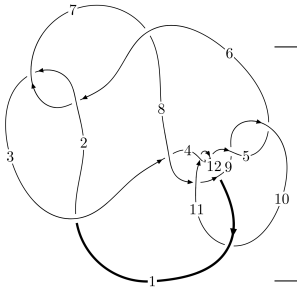
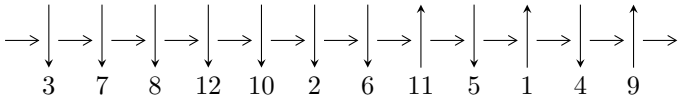
$12a_{0553}$ $(K12a_{0553})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2.25623 \times 10^{23} u^{41} + 9.66993 \times 10^{22} u^{40} + \cdots + 3.04045 \times 10^{23} b + 5.01776 \times 10^{23},$$
$$- 4.05453 \times 10^{23} u^{41} - 3.26106 \times 10^{23} u^{40} + \cdots + 3.04045 \times 10^{23} a - 8.85169 \times 10^{23},\ u^{42} + u^{41} + \cdots + 5u +$$
$$I_2^u = \langle -1.69030 \times 10^{239} u^{79} + 4.53403 \times 10^{239} u^{78} + \cdots + 5.27838 \times 10^{239} b + 3.07543 \times 10^{239},$$
$$4.23498 \times 10^{239} u^{79} - 1.43076 \times 10^{239} u^{78} + \cdots + 5.27838 \times 10^{239} a + 5.44531 \times 10^{240},\ u^{80} - u^{79} + \cdots + 16u$$
$$I_3^u = \langle u^2 + b - 1,\ u^{19} + u^{18} + \cdots + a + 2,\ u^{20} + u^{19} + \cdots + 6u - 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 142 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.

$\boldsymbol{I_1^u = \langle 2.26\times10^{23}u^{41}+9.67\times10^{22}u^{40}+\cdots+3.04\times10^{23}b+5.02\times10^{23},\ -4.05\times10^{23}u^{41}-3.26\times10^{23}u^{40}+\cdots+3.04\times10^{23}a-8.85\times10^{23},\ u^{42}+u^{41}+\cdots+5u+1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1.33353u^{41}+1.07256u^{40}+\cdots+5.15836u+2.91131 \\ -0.742070u^{41}-0.318043u^{40}+\cdots-5.18702u-1.65034 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.356219u^{41}-0.656913u^{40}+\cdots+1.83103u+1.56167 \\ 0.742070u^{41}+0.318043u^{40}+\cdots+5.18702u+1.65034 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 2.07560u^{41}+1.39060u^{40}+\cdots+10.3454u+4.56165 \\ -0.742070u^{41}-0.318043u^{40}+\cdots-5.18702u-1.65034 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.137641u^{41}-0.218884u^{40}+\cdots+0.646429u-0.235243 \\ -0.424027u^{41}-0.699003u^{40}+\cdots-1.06001u-0.742070 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.682566u^{41}+0.629255u^{40}+\cdots+0.728245u+1.43319 \\ 1.27131u^{41}+1.19520u^{40}+\cdots+4.41786u+1.76416 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.33353u^{41}+1.07256u^{40}+\cdots+5.15836u+2.91131 \\ -0.742070u^{41}-0.318043u^{40}+\cdots-5.18702u-1.65034 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.260974u^{41}-0.330487u^{40}+\cdots+2.75635u+1.33353 \\ -0.424027u^{41}-0.699003u^{40}+\cdots-1.06001u-0.742070 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.01423u^{41}-0.256599u^{40}+\cdots+12.9428u+5.13247 \\ -1.27131u^{41}-1.19520u^{40}+\cdots-4.41786u-1.76416 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{7583485754280483116439 99}{304044864012407159949563}u^{41}-\frac{1897037809898713848441 27}{304044864012407159949563}u^{40}+\cdots-\frac{7730241568455721546828 26}{304044864012407159949563}u-\frac{2397936412798830570628702}{304044864012407159949563}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{42} + 14u^{41} + \cdots + 92u + 16$
