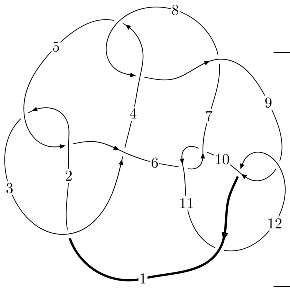
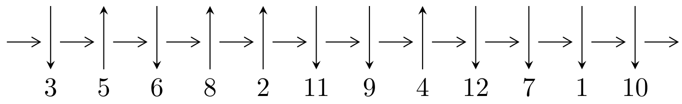
$12a_{0010}$ ($K12a_{0010}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 1.53494\times 10^{76}u^{118} + 2.11404\times 10^{77}u^{117} + \cdots + 6.29838\times 10^{74}b - 4.20588\times 10^{76},\\
& -3.27734\times 10^{76}u^{118} - 1.76333\times 10^{77}u^{117} + \cdots + 3.14919\times 10^{74}a - 2.34713\times 10^{77},\\
& u^{119} + 13u^{118} + \cdots - 20u - 1\rangle\\
I_2^u = \langle & -a^3 - a^2 + b - a,\ a^4 + a^3 + a^2 + 1,\ u - 1\rangle\\
I_3^u = \langle & b,\ u^2a + a^2 + 2au + 3u^2 + a + 5u + 4,\ u^3 + u^2 - 1\rangle\\
I_4^u = \langle & -a^5 + 2a^4 - 2a^3 + 2a^2 + b - 2a + 1,\ a^6 - 2a^5 + 2a^4 - 2a^3 + 2a^2 - a + 1,\ u - 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 135 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. $\boldsymbol{I_1^u = \langle 1.53 \times 10^{76} u^{118} + 2.11 \times 10^{77} u^{117} + \cdots + 6.30 \times 10^{74} b - 4.21 \times 10^{76},\ -3.28 \times 10^{76} u^{118} - 1.76 \times 10^{77} u^{117} + \cdots + 3.15 \times 10^{74} a - 2.35 \times 10^{77},\ u^{119} + 13u^{118} + \cdots - 20u - 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_4 = \begin{pmatrix} 104.069u^{118} + 559.930u^{117} + \cdots + 12845.3u + 745.312 \\ -24.3704u^{118} - 335.648u^{117} + \cdots + 1158.29u + 66.7771 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 148.115u^{118} + 1786.08u^{117} + \cdots - 3799.29u - 227.176 \\ 27.5034u^{118} + 486.129u^{117} + \cdots - 4211.15u - 238.606 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 509.194u^{118} + 5592.67u^{117} + \cdots + 4807.30u + 342.681 \\ 332.399u^{118} + 4415.95u^{117} + \cdots - 11668.3u - 608.640 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 175.618u^{118} + 2272.21u^{117} + \cdots - 8010.44u - 465.782 \\ 27.5034u^{118} + 486.129u^{117} + \cdots - 4211.15u - 238.606 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 99.1977u^{118} + 1386.25u^{117} + \cdots - 7021.64u - 412.862 \\ -67.9945u^{118} - 781.463u^{117} + \cdots - 702.392u - 51.4383 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 928.371u^{118} + 10559.2u^{117} + \cdots - 672.763u + 54.6534 \\ 660.964u^{118} + 8651.81u^{117} + \cdots - 22541.4u - 1190.83 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 466.460u^{118} + 5235.90u^{117} + \cdots + 1169.98u + 102.276 \\ 557.127u^{118} + 7140.14u^{117} + \cdots - 16297.2u - 860.184 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 413.566u^{118} + 3160.04u^{117} + \cdots + 29822.9u + 1714.64$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{119} + 55u^{118} + \cdots + 208u - 1$
