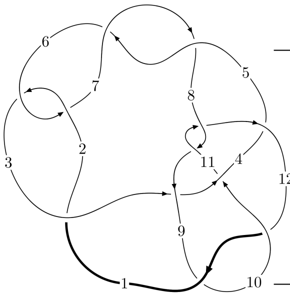
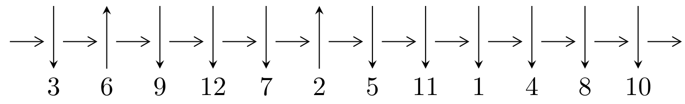
$12a_{0414}$ ($K12a_{0414}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 5989u^{32} - 10457u^{31} + \cdots + 131072b - 109701,\ 4909u^{32} - 21209u^{31} + \cdots + 8192a - 2485,$$
$$u^{33} - 4u^{32} + \cdots - 5u - 1\rangle$$
$$I_2^u = \langle -1.96974 \times 10^{53}u^{47} - 1.99921 \times 10^{54}u^{46} + \cdots + 5.08812 \times 10^{53}b - 4.24069 \times 10^{53},$$
$$-5.78567 \times 10^{53}u^{47} - 4.93093 \times 10^{54}u^{46} + \cdots + 5.08812 \times 10^{53}a - 2.96282 \times 10^{54},$$
$$u^{48} + 9u^{47} + \cdots + 64u^2 + 1\rangle$$
$$I_3^u = \langle 16b^4 + 8b^3 + 12b^2 + 4b + 1,\ a,\ u - 1\rangle$$
$$I_4^u = \langle au + b - u + 1,\ a^2 - a + 1,\ u^2 + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 89 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. $I^u_1 = \langle 5989u^{32} - 10457u^{31} + \cdots + 131072b - 109701,\ 4909u^{32} - 21209u^{31} + \cdots + 8192a - 2485,\ u^{33} - 4u^{32} + \cdots - 5u - 1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.599243u^{32} + 2.58899u^{31} + \cdots + 10.0874u + 0.303345 \\ -0.0456924u^{32} + 0.0797806u^{31} + \cdots + 2.44522u + 0.836952 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.470421u^{32} + 1.90313u^{31} + \cdots + 10.2872u + 0.214317 \\ -0.174515u^{32} + 0.765640u^{31} + \cdots + 2.24542u + 0.925980 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.688271u^{32} + 3.07392u^{31} + \cdots + 12.1718u + 0.948280 \\ -0.216263u^{32} + 0.632584u^{31} + \cdots + 3.00031u + 0.965775 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.0625076u^{32} + 0.312538u^{31} + \cdots - 3.24997u + 1.93751 \\ 0.0625153u^{32} - 0.312576u^{31} + \cdots - 0.750061u + 0.0624847 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.183983u^{32} - 0.905144u^{31} + \cdots + 6.21585u - 1.95071 \\ 0.0234833u^{32} - 0.0922699u^{31} + \cdots + 0.322815u - 0.177536 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -7.62939 \times 10^{-6}u^{32} + 0.0000381470u^{31} + \cdots + 2.00003u - 0.999992 \\ -0.0000152588u^{32} + 0.0000762939u^{31} + \cdots + 2.00006u + 0.0000152588 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{16}u^{32} - \frac{3}{16}u^{31} + \cdots - \frac{3}{8}u + \frac{15}{16} \\ -\frac{1}{16}u^{32} + \frac{3}{16}u^{31} + \cdots + \frac{3}{8}u + \frac{1}{16} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{16}u^{32} + \frac{5}{16}u^{31} + \cdots - \frac{9}{4}u - \frac{1}{16} \\ \frac{1}{16}u^{32} - \frac{5}{16}u^{31} + \cdots + \frac{5}{4}u + \frac{1}{16} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{522847}{262144}u^{32} + \frac{2155227}{262144}u^{31} + \cdots + \frac{1440543}{65536}u - \frac{304289}{262144}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7	$u^{33} + 8u^{32} + \cdots + 113u - 16$