c_2, c_6	$u^{42} - 6u^{41} + \cdots + 26u - 4$
c_3	$u^{42} + 6u^{41} + \cdots - 97086u - 58612$
c_4, c_5, c_9 c_{11}	$u^{42} + u^{41} + \cdots + 5u + 1$
c_8, c_{10}	$u^{42} - 3u^{41} + \cdots - 4u - 1$
c_{12}	$u^{42} - 44u^{41} + \cdots + 18874368u - 1048576$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{42} + 26y^{41} + \cdots + 10512y + 256$
c_2, c_6	$y^{42} - 14y^{41} + \cdots - 92y + 16$
c_3	$y^{42} - 22y^{41} + \cdots - 37177652828y + 3435366544$
c_4, c_5, c_9 c_{11}	$y^{42} - 33y^{41} + \cdots - 5y + 1$
c_8, c_{10}	$y^{42} + 5y^{41} + \cdots - 102y + 1$
c_{12}	$y^{42} + 4y^{41} + \cdots - 24739011624960y + 1099511627776$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.129110+0.837718I$ $a=\ \ 0.208797+0.545010I$ $b=\ \ 0.766049-0.963564I$	$1.83605-7.68678I$	$-3.96818+6.98985I$
$u=-0.129110-0.837718I$ $a=\ \ 0.208797-0.545010I$ $b=\ \ 0.766049+0.963564I$	$1.83605+7.68678I$	$-3.96818-6.98985I$
$u=-1.183880+0.049134I$ $a=-1.11857+1.10941I$ $b=\ \ 0.682568+0.572973I$	$-3.35379+2.88258I$	$-9.71297-5.70027I$
$u=-1.183880-0.049134I$ $a=-1.11857-1.10941I$ $b=\ \ 0.682568-0.572973I$	$-3.35379-2.88258I$	$-9.71297+5.70027I$
$u=-1.186440+0.119570I$ $a=-0.77152-2.13314I$ $b=\ \ 0.091296-0.620171I$	$-5.41447+1.52315I$	$-20.8164-2.3413I$
$u=-1.186440-0.119570I$ $a=-0.77152+2.13314I$ $b=\ \ 0.091296+0.620171I$	$-5.41447-1.52315I$	$-20.8164+2.3413I$
$u=\ \ 0.154286+0.788847I$ $a=\ \ 0.196401-0.509540I$ $b=\ \ 0.810088+0.862295I$	$2.84163+2.23994I$	$-1.58112-1.75265I$
$u=\ \ 0.154286-0.788847I$ $a=\ \ 0.196401+0.509540I$ $b=\ \ 0.810088-0.862295I$	$2.84163-2.23994I$	$-1.58112+1.75265I$
$u=-1.130060+0.426134I$ $a=\ \ 0.34478-1.74706I$ $b=-0.649711-0.498795I$	$0.35921+3.98317I$	$-5.18876-5.91925I$
$u=-1.130060-0.426134I$ $a=\ \ 0.34478+1.74706I$ $b=-0.649711+0.498795I$	$0.35921-3.98317I$	$-5.18876+5.91925I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.213330 + 0.075694I$ $a = -0.94606 - 1.09355I$ $b = 0.759589 - 0.683845I$	$-4.83918 - 8.81290I$	$-11.6564 + 8.5892I$
$u = 1.213330 - 0.075694I$ $a = -0.94606 + 1.09355I$ $b = 0.759589 + 0.683845I$	$-4.83918 + 8.81290I$	$-11.6564 - 8.5892I$