c_2, c_5	$u^{119} + 5u^{118} + \cdots + 8u - 1$
c_3	$u^{119} - 5u^{118} + \cdots + 5788u - 292$
c_4, c_8	$u^{119} - 2u^{118} + \cdots + 32u + 64$
c_6, c_{10}	$u^{119} - 3u^{118} + \cdots - 5120u + 1024$
c_7	$u^{119} + 40u^{118} + \cdots - 80896u - 4096$
c_9, c_{12}	$u^{119} - 13u^{118} + \cdots - 20u + 1$
c_{11}	$u^{119} + 53u^{118} + \cdots - 14u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{119} + 23y^{118} + \cdots + 45340y - 1$
c_2, c_5	$y^{119} + 55y^{118} + \cdots + 208y - 1$
c_3	$y^{119} - 9y^{118} + \cdots + 26282120y - 85264$
c_4, c_8	$y^{119} + 40y^{118} + \cdots - 80896y - 4096$
c_6, c_{10}	$y^{119} + 69y^{118} + \cdots - 31981568y - 1048576$
c_7	$y^{119} + 68y^{118} + \cdots + 5134876672y - 16777216$
c_9, c_{12}	$y^{119} - 53y^{118} + \cdots - 14y - 1$
c_{11}	$y^{119} + 39y^{118} + \cdots + 5618y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.839718 + 0.548941I$ $a = 1.03007 + 1.37383I$ $b = -0.794811 - 0.704672I$	$1.89954 - 0.71334I$	0
$u = 0.839718 - 0.548941I$ $a = 1.03007 - 1.37383I$ $b = -0.794811 + 0.704672I$	$1.89954 + 0.71334I$	0
$u = -0.414192 + 0.897221I$ $a = 1.060200 - 0.496479I$ $b = -0.687708 + 1.025140I$	$0.91210 - 4.63467I$	0
$u = -0.414192 - 0.897221I$ $a = 1.060200 + 0.496479I$ $b = -0.687708 - 1.025140I$	$0.91210 + 4.63467I$	0
$u = -0.835785 + 0.571845I$ $a = 0.665117 - 0.447173I$ $b = -0.834943 - 0.140628I$	$1.84382 + 2.29296I$	0
$u = -0.835785 - 0.571845I$ $a = 0.665117 + 0.447173I$ $b = -0.834943 + 0.140628I$	$1.84382 - 2.29296I$	0
$u = -0.479737 + 0.894115I$ $a = 1.68069 + 0.21651I$ $b = -0.948305 - 0.723106I$	$5.19353 - 5.82530I$	0
$u = -0.479737 - 0.894115I$ $a = 1.68069 - 0.21651I$ $b = -0.948305 + 0.723106I$	$5.19353 + 5.82530I$	0
$u = 0.859164 + 0.551104I$ $a = 2.56167 + 0.36793I$ $b = -0.692210 + 0.826381I$	$1.83580 - 3.70893I$	0
$u = 0.859164 - 0.551104I$ $a = 2.56167 - 0.36793I$ $b = -0.692210 - 0.826381I$	$1.83580 + 3.70893I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.920082 + 0.330594I$ $a = -1.05886 - 1.09117I$ $b = 0.701252 + 0.313348I$	$-2.14764 + 0.46525I$	0
$u = 0.920082 - 0.330594I$ $a = -1.05886 + 1.09117I$ $b = 0.701252 - 0.313348I$	$-2.14764 - 0.46525I$	0
$u = -0.535990 + 0.870642I$ $a = 1.351430 - 0.147219I$ $b = -0.718212 + 0.865805I$	$5.58089 + 1.54128I$	0
$u = -0.535990 - 0.870642I$ $a = 1.351430 + 0.147219I$ $b = -0.718212 - 0.865805I$	$5.58089 - 1.54128I$	0
$u = -0.811525 + 0.533856I$ $a = -0.006008 + 1.406260I$ $b = -0.202031 + 0.895750I$	$1.40789 - 0.40488I$	0