c_2, c_6	$u^{33} - 2u^{32} + \cdots + 9u + 4$
c_3, c_4	$16(16u^{33} + 8u^{32} + \cdots + 4u + 4)$
c_8, c_9, c_{11} c_{12}	$u^{33} + 4u^{32} + \cdots - 5u + 1$
c_{10}	$u^{33} - 3u^{32} + \cdots - 384u + 512$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7	$y^{33} + 36y^{32} + \cdots + 55265y - 256$
c_2, c_6	$y^{33} + 8y^{32} + \cdots + 113y - 16$
c_3, c_4	$256(256y^{33} + 6464y^{32} + \cdots - 32y - 16)$
c_8, c_9, c_{11} c_{12}	$y^{33} + 24y^{32} + \cdots - 7y - 1$
c_{10}	$y^{33} + 7y^{32} + \cdots - 4210688y - 262144$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.810506 + 0.397174I$ $a = 0.471042 - 0.576203I$ $b = 0.031782 + 0.156283I$	$-2.63885 - 1.50470I$	$-17.6118 + 0.9903I$
$u = 0.810506 - 0.397174I$ $a = 0.471042 + 0.576203I$ $b = 0.031782 - 0.156283I$	$-2.63885 + 1.50470I$	$-17.6118 - 0.9903I$
$u = 0.459603 + 0.737094I$ $a = 0.563800 - 1.220850I$ $b = -0.026160 + 0.652384I$	$1.91133 - 4.13194I$	$-6.69421 + 7.53600I$
$u = 0.459603 - 0.737094I$ $a = 0.563800 + 1.220850I$ $b = -0.026160 - 0.652384I$	$1.91133 + 4.13194I$	$-6.69421 - 7.53600I$
$u = 1.196360 + 0.133535I$ $a = 0.087023 - 0.413184I$ $b = 0.0413995 - 0.0359861I$	$-1.64834 + 1.66934I$	$3.56607 - 13.11303I$
$u = 1.196360 - 0.133535I$ $a = 0.087023 + 0.413184I$ $b = 0.0413995 + 0.0359861I$	$-1.64834 - 1.66934I$	$3.56607 + 13.11303I$
$u = -0.056738 + 1.254160I$ $a = -1.46678 - 1.15743I$ $b = 2.16586 + 1.14828I$	$5.46091 - 1.66598I$	$1.53418 + 0.83103I$
$u = -0.056738 - 1.254160I$ $a = -1.46678 + 1.15743I$ $b = 2.16586 - 1.14828I$	$5.46091 + 1.66598I$	$1.53418 - 0.83103I$
$u = 0.289788 + 0.681289I$ $a = -0.86769 + 1.37314I$ $b = 0.375820 - 0.719083I$	$1.78168 + 1.19316I$	$-7.53573 + 1.61269I$
$u = 0.289788 - 0.681289I$ $a = -0.86769 - 1.37314I$ $b = 0.375820 + 0.719083I$	$1.78168 - 1.19316I$	$-7.53573 - 1.61269I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.270166 + 1.241020I$ $a = -1.48489 - 0.50819I$ $b = 2.34742 + 0.73110I$	$3.11523 + 5.84648I$	$-4.56559 - 6.45729I$
$u = -0.270166 - 1.241020I$ $a = -1.48489 + 0.50819I$ $b = 2.34742 - 0.73110I$	$3.11523 - 5.84648I$	$-4.56559 + 6.45729I$
$u = -0.141430 + 1.333060I$ $a = 1.31942 + 0.84469I$ $b = -2.15460 - 0.87222I$	$8.30753 + 3.24726I$	$2.97336 - 3.54656I$
$u = -0.141430 - 1.333060I$ $a = 1.31942 - 0.84469I$ $b = -2.15460 + 0.87222I$	$8.30753 - 3.24726I$	$2.97336 + 3.54656I$
$u = 0.162413 + 1.369390I$ $a = -0.78771 - 1.24953I$ $b = 1.53033 + 0.98573I$	$15.1953 - 7.1498I$	$0. + 4.85816I$