$u = 0.005260 + 0.776538I$ $a = 0.315859 + 0.529708I$ $b = 0.489355 - 0.846533I$	$-2.63776 - 2.01463I$	$-9.50411 + 3.62154I$
$u = 0.005260 - 0.776538I$ $a = 0.315859 - 0.529708I$ $b = 0.489355 + 0.846533I$	$-2.63776 + 2.01463I$	$-9.50411 - 3.62154I$
$u = 0.215406 + 0.717843I$ $a = 0.498976 + 0.594478I$ $b = 0.083209 - 0.718916I$	$1.03284 + 3.43933I$	$-5.25606 - 1.29339I$
$u = 0.215406 - 0.717843I$ $a = 0.498976 - 0.594478I$ $b = 0.083209 + 0.718916I$	$1.03284 - 3.43933I$	$-5.25606 + 1.29339I$
$u = 1.250870 + 0.029270I$ $a = -0.86186 + 1.52627I$ $b = 0.402311 + 0.797420I$	$-10.43820 + 1.64027I$	$-19.3366 - 4.1061I$
$u = 1.250870 - 0.029270I$ $a = -0.86186 - 1.52627I$ $b = 0.402311 - 0.797420I$	$-10.43820 - 1.64027I$	$-19.3366 + 4.1061I$
$u = 1.183600 + 0.466397I$ $a = 0.26597 + 1.64501I$ $b = -0.767402 + 0.595298I$	$-0.04073 - 10.00640I$	$-6.00000 + 9.99752I$
$u = 1.183600 - 0.466397I$ $a = 0.26597 - 1.64501I$ $b = -0.767402 - 0.595298I$	$-0.04073 + 10.00640I$	$-6.00000 - 9.99752I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.275990 + 0.184603I$ $a = -0.37506 + 1.80775I$ $b = -0.074450 + 0.897247I$	$-8.35329 - 6.18961I$	$-17.4347 + 7.3045I$
$u = 1.275990 - 0.184603I$ $a = -0.37506 - 1.80775I$ $b = -0.074450 - 0.897247I$	$-8.35329 + 6.18961I$	$-17.4347 - 7.3045I$
$u = -0.540941 + 0.438454I$ $a = -0.141478 + 0.341563I$ $b = 1.289300 - 0.240168I$	$4.31778 + 3.64803I$	$-4.57023 - 8.96524I$
$u = -0.540941 - 0.438454I$ $a = -0.141478 - 0.341563I$ $b = 1.289300 + 0.240168I$	$4.31778 - 3.64803I$	$-4.57023 + 8.96524I$
$u = 0.468364 + 0.499939I$ $a = -0.071909 - 0.357763I$ $b = 1.241650 + 0.335026I$	$4.66986 + 1.75891I$	$-1.95443 + 2.74065I$
$u = 0.468364 - 0.499939I$ $a = -0.071909 + 0.357763I$ $b = 1.241650 - 0.335026I$	$4.66986 - 1.75891I$	$-1.95443 - 2.74065I$
$u = -0.267732 + 0.602998I$ $a = 0.630356 - 0.557804I$ $b = 0.005521 + 0.517110I$	$1.74525 + 1.74697I$	$-3.78653 - 4.83256I$
$u = -0.267732 - 0.602998I$ $a = 0.630356 + 0.557804I$ $b = 0.005521 - 0.517110I$	$1.74525 - 1.74697I$	$-3.78653 + 4.83256I$
$u = 0.088989 + 0.553108I$ $a = 0.258260 - 0.292992I$ $b = 0.693618 + 0.405730I$	$1.27279 + 1.01412I$	$1.95077 - 3.41118I$
$u = 0.088989 - 0.553108I$ $a = 0.258260 + 0.292992I$ $b = 0.693618 - 0.405730I$	$1.27279 - 1.01412I$	$1.95077 + 3.41118I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.42369 + 0.44997I$ $a = 0.01185 + 1.47417I$ $b = -0.87902 + 1.23053I$	$-7.37891 - 9.51051I$	0
$u = 1.42369 - 0.44997I$ $a = 0.01185 - 1.47417I$ $b = -0.87902 - 1.23053I$	$-7.37891 + 9.51051I$	0