$u = -0.811525 - 0.533856I$ $a = -0.006008 - 1.406260I$ $b = -0.202031 - 0.895750I$	$1.40789 + 0.40488I$	0
$u = -0.506849 + 0.899088I$ $a = -1.324780 + 0.302703I$ $b = 0.743370 - 0.916592I$	$6.96695 - 3.78303I$	0
$u = -0.506849 - 0.899088I$ $a = -1.324780 - 0.302703I$ $b = 0.743370 + 0.916592I$	$6.96695 + 3.78303I$	0
$u = -0.520633 + 0.894920I$ $a = -1.58006 - 0.26157I$ $b = 0.896350 + 0.744474I$	$7.05859 - 0.70677I$	0
$u = -0.520633 - 0.894920I$ $a = -1.58006 + 0.26157I$ $b = 0.896350 - 0.744474I$	$7.05859 + 0.70677I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.700245 + 0.663386I$ $a = -0.88509 - 1.53838I$ $b = 0.659039 + 0.972129I$	$-0.29156 + 6.55308I$	0
$u = 0.700245 - 0.663386I$ $a = -0.88509 + 1.53838I$ $b = 0.659039 - 0.972129I$	$-0.29156 - 6.55308I$	0
$u = -0.880230 + 0.554713I$ $a = 0.36352 - 1.59110I$ $b = 0.057310 - 0.897606I$	$1.17161 + 4.80695I$	0
$u = -0.880230 - 0.554713I$ $a = 0.36352 + 1.59110I$ $b = 0.057310 + 0.897606I$	$1.17161 - 4.80695I$	0
$u = -0.563327 + 0.775350I$ $a = 1.353100 - 0.003460I$ $b = -0.815150 - 0.602192I$	$2.15561 + 0.96157I$	0
$u = -0.563327 - 0.775350I$ $a = 1.353100 + 0.003460I$ $b = -0.815150 + 0.602192I$	$2.15561 - 0.96157I$	0
$u = 0.729173 + 0.618822I$ $a = 0.91485 + 1.48291I$ $b = -0.677218 - 0.888176I$	$1.64414 + 1.56779I$	0
$u = 0.729173 - 0.618822I$ $a = 0.91485 - 1.48291I$ $b = -0.677218 + 0.888176I$	$1.64414 - 1.56779I$	0
$u = 0.806433 + 0.513028I$ $a = -2.73489 - 0.49333I$ $b = 0.677943 - 0.716615I$	$0.49484 + 1.35815I$	0
$u = 0.806433 - 0.513028I$ $a = -2.73489 + 0.49333I$ $b = 0.677943 + 0.716615I$	$0.49484 - 1.35815I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.896751 + 0.539049I$ $a = -1.09612 - 1.34285I$ $b = 0.874636 + 0.641589I$	$0.17888 - 5.63399I$	0
$u = 0.896751 - 0.539049I$ $a = -1.09612 + 1.34285I$ $b = 0.874636 - 0.641589I$	$0.17888 + 5.63399I$	0
$u = -0.449457 + 0.951285I$ $a = -1.264510 + 0.571043I$ $b = 0.774340 - 1.021660I$	$6.17714 - 6.89104I$	0
$u = -0.449457 - 0.951285I$ $a = -1.264510 - 0.571043I$ $b = 0.774340 + 1.021660I$	$6.17714 + 6.89104I$	0
$u = -0.432123 + 0.970962I$ $a = 1.25415 - 0.65761I$ $b = -0.785309 + 1.057920I$	$4.11704 - 12.19560I$	0
$u = -0.432123 - 0.970962I$ $a = 1.25415 + 0.65761I$ $b = -0.785309 - 1.057920I$	$4.11704 + 12.19560I$	0
$u = -0.935084 + 0.512602I$ $a = -0.632458 + 0.577496I$ $b = 1.039780 - 0.012368I$	$-1.16555 + 5.57300I$	0
$u = -0.935084 - 0.512602I$ $a = -0.632458 - 0.577496I$ $b = 1.039780 + 0.012368I$	$-1.16555 - 5.57300I$	0
$u = -0.810344 + 0.451943I$ $a = -0.728244 + 0.571667I$ $b = 1.018150 + 0.257504I$	$-0.64746 - 1.61824I$	0