$u = 0.162413 - 1.369390I$ $a = -0.78771 + 1.24953I$ $b = 1.53033 - 0.98573I$	$15.1953 + 7.1498I$	$0. - 4.85816I$
$u = 0.118253 + 1.392890I$ $a = 0.86034 + 1.18437I$ $b = -1.63148 - 0.95130I$	$15.7605 - 0.3593I$	0
$u = 0.118253 - 1.392890I$ $a = 0.86034 - 1.18437I$ $b = -1.63148 + 0.95130I$	$15.7605 + 0.3593I$	0
$u = -0.439636 + 1.342260I$ $a = -1.183190 - 0.355879I$ $b = 2.28590 + 0.59287I$	$6.8551 + 12.3830I$	$0. - 9.37412I$
$u = -0.439636 - 1.342260I$ $a = -1.183190 + 0.355879I$ $b = 2.28590 - 0.59287I$	$6.8551 - 12.3830I$	$0. + 9.37412I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.35672 + 1.37871I$ $a = 1.194790 + 0.473103I$ $b = -2.24033 - 0.62807I$	$8.96151 + 7.45389I$	0
$u = -0.35672 - 1.37871I$ $a = 1.194790 - 0.473103I$ $b = -2.24033 + 0.62807I$	$8.96151 - 7.45389I$	0
$u = 0.522632$ $a = -1.04517$ $b = 0.171255$	-0.864315	-11.0710
$u = 1.49341 + 0.02296I$ $a = 0.004827 - 0.505215I$ $b = 0.009296 - 0.149192I$	$6.08983 + 3.23170I$	0
$u = 1.49341 - 0.02296I$ $a = 0.004827 + 0.505215I$ $b = 0.009296 + 0.149192I$	$6.08983 - 3.23170I$	0
$u = -0.53426 + 1.45932I$ $a = -1.028710 - 0.344760I$ $b = 2.27296 + 0.51516I$	$16.3788 + 16.6342I$	0
$u = -0.53426 - 1.45932I$ $a = -1.028710 + 0.344760I$ $b = 2.27296 - 0.51516I$	$16.3788 - 16.6342I$	0
$u = -0.51174 + 1.47115I$ $a = 1.030260 + 0.366604I$ $b = -2.25941 - 0.51779I$	$16.8347 + 9.9710I$	0
$u = -0.51174 - 1.47115I$ $a = 1.030260 - 0.366604I$ $b = -2.25941 + 0.51779I$	$16.8347 - 9.9710I$	0
$u = -0.373254 + 0.022102I$ $a = -0.06596 + 1.42063I$ $b = 0.074590 + 1.162160I$	$6.15660 - 3.12287I$	$1.67109 + 2.42125I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.373254-0.022102I$ $a=-0.06596-1.42063I$ $b=\ 0.074590-1.162160I$	$6.15660+3.12287I$	$1.67109-2.42125I$
$u=-0.107703+0.140066I$ $a=-1.12399+2.11844I$ $b=\ 0.341008+0.397575I$	$-0.346424-1.198420I$	$-4.36203+5.18223I$
$u=-0.107703-0.140066I$ $a=-1.12399-2.11844I$ $b=\ 0.341008-0.397575I$	$-0.346424+1.198420I$	$-4.36203-5.18223I$

II. $\boldsymbol{I_2^u = \langle -1.97\times 10^{53}u^{47} - 2.00\times 10^{54}u^{46} + \cdots + 5.09\times 10^{53}b - 4.24\times 10^{53},\ -5.79\times 10^{53}u^{47} - 4.93\times 10^{54}u^{46} + \cdots + 5.09\times 10^{53}a - 2.96\times 10^{54},\ u^{48} + 9u^{47} + \cdots + 64u^2 + 1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1.13709u^{47} + 9.69105u^{46} + \cdots + 70.0607u + 5.82301 \\ 0.387125u^{47} + 3.92917u^{46} + \cdots + 7.46630u + 0.833448 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.55344u^{47} + 13.7027u^{46} + \cdots + 71.5849u + 5.72526 \\ -0.0292178u^{47} - 0.0824765u^{46} + \cdots + 5.94208u + 0.931194 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1.32966u^{47} + 11.7305u^{46} + \cdots + 78.6641u + 6.11366 \\ -0.241681u^{47} - 1.88232u^{46} + \cdots + 7.27373u + 0.527099 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1.59496u^{47} - 14.2055u^{46} + \cdots - 56.3536u + 1.75782 \\ 0.0247441u^{47} + 0.125308u^{46} + \cdots - 6.45255u - 0.262204 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 2.51207u^{47} + 22.2488u^{46} + \cdots + 63.3921u - 0.943478 \\ 0.00312394u^{47} + 0.0401568u^{46} + \cdots + 7.57257u + 0.426062 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.572309u^{47} + 5.04293u^{46} + \cdots + 0.200411u - 0.779680 \\ 0.282861u^{47} + 2.34564u^{46} + \cdots - 0.371898u + 0.328173 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.294021u^{47} - 2.25196u^{46} + \cdots - 36.4484u - 8.21659 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{47} - 9u^{46} + \cdots - 620u^2 - 64u \\ 0.394226u^{47} + 3.26397u^{46} + \cdots - 8.21659u + 0.294021 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0194241u^{47} + 0.274555u^{46} + \cdots + 24.2369u - 5.45603$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7	$(u^{24} + 5u^{23} + \cdots + 4u + 1)^2$
c_2, c_6	$(u^{24} - u^{23} + \cdots - 2u + 1)^2$
c_3, c_4	$u^{48} - 5u^{47} + \cdots - 226208u + 1237879$
c_8, c_9, c_{11} c_{12}	$u^{48} - 9u^{47} + \cdots + 64u^2 + 1$
c_{10}	$(u^{24} + u^{23} + \cdots - 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7	$(y^{24} + 29y^{23} + \cdots + 20y + 1)^2$
c_2, c_6	$(y^{24} + 5y^{23} + \cdots + 4y + 1)^2$
c_3, c_4	$y^{48} + 31y^{47} + \cdots + 24673685371492y + 1532344418641$
c_8, c_9, c_{11} c_{12}	$y^{48} + 35y^{47} + \cdots + 128y + 1$
c_{10}	$(y^{24} + 9y^{23} + \cdots + 4y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.980744 + 0.033066I$ $a = 0.710121 - 0.970033I$ $b = -0.0139690 + 0.0292733I$	$2.50043 + 7.34378I$	$-8.00000 - 8.70536I$
$u = -0.980744 - 0.033066I$ $a = 0.710121 + 0.970033I$ $b = -0.0139690 - 0.0292733I$	$2.50043 - 7.34378I$	$-8.00000 + 8.70536I$
$u = -0.018560 + 1.043510I$ $a = -0.640429 + 0.680961I$ $b = 1.46692 + 0.06389I$	$1.62658 + 2.08350I$	0
$u = -0.018560 - 1.043510I$ $a = -0.640429 - 0.680961I$ $b = 1.46692 - 0.06389I$	$1.62658 - 2.08350I$	0
$u = -0.882259 + 0.224615I$ $a = -0.891979 + 0.856342I$ $b = 0.114179 - 0.194204I$	$3.92390 + 3.08008I$	$-1.95703 - 2.82964I$
$u = -0.882259 - 0.224615I$ $a = -0.891979 - 0.856342I$ $b = 0.114179 + 0.194204I$	$3.92390 - 3.08008I$	$-1.95703 + 2.82964I$
$u = 0.010763 + 1.094900I$ $a = 0.290435 - 0.328937I$ $b = -3.08197 - 0.34616I$	$3.08573 - 1.11019I$	0
$u = 0.010763 - 1.094900I$ $a = 0.290435 + 0.328937I$ $b = -3.08197 + 0.34616I$	$3.08573 + 1.11019I$	0