$u = -1.44107 + 0.39945I$ $a = -0.03941 - 1.48174I$ $b = -0.74204 - 1.31355I$	$-9.51277 + 4.75387I$	0
$u = -1.44107 - 0.39945I$ $a = -0.03941 + 1.48174I$ $b = -0.74204 + 1.31355I$	$-9.51277 - 4.75387I$	0
$u = -0.467313$ $a = -0.190127$ $b = 1.14861$	0.327792	-22.7930
$u = -1.47914 + 0.46825I$ $a = 0.00076 - 1.42482I$ $b = -0.97294 - 1.38112I$	$-12.2925 + 11.8405I$	0
$u = -1.47914 - 0.46825I$ $a = 0.00076 + 1.42482I$ $b = -0.97294 + 1.38112I$	$-12.2925 - 11.8405I$	0
$u = 1.46466 + 0.51916I$ $a = 0.039566 + 1.412300I$ $b = -1.11314 + 1.29694I$	$-5.76180 - 12.68780I$	0
$u = 1.46466 - 0.51916I$ $a = 0.039566 - 1.412300I$ $b = -1.11314 - 1.29694I$	$-5.76180 + 12.68780I$	0
$u = -1.48417 + 0.52390I$ $a = 0.033655 - 1.398890I$ $b = -1.14418 - 1.35093I$	$-7.0633 + 18.4553I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.48417-0.52390I$ $a=\ \ 0.033655+1.398890I$ $b=-1.14418+1.35093I$	$-7.0633-18.4553I$	0
$u=-0.336499$ $a=\ \ 1.23139$ $b=-0.0919546$	-0.740467	-14.2860

II. $I_2^u = \langle -1.69 \times 10^{239} u^{79} + 4.53 \times 10^{239} u^{78} + \cdots + 5.28 \times 10^{239} b + 3.08 \times 10^{239},\ 4.23 \times 10^{239} u^{79} - 1.43 \times 10^{239} u^{78} + \cdots + 5.28 \times 10^{239} a + 5.45 \times 10^{240},\ u^{80} - u^{79} + \cdots + 16u + 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -0.802325u^{79} + 0.271060u^{78} + \cdots - 1089.56u - 10.3162 \\ 0.320231u^{79} - 0.858981u^{78} + \cdots - 20.8795u - 0.582647 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.516068u^{79} + 0.487109u^{78} + \cdots - 516.254u + 26.4919 \\ -0.202847u^{79} + 0.477995u^{78} + \cdots - 29.2026u - 0.0849526 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1.12256u^{79} + 1.13004u^{78} + \cdots - 1068.68u - 9.73360 \\ 0.320231u^{79} - 0.858981u^{78} + \cdots - 20.8795u - 0.582647 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.80579u^{79} + 1.76789u^{78} + \cdots - 1294.87u - 2.86959 \\ -0.636707u^{79} + 1.41921u^{78} + \cdots - 39.0595u - 1.05782 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.876128u^{79} - 0.791821u^{78} + \cdots + 867.674u + 19.7324 \\ 0.852252u^{79} - 1.81244u^{78} + \cdots + 21.8245u + 1.25344 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1.03160u^{79} + 0.833907u^{78} + \cdots - 1094.09u - 10.5337 \\ 0.161944u^{79} - 0.475631u^{78} + \cdots - 21.4547u - 0.698779 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1.94294u^{79} - 2.11379u^{78} + \cdots + 1397.76u + 4.71417 \\ -0.448779u^{79} + 0.963456u^{78} + \cdots + 30.0345u + 0.437105 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.731095u^{79} - 0.879762u^{78} + \cdots + 444.056u - 14.4550 \\ -0.724590u^{79} + 1.48433u^{78} + \cdots + 9.28280u - 0.670444 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.89162u^{79} + 4.42072u^{78} + \cdots - 12.3040u - 15.1389$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^{20}+7u^{19}+\cdots+6u+1)^4$