$u = -0.810344 - 0.451943I$ $a = -0.728244 - 0.571667I$ $b = 1.018150 - 0.257504I$	$-0.64746 + 1.61824I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.857581 + 0.325966I$ $a = 0.188149 - 0.845340I$ $b = 0.348024 - 1.228190I$	$-5.56356 + 0.94413I$	0
$u = -0.857581 - 0.325966I$ $a = 0.188149 + 0.845340I$ $b = 0.348024 + 1.228190I$	$-5.56356 - 0.94413I$	0
$u = 1.073860 + 0.172674I$ $a = 1.16829 + 1.04677I$ $b = -0.698025 + 0.105091I$	$-2.63266 - 2.23010I$	0
$u = 1.073860 - 0.172674I$ $a = 1.16829 - 1.04677I$ $b = -0.698025 - 0.105091I$	$-2.63266 + 2.23010I$	0
$u = -0.612148 + 0.916355I$ $a = -1.36804 - 0.41960I$ $b = 0.767030 + 0.815475I$	$7.27557 + 1.92163I$	0
$u = -0.612148 - 0.916355I$ $a = -1.36804 + 0.41960I$ $b = 0.767030 - 0.815475I$	$7.27557 - 1.92163I$	0
$u = 0.895015 + 0.056762I$ $a = -0.97632 - 4.21446I$ $b = 0.037868 - 0.362547I$	$-1.30782 - 2.14757I$	0
$u = 0.895015 - 0.056762I$ $a = -0.97632 + 4.21446I$ $b = 0.037868 + 0.362547I$	$-1.30782 + 2.14757I$	0
$u = 0.938429 + 0.604225I$ $a = 2.35579 + 0.15592I$ $b = -0.711352 + 0.998662I$	$0.99788 - 6.39299I$	0
$u = 0.938429 - 0.604225I$ $a = 2.35579 - 0.15592I$ $b = -0.711352 - 0.998662I$	$0.99788 + 6.39299I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.978707 + 0.546639I$ $a = -2.16911 - 0.28799I$ $b = 0.578860 - 1.013760I$	$-3.94184 - 4.12095I$	0
$u = 0.978707 - 0.546639I$ $a = -2.16911 + 0.28799I$ $b = 0.578860 + 1.013760I$	$-3.94184 + 4.12095I$	0
$u = -1.029680 + 0.451076I$ $a = -0.759282 + 0.856662I$ $b = 0.104751 + 1.287900I$	$-6.58231 + 2.05524I$	0
$u = -1.029680 - 0.451076I$ $a = -0.759282 - 0.856662I$ $b = 0.104751 - 1.287900I$	$-6.58231 - 2.05524I$	0
$u = -0.649950 + 0.933230I$ $a = 1.287340 + 0.511260I$ $b = -0.706439 - 0.861121I$	$5.59145 + 6.98652I$	0
$u = -0.649950 - 0.933230I$ $a = 1.287340 - 0.511260I$ $b = -0.706439 + 0.861121I$	$5.59145 - 6.98652I$	0
$u = 0.960992 + 0.623339I$ $a = -2.31214 - 0.07898I$ $b = 0.724478 - 1.053400I$	$-1.08963 - 11.56600I$	0
$u = 0.960992 - 0.623339I$ $a = -2.31214 + 0.07898I$ $b = 0.724478 + 1.053400I$	$-1.08963 + 11.56600I$	0
$u = -0.817590 + 0.805347I$ $a = 0.587598 + 0.323895I$ $b = -0.296511 - 0.547479I$	$2.77173 + 1.39379I$	0
$u = -0.817590 - 0.805347I$ $a = 0.587598 - 0.323895I$ $b = -0.296511 + 0.547479I$	$2.77173 - 1.39379I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.111590 + 0.323733I$ $a = -1.17299 - 0.82930I$ $b = 0.066112 - 0.973792I$	$-3.92676 - 1.15806I$	0
$u = 1.111590 - 0.323733I$ $a = -1.17299 + 0.82930I$ $b = 0.066112 + 0.973792I$	$-3.92676 + 1.15806I$	0