$u = 0.319322 + 1.080060I$ $a = -0.894805 + 0.364573I$ $b = 1.53223 - 0.32727I$	$-0.47750 - 2.61939I$	0
$u = 0.319322 - 1.080060I$ $a = -0.894805 - 0.364573I$ $b = 1.53223 + 0.32727I$	$-0.47750 + 2.61939I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.022326 + 0.866430I$ $a = -0.351897 - 0.428351I$ $b = -0.42856 - 2.75599I$	$3.08573 + 1.11019I$	$-7.08627 - 5.87957I$
$u = 0.022326 - 0.866430I$ $a = -0.351897 + 0.428351I$ $b = -0.42856 + 2.75599I$	$3.08573 - 1.11019I$	$-7.08627 + 5.87957I$
$u = 0.070364 + 1.192310I$ $a = 0.653251 - 0.404984I$ $b = -1.73332 + 0.20487I$	$3.18351 - 1.48443I$	0
$u = 0.070364 - 1.192310I$ $a = 0.653251 + 0.404984I$ $b = -1.73332 - 0.20487I$	$3.18351 + 1.48443I$	0
$u = -0.112411 + 1.231810I$ $a = -0.366402 + 0.690629I$ $b = 1.46512 + 0.56427I$	$9.74478 + 4.87894I$	0
$u = -0.112411 - 1.231810I$ $a = -0.366402 - 0.690629I$ $b = 1.46512 - 0.56427I$	$9.74478 - 4.87894I$	0
$u = -0.080284 + 1.240960I$ $a = 0.359527 - 0.665336I$ $b = -1.52951 - 0.59847I$	$9.92570 - 1.57218I$	0
$u = -0.080284 - 1.240960I$ $a = 0.359527 + 0.665336I$ $b = -1.52951 + 0.59847I$	$9.92570 + 1.57218I$	0
$u = -1.246030 + 0.166941I$ $a = -0.622701 + 0.776104I$ $b = 0.215883 + 0.099436I$	$11.61100 + 3.84160I$	0
$u = -1.246030 - 0.166941I$ $a = -0.622701 - 0.776104I$ $b = 0.215883 - 0.099436I$	$11.61100 - 3.84160I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.255490 + 0.121911I$ $a = 0.603893 - 0.792963I$ $b = -0.189376 - 0.121790I$	$11.3504 + 10.3945I$	0
$u = -1.255490 - 0.121911I$ $a = 0.603893 + 0.792963I$ $b = -0.189376 + 0.121790I$	$11.3504 - 10.3945I$	0
$u = -0.546001 + 1.213640I$ $a = -0.687726 + 0.249352I$ $b = 1.208230 - 0.558353I$	$6.78312 + 2.24409I$	0
$u = -0.546001 - 1.213640I$ $a = -0.687726 - 0.249352I$ $b = 1.208230 + 0.558353I$	$6.78312 - 2.24409I$	0
$u = 0.465585 + 0.444846I$ $a = 0.35870 - 1.41573I$ $b = -1.06906 - 1.22858I$	$9.92570 + 1.57218I$	$-4.12166 - 2.29522I$
$u = 0.465585 - 0.444846I$ $a = 0.35870 + 1.41573I$ $b = -1.06906 + 1.22858I$	$9.92570 - 1.57218I$	$-4.12166 + 2.29522I$
$u = 0.487951 + 0.375365I$ $a = -0.51836 + 1.48283I$ $b = 1.07574 + 1.16660I$	$9.74478 - 4.87894I$	$-4.44407 + 2.58342I$
$u = 0.487951 - 0.375365I$ $a = -0.51836 - 1.48283I$ $b = 1.07574 - 1.16660I$	$9.74478 + 4.87894I$	$-4.44407 - 2.58342I$
$u = 0.322137 + 1.361350I$ $a = 0.762790 - 0.256280I$ $b = -1.64722 + 0.35851I$	$3.92390 - 3.08008I$	0
$u = 0.322137 - 1.361350I$ $a = 0.762790 + 0.256280I$ $b = -1.64722 - 0.35851I$	$3.92390 + 3.08008I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.471832 + 1.328370I$ $a = -0.809389 + 0.212649I$ $b = 1.63311 - 0.39683I$	$2.50043 - 7.34378I$	0
$u = 0.471832 - 1.328370I$ $a = -0.809389 - 0.212649I$ $b = 1.63311 + 0.39683I$	$2.50043 + 7.34378I$	0