c_2, c_6	$(u^{20}+u^{19}+\cdots+3u^2-1)^4$
c_3	$(u^{20}-u^{19}+\cdots+4u-1)^4$
c_4, c_5, c_9 c_{11}	$u^{80}-u^{79}+\cdots+16u+1$
c_8, c_{10}	$u^{80}+23u^{79}+\cdots+798776u+37537$
c_{12}	$(u^2+u+1)^{40}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^{20} + 13y^{19} + \cdots - 6y + 1)^4$
c_2, c_6	$(y^{20} - 7y^{19} + \cdots - 6y + 1)^4$
c_3	$(y^{20} - 11y^{19} + \cdots - 6y + 1)^4$
c_4, c_5, c_9 c_{11}	$y^{80} - 69y^{79} + \cdots + 1440y + 1$
c_8, c_{10}	$y^{80} + 27y^{79} + \cdots + 9352736088y + 1409026369$
c_{12}	$(y^2 + y + 1)^{40}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.207784 + 0.987527I$ $a = 0.445184 - 0.154793I$ $b = -0.851402 - 0.539056I$	$3.03993 + 4.87637I$	0
$u = 0.207784 - 0.987527I$ $a = 0.445184 + 0.154793I$ $b = -0.851402 + 0.539056I$	$3.03993 - 4.87637I$	0
$u = -0.951078 + 0.228099I$ $a = 0.55710 + 1.83713I$ $b = 0.772031 + 0.458447I$	$3.03993 - 0.81660I$	0
$u = -0.951078 - 0.228099I$ $a = 0.55710 - 1.83713I$ $b = 0.772031 - 0.458447I$	$3.03993 + 0.81660I$	0
$u = 0.996696 + 0.266242I$ $a = 0.44755 - 1.84281I$ $b = 0.890900 - 0.596478I$	$3.03993 - 4.87637I$	0
$u = 0.996696 - 0.266242I$ $a = 0.44755 + 1.84281I$ $b = 0.890900 + 0.596478I$	$3.03993 + 4.87637I$	0
$u = -0.275813 + 0.910568I$ $a = 0.560339 + 0.160187I$ $b = -0.841509 + 0.463941I$	$3.03993 + 0.81660I$	0
$u = -0.275813 - 0.910568I$ $a = 0.560339 - 0.160187I$ $b = -0.841509 - 0.463941I$	$3.03993 - 0.81660I$	0
$u = -0.240644 + 1.064020I$ $a = 0.010895 - 0.165200I$ $b = -0.596302 - 0.694141I$	$-2.17062 + 4.19124I$	0
$u = -0.240644 - 1.064020I$ $a = 0.010895 + 0.165200I$ $b = -0.596302 + 0.694141I$	$-2.17062 - 4.19124I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.899552+0.699001I$ $a=-0.555723+0.260013I$ $b=-0.351175-0.083803I$	$-3.26827+4.38821I$	0
$u=-0.899552-0.699001I$ $a=-0.555723-0.260013I$ $b=-0.351175+0.083803I$	$-3.26827-4.38821I$	0
$u=0.518571+1.015560I$ $a=-0.211103+0.058336I$ $b=-0.400489+0.599197I$	$-3.66592+0.10467I$	0
$u=0.518571-1.015560I$ $a=-0.211103-0.058336I$ $b=-0.400489-0.599197I$	$-3.66592-0.10467I$	0
$u=-1.140030+0.123562I$ $a=0.558917-1.144130I$ $b=-0.104456-0.760969I$	$-2.17062+0.13148I$	0
$u=-1.140030-0.123562I$ $a=0.558917+1.144130I$ $b=-0.104456+0.760969I$	$-2.17062-0.13148I$	0