$u = -1.039170 + 0.511622I$ $a = 0.966640 - 0.982366I$ $b = -0.216751 - 1.189260I$	$-2.70805 + 5.79660I$	0
$u = -1.039170 - 0.511622I$ $a = 0.966640 + 0.982366I$ $b = -0.216751 + 1.189260I$	$-2.70805 - 5.79660I$	0
$u = 0.825868$ $a = -0.825487$ $b = 0.262404$	-1.19842	0
$u = -0.789158 + 0.234058I$ $a = 0.046847 - 0.787410I$ $b = 0.556048 - 1.191030I$	$-3.70047 - 7.10733I$	0
$u = -0.789158 - 0.234058I$ $a = 0.046847 + 0.787410I$ $b = 0.556048 + 1.191030I$	$-3.70047 + 7.10733I$	0
$u = -0.757598 + 0.296110I$ $a = -0.051753 + 0.850977I$ $b = -0.477016 + 1.110170I$	$-1.16003 - 2.19769I$	0
$u = -0.757598 - 0.296110I$ $a = -0.051753 - 0.850977I$ $b = -0.477016 - 1.110170I$	$-1.16003 + 2.19769I$	0
$u = -1.086580 + 0.507173I$ $a = -1.060610 + 0.806288I$ $b = 0.299743 + 1.275690I$	$-5.76467 + 10.31460I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.086580 - 0.507173I$ $a = -1.060610 - 0.806288I$ $b = 0.299743 - 1.275690I$	$-5.76467 - 10.31460I$	0
$u = 1.137620 + 0.399746I$ $a = 1.317670 + 0.471398I$ $b = -0.156909 + 1.115740I$	$-6.84406 - 5.05649I$	0
$u = 1.137620 - 0.399746I$ $a = 1.317670 - 0.471398I$ $b = -0.156909 - 1.115740I$	$-6.84406 + 5.05649I$	0
$u = 0.566725 + 0.544339I$ $a = -0.74644 - 1.42376I$ $b = 0.411940 + 0.873848I$	$-2.76173 - 0.28929I$	0
$u = 0.566725 - 0.544339I$ $a = -0.74644 + 1.42376I$ $b = 0.411940 - 0.873848I$	$-2.76173 + 0.28929I$	0
$u = -0.918520 + 0.804272I$ $a = -0.183100 - 0.583283I$ $b = -0.138746 + 0.590858I$	$2.48569 + 4.61487I$	0
$u = -0.918520 - 0.804272I$ $a = -0.183100 + 0.583283I$ $b = -0.138746 - 0.590858I$	$2.48569 - 4.61487I$	0
$u = -1.059890 + 0.640593I$ $a = 0.480179 - 0.776739I$ $b = -0.955852 + 0.487819I$	$0.63997 + 4.40174I$	0
$u = -1.059890 - 0.640593I$ $a = 0.480179 + 0.776739I$ $b = -0.955852 - 0.487819I$	$0.63997 - 4.40174I$	0
$u = 1.197300 + 0.316904I$ $a = 0.855329 + 0.548247I$ $b = 0.063583 + 1.105510I$	$-7.04263 + 2.47483I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.197300 - 0.316904I$ $a = 0.855329 - 0.548247I$ $b = 0.063583 - 1.105510I$	$-7.04263 - 2.47483I$	0
$u = 1.251080 + 0.049890I$ $a = 0.757436 + 0.867886I$ $b = -0.772334 + 0.600594I$	$-1.06625 + 3.37112I$	0
$u = 1.251080 - 0.049890I$ $a = 0.757436 - 0.867886I$ $b = -0.772334 - 0.600594I$	$-1.06625 - 3.37112I$	0
$u = 1.269350 + 0.008920I$ $a = -0.555567 + 0.802077I$ $b = 0.702631 + 0.733404I$	$0.42376 + 1.47707I$	0
$u = 1.269350 - 0.008920I$ $a = -0.555567 - 0.802077I$ $b = 0.702631 - 0.733404I$	$0.42376 - 1.47707I$	0
$u = -1.087090 + 0.679594I$ $a = 1.86636 - 1.04154I$ $b = -0.629300 - 0.928389I$	$3.90770 + 4.19903I$	0
