$
$u = -0.687512 - 0.928828I$ $a = -1.86487 - 0.10244I$ $b = -1.48646 - 1.53530I$	$-0.16029 + 5.52702I$	$-3.57206 - 7.00248I$
$u = 0.636878 + 1.050560I$ $a = -0.563849 + 0.610645I$ $b = -1.65719 + 0.48350I$	$-7.70394 + 3.71612I$	$-10.19900 - 2.45937I$
$u = 0.636878 + 1.050560I$ $a = -0.362743 + 1.357530I$ $b = -1.000620 - 0.203449I$	$-7.70394 + 3.71612I$	$-10.19900 - 2.45937I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.636878 - 1.050560I$ $a = -0.563849 - 0.610645I$ $b = -1.65719 - 0.48350I$	$-7.70394 - 3.71612I$	$-10.19900 + 2.45937I$
$u = 0.636878 - 1.050560I$ $a = -0.362743 - 1.357530I$ $b = -1.000620 + 0.203449I$	$-7.70394 - 3.71612I$	$-10.19900 + 2.45937I$
$u = -0.666721 + 1.052350I$ $a = 1.51291 + 1.05726I$ $b = 2.53933 - 0.66065I$	$-7.18622 - 9.88550I$	$-9.13872 + 7.31129I$
$u = -0.666721 + 1.052350I$ $a = -1.53887 - 1.43806I$ $b = -2.12129 + 0.88721I$	$-7.18622 - 9.88550I$	$-9.13872 + 7.31129I$
$u = -0.666721 - 1.052350I$ $a = 1.51291 - 1.05726I$ $b = 2.53933 + 0.66065I$	$-7.18622 + 9.88550I$	$-9.13872 - 7.31129I$
$u = -0.666721 - 1.052350I$ $a = -1.53887 + 1.43806I$ $b = -2.12129 - 0.88721I$	$-7.18622 + 9.88550I$	$-9.13872 - 7.31129I$
$u = 0.381963$ $a = -0.253895$ $b = 0.971005$	-2.38250	-0.527780
$u = 0.381963$ $a = 2.54214$ $b = -0.0969785$	-2.38250	-0.527780

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 - 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.676097 + 0.978318I$ $a = 2.15417 + 0.28654I$ $b = 1.17610 + 2.30119I$	$-2.46740 + 5.33349I$	$-10.00000 - 5.29150I$
$u = 0.676097 - 0.978318I$ $a = 2.15417 - 0.28654I$ $b = 1.17610 - 2.30119I$	$-2.46740 - 5.33349I$	$-10.00000 + 5.29150I$
$u = -0.676097 + 0.978318I$ $a = -0.154169 + 0.286543I$ $b = -0.176097 - 0.344557I$	$-2.46740 - 5.33349I$	$-10.00000 + 5.29150I$
$u = -0.676097 - 0.978318I$ $a = -0.154169 - 0.286543I$ $b = -0.176097 + 0.344557I$	$-2.46740 + 5.33349I$	$-10.00000 - 5.29150I$

IV. $I_4^u = \langle b+u,\ a+1,\ u^2+1\rangle$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u-1 \\ -u \end{pmatrix}$$

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

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

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

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

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

$$a_{12} = \begin{pmatrix} -u \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.000000I$ $a = -1.00000$ $b = \quad -1.000000I$	-6.57974	-16.0000
$u = \quad -1.000000I$ $a = -1.00000$ $b = \quad 1.000000I$	-6.57974	-16.0000

V. $\boldsymbol{I_5^u = \langle u^3 + u^2 + b - 1,\ u^3 + u^2 + a + u,\ u^4 + 1\rangle}$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^3 + u^2 + 2u \\ 2u^3 + u^2 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^3 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^3 - u + 1 \\ -u^3 + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^3 + u^2 + u \\ u^3 + u^2 - 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.707107 + 0.707107I$		
$a =$	$-2.41421I$	-1.64493	-8.00000
$b =$	$1.70711 - 1.70711I$		
$u =$	$0.707107 - 0.707107I$		
$a =$	$2.41421I$	-1.64493	-8.00000
$b =$	$1.70711 + 1.70711I$		
$u =$	$-0.707107 + 0.707107I$		
$a =$	$-0.414214I$	-1.64493	-8.00000
$b =$	$0.292893 + 0.292893I$		
$u =$	$-0.707107 - 0.707107I$		
$a =$	$0.414214I$	-1.64493	-8.00000
$b =$	$0.292893 - 0.292893I$		

VI. $I_1^v = \langle a,\ b-1,\ v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$u(u-1)^2(u^2+1)^2(u^2-u+2)^2(u^{19}+7u^{18}+\cdots+2u-1)^2$ $\cdot(u^{31}+11u^{30}+\cdots-28u-4)$
c_2, c_7	$u(u^2+1)(u^4+1)(u^4+u^2+2)(u^{19}-u^{18}+\cdots+2u+1)^2$ $\cdot(u^{31}+3u^{30}+\cdots+2u-2)$
c_3, c_4, c_9 c_{10}	$((u-1)^6)(u+1)^5(u^{31}+u^{30}+\cdots+2u+1)(u^{38}+u^{37}+\cdots+11u-16)$
c_5, c_{11}	$((u-1)^5)(u+1)^6(u^{31}+u^{30}+\cdots+2u+1)(u^{38}+u^{37}+\cdots+11u-16)$
c_8, c_{12}	$u(u^2+1)(u^4+1)(u^4+u^2+2)(u^{19}+5u^{18}+\cdots+2u+1)^2$ $\cdot(u^{31}-15u^{30}+\cdots+3142u-314)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y(y-1)^2(y+1)^4(y^2+3y+4)^2(y^{19}+11y^{18}+\cdots+42y-1)^2$ $\cdot(y^{31}+19y^{30}+\cdots-336y-16)$
c_2, c_7	$y(y+1)^2(y^2+1)^2(y^2+y+2)^2(y^{19}+7y^{18}+\cdots+2y-1)^2$ $\cdot(y^{31}+11y^{30}+\cdots-28y-4)$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$((y-1)^{11})(y^{31}-41y^{30}+\cdots+6y-1)(y^{38}-33y^{37}+\cdots-153y+256)$
c_8, c_{12}	$y(y+1)^2(y^2+1)^2(y^2+y+2)^2(y^{19}+19y^{18}+\cdots+10y-1)^2$ $\cdot(y^{31}+23y^{30}+\cdots-1185660y-98596)$