$u=0.788041+0.320938I$ $a=-1.165290-0.395640I$ $b=-0.903502+0.071649I$	$-3.26827+0.32844I$	0
$u=0.788041-0.320938I$ $a=-1.165290+0.395640I$ $b=-0.903502-0.071649I$	$-3.26827-0.32844I$	0
$u=1.180310+0.012052I$ $a=-0.91234-1.30364I$ $b=-1.73380-0.97589I$	$-5.25931-1.21416I$	0
$u=1.180310-0.012052I$ $a=-0.91234+1.30364I$ $b=-1.73380+0.97589I$	$-5.25931+1.21416I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.111090+0.442655I$ $a=\ \ 0.654258-0.784229I$ $b=-0.591917-0.592017I$	$-0.50419+2.40320I$	0
$u=-1.111090-0.442655I$ $a=\ \ 0.654258+0.784229I$ $b=-0.591917+0.592017I$	$-0.50419-2.40320I$	0
$u=-1.198430+0.027915I$ $a=-0.92147-1.37061I$ $b=-1.91445-1.03978I$	$-6.41764+4.04252I$	0
$u=-1.198430-0.027915I$ $a=-0.92147+1.37061I$ $b=-1.91445+1.03978I$	$-6.41764-4.04252I$	0
$u=\ \ 1.224920+0.184610I$ $a=-0.680597-1.092490I$ $b=-1.00390-1.04377I$	$-5.61498-2.02988I$	0
$u=\ \ 1.224920-0.184610I$ $a=-0.680597+1.092490I$ $b=-1.00390+1.04377I$	$-5.61498+2.02988I$	0
$u=\ \ 1.214950+0.272262I$ $a=\ \ 0.12453-1.65766I$ $b=\ \ 0.77124-1.37558I$	$-2.17062-4.19124I$	0
$u=\ \ 1.214950-0.272262I$ $a=\ \ 0.12453+1.65766I$ $b=\ \ 0.77124+1.37558I$	$-2.17062+4.19124I$	0
$u=-1.269020+0.005894I$ $a=-0.80674+1.39166I$ $b=-1.77834+1.38715I$	$-10.49270+2.02988I$	0
$u=-1.269020-0.005894I$ $a=-0.80674-1.39166I$ $b=-1.77834-1.38715I$	$-10.49270-2.02988I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.176100 + 0.483198I$ $a = 0.592616 + 0.752617I$ $b = -0.674058 + 0.672840I$	$-1.65238 - 8.02785I$	0
$u = 1.176100 - 0.483198I$ $a = 0.592616 - 0.752617I$ $b = -0.674058 - 0.672840I$	$-1.65238 + 8.02785I$	0
$u = 1.221650 + 0.370872I$ $a = 0.05476 - 1.79734I$ $b = 1.20285 - 1.51952I$	$-0.50419 - 6.46297I$	0
$u = 1.221650 - 0.370872I$ $a = 0.05476 + 1.79734I$ $b = 1.20285 + 1.51952I$	$-0.50419 + 6.46297I$	0
$u = 0.340631 + 1.244900I$ $a = -0.0068353 + 0.0139151I$ $b = -0.502001 + 0.840278I$	$-6.59138 - 5.99841I$	0
$u = 0.340631 - 1.244900I$ $a = -0.0068353 - 0.0139151I$ $b = -0.502001 - 0.840278I$	$-6.59138 + 5.99841I$	0
$u = -1.239340 + 0.384198I$ $a = 0.02492 + 1.80581I$ $b = 1.25428 + 1.61735I$	$-1.65238 + 12.08760I$	0
$u = -1.239340 - 0.384198I$ $a = 0.02492 - 1.80581I$ $b = 1.25428 - 1.61735I$	$-1.65238 - 12.08760I$	0
$u = 1.262130 + 0.312419I$ $a = 0.500943 + 0.892680I$ $b = -0.454901 + 0.863903I$	$-6.59138 - 1.93864I$	0
$u = 1.262130 - 0.312419I$ $a = 0.500943 - 0.892680I$ $b = -0.454901 - 0.863903I$	$-6.59138 + 1.93864I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.268080+0.331222I$ $a=\ \ 0.00849+1.71936I$ $b=\ \ 0.95703+1.70298I$	$-6.59138+5.99841I$	0