$u = -1.087090 - 0.679594I$ $a = 1.86636 + 1.04154I$ $b = -0.629300 + 0.928389I$	$3.90770 - 4.19903I$	0
$u = 1.284030 + 0.143247I$ $a = 0.036853 - 0.615614I$ $b = -0.495015 - 0.986392I$	$-4.93724 + 1.60165I$	0
$u = 1.284030 - 0.143247I$ $a = 0.036853 + 0.615614I$ $b = -0.495015 + 0.986392I$	$-4.93724 - 1.60165I$	0
$u = -1.064710 + 0.741240I$ $a = -0.277342 + 0.897515I$ $b = 0.742689 - 0.725590I$	$5.89617 + 4.15536I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.064710-0.741240I$ $a=-0.277342-0.897515I$ $b=\ \ 0.742689+0.725590I$	$5.89617-4.15536I$	0
$u=-1.102950+0.686493I$ $a=-0.440580+0.903893I$ $b=\ \ 0.949091-0.677833I$	$5.28838+6.53580I$	0
$u=-1.102950-0.686493I$ $a=-0.440580-0.903893I$ $b=\ \ 0.949091+0.677833I$	$5.28838-6.53580I$	0
$u=-1.111110+0.682830I$ $a=-1.88014+0.91406I$ $b=\ \ 0.686421+0.974756I$	$5.12997+9.61003I$	0
$u=-1.111110-0.682830I$ $a=-1.88014-0.91406I$ $b=\ \ 0.686421-0.974756I$	$5.12997-9.61003I$	0
$u=-1.050750+0.774843I$ $a=\ \ 0.177397-0.916450I$ $b=-0.634242+0.782662I$	$4.37242-0.75282I$	0
$u=-1.050750-0.774843I$ $a=\ \ 0.177397+0.916450I$ $b=-0.634242-0.782662I$	$4.37242+0.75282I$	0
$u=-1.121590+0.670685I$ $a=\ \ 0.492218-0.917395I$ $b=-1.022270+0.680881I$	$3.24675+11.59470I$	0
$u=-1.121590-0.670685I$ $a=\ \ 0.492218+0.917395I$ $b=-1.022270-0.680881I$	$3.24675-11.59470I$	0
$u=-0.075409+0.682425I$ $a=\ \ 0.086947+0.787821I$ $b=\ \ 0.292630-1.071980I$	$-3.15480-6.11083I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.075409 - 0.682425I$ $a = 0.086947 - 0.787821I$ $b = 0.292630 + 1.071980I$	$-3.15480 + 6.11083I$	0
$u = -1.147180 + 0.650115I$ $a = 1.73131 - 0.74067I$ $b = -0.686674 - 1.117410I$	$-1.29805 + 10.32960I$	0
$u = -1.147180 - 0.650115I$ $a = 1.73131 + 0.74067I$ $b = -0.686674 + 1.117410I$	$-1.29805 - 10.32960I$	0
$u = 1.326620 + 0.083300I$ $a = -0.325119 + 0.532619I$ $b = 0.671338 + 0.960557I$	$-0.26952 + 3.81757I$	0
$u = 1.326620 - 0.083300I$ $a = -0.325119 - 0.532619I$ $b = 0.671338 - 0.960557I$	$-0.26952 - 3.81757I$	0
$u = -1.155800 + 0.680181I$ $a = -1.86342 + 0.70790I$ $b = 0.768201 + 1.078860I$	$4.01736 + 12.84630I$	0
$u = -1.155800 - 0.680181I$ $a = -1.86342 - 0.70790I$ $b = 0.768201 - 1.078860I$	$4.01736 - 12.84630I$	0
$u = -1.170030 + 0.679801I$ $a = 1.86153 - 0.64817I$ $b = -0.794031 - 1.111020I$	$1.8548 + 18.2010I$	0
$u = -1.170030 - 0.679801I$ $a = 1.86153 + 0.64817I$ $b = -0.794031 + 1.111020I$	$1.8548 - 18.2010I$	0