$u = -0.391141 + 1.355140I$ $a = 0.646964 - 0.240514I$ $b = -1.43489 + 0.51946I$	$6.78312 - 2.24409I$	0
$u = -0.391141 - 1.355140I$ $a = 0.646964 + 0.240514I$ $b = -1.43489 - 0.51946I$	$6.78312 + 2.24409I$	0
$u = -0.580158 + 0.075111I$ $a = 0.96535 + 1.59014I$ $b = 0.294807 - 0.258255I$	$-0.47750 - 2.61939I$	$-12.11481 + 3.60921I$
$u = -0.580158 - 0.075111I$ $a = 0.96535 - 1.59014I$ $b = 0.294807 + 0.258255I$	$-0.47750 + 2.61939I$	$-12.11481 - 3.60921I$
$u = -0.353776 + 0.398658I$ $a = -1.71158 + 0.19235I$ $b = -0.050547 - 0.825568I$	$3.18351 + 1.48443I$	$-2.66287 - 3.68159I$
$u = -0.353776 - 0.398658I$ $a = -1.71158 - 0.19235I$ $b = -0.050547 + 0.825568I$	$3.18351 - 1.48443I$	$-2.66287 + 3.68159I$
$u = 0.54994 + 1.53645I$ $a = -0.753450 + 0.160860I$ $b = 1.68785 - 0.40537I$	$11.3504 - 10.3945I$	0
$u = 0.54994 - 1.53645I$ $a = -0.753450 - 0.160860I$ $b = 1.68785 + 0.40537I$	$11.3504 + 10.3945I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.51674 + 1.55141I$ $a = \ \ 0.746313 - 0.168037I$ $b = -1.68832 + 0.39730I$	$11.61100 - 3.84160I$	0
$u = \ \ 0.51674 - 1.55141I$ $a = \ \ 0.746313 + 0.168037I$ $b = -1.68832 - 0.39730I$	$11.61100 + 3.84160I$	0
$u = -0.68305 + 1.51479I$ $a = -0.636165 + 0.279673I$ $b = \ \ 1.309160 - 0.286833I$	$15.6992 + 3.3032I$	0
$u = -0.68305 - 1.51479I$ $a = -0.636165 - 0.279673I$ $b = \ \ 1.309160 + 0.286833I$	$15.6992 - 3.3032I$	0
$u = -0.65013 + 1.53993I$ $a = \ \ 0.633866 - 0.274677I$ $b = -1.336370 + 0.290398I$	$15.6992 - 3.3032I$	0
$u = -0.65013 - 1.53993I$ $a = \ \ 0.633866 + 0.274677I$ $b = -1.336370 - 0.290398I$	$15.6992 + 3.3032I$	0
$u = \ \ 0.0430770 + 0.0919701I$ $a = \ \ 3.15367 + 9.07419I$ $b = \ \ 0.699871 + 0.813700I$	$1.62658 - 2.08350I$	$-8.24893 + 3.59251I$
$u = \ \ 0.0430770 - 0.0919701I$ $a = \ \ 3.15367 - 9.07419I$ $b = \ \ 0.699871 - 0.813700I$	$1.62658 + 2.08350I$	$-8.24893 - 3.59251I$

III. $I^u_3 = \langle 16b^4 + 8b^3 + 12b^2 + 4b + 1,\ a,\ u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 32b^3 + b^2 + 16b - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^4 - u^3 + 3u^2 - 2u + 1$
c_2	$u^4 - u^3 + u^2 + 1$
c_3	$16(16u^4 - 8u^3 + 12u^2 - 4u + 1)$
c_4	$16(16u^4 + 8u^3 + 12u^2 + 4u + 1)$
c_6	$u^4 + u^3 + u^2 + 1$
c_7	$u^4 + u^3 + 3u^2 + 2u + 1$
c_8, c_9	$(u-1)^4$
c_{10}	u^4
c_{11}, c_{12}	$(u+1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_6	$y^4 + y^3 + 3y^2 + 2y + 1$
c_3, c_4	$256(256y^4 + 320y^3 + 112y^2 + 8y + 1)$
c_8, c_9, c_{11} c_{12}	$(y-1)^4$
c_{10}	y^4

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = -0.052438 + 0.776246I$	$5.14581 + 3.16396I$	$-8.41011 - 2.42402I$