$u = 1.350500 + 0.100867I$ $a = 0.291784 - 0.425025I$ $b = -0.680751 - 1.032630I$	$-2.33665 + 8.88021I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.350500 - 0.100867I$ $a = 0.291784 + 0.425025I$ $b = -0.680751 + 1.032630I$	$-2.33665 - 8.88021I$	0
$u = 0.150755 + 0.591114I$ $a = 0.504351 + 1.143880I$ $b = 0.056505 - 1.015650I$	$-3.91792 + 1.14684I$	$-8.51521 + 0.I$
$u = 0.150755 - 0.591114I$ $a = 0.504351 - 1.143880I$ $b = 0.056505 + 1.015650I$	$-3.91792 - 1.14684I$	$-8.51521 + 0.I$
$u = -0.093073 + 0.502065I$ $a = -0.508653 - 0.490205I$ $b = -0.275501 + 0.917380I$	$-0.62717 - 1.91102I$	$-1.98255 + 3.82961I$
$u = -0.093073 - 0.502065I$ $a = -0.508653 + 0.490205I$ $b = -0.275501 - 0.917380I$	$-0.62717 + 1.91102I$	$-1.98255 - 3.82961I$
$u = -0.184995 + 0.007775I$ $a = -0.96664 + 2.79178I$ $b = -0.495391 + 0.508906I$	$0.72033 - 1.37466I$	$2.82252 + 4.33533I$
$u = -0.184995 - 0.007775I$ $a = -0.96664 - 2.79178I$ $b = -0.495391 - 0.508906I$	$0.72033 + 1.37466I$	$2.82252 - 4.33533I$
$u = 0.000756 + 0.150219I$ $a = -3.95378 + 3.90980I$ $b = 0.597693 + 0.197031I$	$-0.27659 - 2.59654I$	$1.38730 + 3.76116I$
$u = 0.000756 - 0.150219I$ $a = -3.95378 - 3.90980I$ $b = 0.597693 - 0.197031I$	$-0.27659 + 2.59654I$	$1.38730 - 3.76116I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.351808 + 0.720342I$ $b = -0.547424 + 1.120870I$	$-4.26996 - 7.64338I$	$-10.46170 + 8.45840I$
$u = 1.00000$ $a = 0.351808 - 0.720342I$ $b = -0.547424 - 1.120870I$	$-4.26996 + 7.64338I$	$-10.46170 - 8.45840I$
$u = 1.00000$ $a = -0.851808 + 0.911292I$ $b = 0.547424 + 0.585652I$	$-0.66484 + 1.39709I$	$-7.03830 - 3.59727I$
$u = 1.00000$ $a = -0.851808 - 0.911292I$ $b = 0.547424 - 0.585652I$	$-0.66484 - 1.39709I$	$-7.03830 + 3.59727I$

III. $\boldsymbol{I_3^u = \langle b,\ u^2a + a^2 + 2au + 3u^2 + a + 5u + 4,\ u^3 + u^2 - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^2a - 3au + 3u^2 + 8a + u - 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2 + y + 1)^3$
c_4, c_7, c_8	y^6
c_6, c_{10}, c_{11}	$(y^3 + 3y^2 + 2y - 1)^2$
c_9, c_{12}	$(y^3 - y^2 + 2y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.111778 - 0.558770I$ $b = 0$	$3.02413 + 0.79824I$	$-0.92725 + 3.21674I$
$u = -0.877439 + 0.744862I$ $a = 0.428020 + 0.376187I$ $b = 0$	$3.02413 + 4.85801I$	$2.65209 - 7.50333I$
$u = -0.877439 - 0.744862I$ $a = 0.111778 + 0.558770I$ $b = 0$	$3.02413 - 0.79824I$	$-0.92725 - 3.21674I$
$u = -0.877439 - 0.744862I$ $a = 0.428020 - 0.376187I$ $b = 0$	$3.02413 - 4.85801I$	$2.65209 + 7.50333I$
$u = 0.754878$ $a = -1.53980 + 2.66701I$ $b = 0$	$-1.11345 + 2.02988I$	$-2.22484 + 4.65789I$
$u = 0.754878$ $a = -1.53980 - 2.66701I$ $b = 0$	$-1.11345 - 2.02988I$	$-2.22484 - 4.65789I$

IV.

$\boldsymbol{I^u_4 = \langle -a^5+2a^4-2a^3+2a^2+b-2a+1,\ a^6-2a^5+2a^4-2a^3+2a^2-a+1,\ u-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= a^5-4a^4+3a^3+a^2-9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.398606 + 0.800120I$ $b = 0.498832 + 1.001300I$	$-1.91067 + 2.82812I$	$-7.09522 - 3.87141I$
$u = 1.00000$ $a = -0.398606 - 0.800120I$ $b = 0.498832 - 1.001300I$	$-1.91067 - 2.82812I$	$-7.09522 + 3.87141I$
$u = 1.00000$ $a = 0.215080 + 0.841795I$ $b = -0.284920 + 1.115140I$	-6.04826	$-11.76463 + 0.99756I$
$u = 1.00000$ $a = 0.215080 - 0.841795I$ $b = -0.284920 - 1.115140I$	-6.04826	$-11.76463 - 0.99756I$
$u = 1.00000$ $a = 1.183530 + 0.507021I$ $b = -0.713912 + 0.305839I$	$-1.91067 + 2.82812I$	$-6.64015 - 0.59776I$
$u = 1.00000$ $a = 1.183530 - 0.507021I$ $b = -0.713912 - 0.305839I$	$-1.91067 - 2.82812I$	$-6.64015 + 0.59776I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^3(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{119}+55u^{118}+\cdots+208u-1)$
c_2	$(u^2+u+1)^3(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{119}+5u^{118}+\cdots+8u-1)$
c_3	$(u^2-u+1)^3(u^3-u^2+1)^2(u^4+3u^3+4u^2+3u+2)$ $\cdot(u^{119}-5u^{118}+\cdots+5788u-292)$
c_4	$u^6(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{119}-2u^{118}+\cdots+32u+64)$
c_5	$(u^2-u+1)^3(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{119}+5u^{118}+\cdots+8u-1)$
c_6	$u^{10}(u^3-u^2+2u-1)^2(u^{119}-3u^{118}+\cdots-5120u+1024)$
c_7	$u^6(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{119}+40u^{118}+\cdots-80896u-4096)$
c_8	$u^6(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{119}-2u^{118}+\cdots+32u+64)$
c_9	$((u-1)^{10})(u^3+u^2-1)^2(u^{119}-13u^{118}+\cdots-20u+1)$
c_{10}	$u^{10}(u^3+u^2+2u+1)^2(u^{119}-3u^{118}+\cdots-5120u+1024)$
c_{11}	$((u-1)^{10})(u^3-u^2+2u-1)^2(u^{119}+53u^{118}+\cdots-14u+1)$
c_{12}	$((u+1)^{10})(u^3-u^2+1)^2(u^{119}-13u^{118}+\cdots-20u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^3)(y^4+2y^3+\cdots+5y+1)(y^6-y^5+\cdots+8y^2+1)$ $\cdot(y^{119}+23y^{118}+\cdots+45340y-1)$
c_2, c_5	$(y^2+y+1)^3(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{119}+55y^{118}+\cdots+208y-1)$
c_3	$(y^2+y+1)^3(y^3-y^2+2y-1)^2(y^4-y^3+2y^2+7y+4)$ $\cdot(y^{119}-9y^{118}+\cdots+26282120y-85264)$
c_4, c_8	$y^6(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{119}+40y^{118}+\cdots-80896y-4096)$
c_6, c_{10}	$y^{10}(y^3+3y^2+2y-1)^2(y^{119}+69y^{118}+\cdots-3.19816\times10^7y-1048576)$
c_7	$y^6(y^4+2y^3+7y^2+5y+1)(y^6-y^5+4y^4-2y^3+8y^2+1)$ $\cdot(y^{119}+68y^{118}+\cdots+5134876672y-16777216)$
c_9, c_{12}	$((y-1)^{10})(y^3-y^2+2y-1)^2(y^{119}-53y^{118}+\cdots-14y-1)$
c_{11}	$((y-1)^{10})(y^3+3y^2+2y-1)^2(y^{119}+39y^{118}+\cdots+5618y-1)$