$u = 1.00000$ $a = 0$ $b = -0.052438 - 0.776246I$	$5.14581 - 3.16396I$	$-8.41011 + 2.42402I$
$u = 1.00000$ $a = 0$ $b = -0.197562 + 0.253422I$	$-1.85594 + 1.41510I$	$-12.21489 + 4.38336I$
$u = 1.00000$ $a = 0$ $b = -0.197562 - 0.253422I$	$-1.85594 - 1.41510I$	$-12.21489 - 4.38336I$

IV. $I^u_4 = \langle au + b - u + 1,\ a^2 - a + 1,\ u^2 + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4a - 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6, c_7	$(y^2 + y + 1)^2$
c_3, c_4	$y^4 - 4y^2 + 16$
c_8, c_9, c_{11} c_{12}	$(y + 1)^4$
c_{10}	$(y^2 - y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 0.500000 + 0.866025I$ $b = -0.133975 + 0.500000I$	$3.28987 - 2.02988I$	$-2.00000 + 3.46410I$
$u = 1.000000I$ $a = 0.500000 - 0.866025I$ $b = -1.86603 + 0.50000I$	$3.28987 + 2.02988I$	$-2.00000 - 3.46410I$
$u = -1.000000I$ $a = 0.500000 + 0.866025I$ $b = -1.86603 - 0.50000I$	$3.28987 - 2.02988I$	$-2.00000 + 3.46410I$
$u = -1.000000I$ $a = 0.500000 - 0.866025I$ $b = -0.133975 - 0.500000I$	$3.28987 + 2.02988I$	$-2.00000 - 3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$((u^2-u+1)^2)(u^4-u^3+3u^2-2u+1)(u^{24}+5u^{23}+\cdots+4u+1)^2$ $\cdot(u^{33}+8u^{32}+\cdots+113u-16)$
c_2	$((u^2+u+1)^2)(u^4-u^3+u^2+1)(u^{24}-u^{23}+\cdots-2u+1)^2$ $\cdot(u^{33}-2u^{32}+\cdots+9u+4)$
c_3	$256(u^4-2u^3+2u^2-4u+4)(16u^4-8u^3+12u^2-4u+1)$ $\cdot(16u^{33}+8u^{32}+\cdots+4u+4)(u^{48}-5u^{47}+\cdots-226208u+1237879)$
c_4	$256(u^4+2u^3+2u^2+4u+4)(16u^4+8u^3+12u^2+4u+1)$ $\cdot(16u^{33}+8u^{32}+\cdots+4u+4)(u^{48}-5u^{47}+\cdots-226208u+1237879)$
c_6	$((u^2-u+1)^2)(u^4+u^3+u^2+1)(u^{24}-u^{23}+\cdots-2u+1)^2$ $\cdot(u^{33}-2u^{32}+\cdots+9u+4)$
c_7	$((u^2+u+1)^2)(u^4+u^3+3u^2+2u+1)(u^{24}+5u^{23}+\cdots+4u+1)^2$ $\cdot(u^{33}+8u^{32}+\cdots+113u-16)$
c_8, c_9	$((u-1)^4)(u^2+1)^2(u^{33}+4u^{32}+\cdots-5u+1)$ $\cdot(u^{48}-9u^{47}+\cdots+64u^2+1)$
c_{10}	$u^4(u^4-u^2+1)(u^{24}+u^{23}+\cdots-2u+1)^2$ $\cdot(u^{33}-3u^{32}+\cdots-384u+512)$
c_{11}, c_{12}	$((u+1)^4)(u^2+1)^2(u^{33}+4u^{32}+\cdots-5u+1)$ $\cdot(u^{48}-9u^{47}+\cdots+64u^2+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7	$((y^2+y+1)^2)(y^4+5y^3+\cdots+2y+1)(y^{24}+29y^{23}+\cdots+20y+1)^2$ $\cdot(y^{33}+36y^{32}+\cdots+55265y-256)$
c_2, c_6	$((y^2+y+1)^2)(y^4+y^3+3y^2+2y+1)(y^{24}+5y^{23}+\cdots+4y+1)^2$ $\cdot(y^{33}+8y^{32}+\cdots+113y-16)$
c_3, c_4	$65536(y^4-4y^2+16)(256y^4+320y^3+112y^2+8y+1)$ $\cdot(256y^{33}+6464y^{32}+\cdots-32y-16)$ $\cdot(y^{48}+31y^{47}+\cdots+24673685371492y+1532344418641)$
c_8, c_9, c_{11} c_{12}	$((y-1)^4)(y+1)^4(y^{33}+24y^{32}+\cdots-7y-1)$ $\cdot(y^{48}+35y^{47}+\cdots+128y+1)$
c_{10}	$y^4(y^2-y+1)^2(y^{24}+9y^{23}+\cdots+4y+1)^2$ $\cdot(y^{33}+7y^{32}+\cdots-4210688y-262144)$