$u=-1.268080-0.331222I$ $a=\ \ 0.00849-1.71936I$ $b=\ \ 0.95703-1.70298I$	$-6.59138-5.99841I$	0
$u=\ \ 1.314510+0.067425I$ $a=-0.68640-1.37199I$ $b=-1.43973-1.62011I$	$-5.25931-2.84561I$	0
$u=\ \ 1.314510-0.067425I$ $a=-0.68640+1.37199I$ $b=-1.43973+1.62011I$	$-5.25931+2.84561I$	0
$u=-0.198524+1.302860I$ $a=\ \ 0.0821657-0.0079703I$ $b=-0.640357-0.895315I$	$-0.50419+6.46297I$	0
$u=-0.198524-1.302860I$ $a=\ \ 0.0821657+0.0079703I$ $b=-0.640357+0.895315I$	$-0.50419-6.46297I$	0
$u=-1.329160+0.038165I$ $a=-0.70698+1.42142I$ $b=-1.60376+1.71482I$	$-6.41764+8.10228I$	0
$u=-1.329160-0.038165I$ $a=-0.70698-1.42142I$ $b=-1.60376-1.71482I$	$-6.41764-8.10228I$	0
$u=-1.307500+0.242820I$ $a=-0.02283+1.54565I$ $b=\ \ 0.44377+1.69971I$	$-3.66592-0.10467I$	0
$u=-1.307500-0.242820I$ $a=-0.02283-1.54565I$ $b=\ \ 0.44377-1.69971I$	$-3.66592+0.10467I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.227721 + 1.347240I$ $a = 0.0715746 - 0.0185276I$ $b = -0.614831 + 0.942610I$	$-1.65238 - 12.08760I$	0
$u = 0.227721 - 1.347240I$ $a = 0.0715746 + 0.0185276I$ $b = -0.614831 - 0.942610I$	$-1.65238 + 12.08760I$	0
$u = 1.366970 + 0.076347I$ $a = 0.287797 + 1.039200I$ $b = -0.180804 + 1.129850I$	$-3.66592 + 4.16444I$	0
$u = 1.366970 - 0.076347I$ $a = 0.287797 - 1.039200I$ $b = -0.180804 - 1.129850I$	$-3.66592 - 4.16444I$	0
$u = 1.373280 + 0.192811I$ $a = -0.212459 - 1.275000I$ $b = -0.21758 - 1.60360I$	$-3.26827 - 4.38821I$	0
$u = 1.373280 - 0.192811I$ $a = -0.212459 + 1.275000I$ $b = -0.21758 + 1.60360I$	$-3.26827 + 4.38821I$	0
$u = -1.46328 + 0.16377I$ $a = -0.056126 + 1.023110I$ $b = -0.128306 + 1.324110I$	$-3.26827 - 0.32844I$	0
$u = -1.46328 - 0.16377I$ $a = -0.056126 - 1.023110I$ $b = -0.128306 - 1.324110I$	$-3.26827 + 0.32844I$	0
$u = -1.40433 + 0.49536I$ $a = -0.316968 + 0.709311I$ $b = -0.060476 + 0.799784I$	$-5.61498 + 2.02988I$	0
$u = -1.40433 - 0.49536I$ $a = -0.316968 - 0.709311I$ $b = -0.060476 - 0.799784I$	$-5.61498 - 2.02988I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.303297+0.220517I$ $a=-2.32870-1.44235I$ $b=-0.793911-0.617070I$	$-3.66592+4.16444I$	$-10.50898-5.63372I$
$u=-0.303297-0.220517I$ $a=-2.32870+1.44235I$ $b=-0.793911+0.617070I$	$-3.66592-4.16444I$	$-10.50898+5.63372I$
$u=-0.032805+0.324330I$ $a=1.22905+2.57528I$ $b=-0.573161+0.571751I$	$-2.17062+0.13148I$	$-6.73748+0.14555I$
$u=-0.032805-0.324330I$ $a=1.22905-2.57528I$ $b=-0.573161-0.571751I$	$-2.17062-0.13148I$	$-6.73748-0.14555I$
$u=-1.52542+0.74509I$ $a=-0.213173+0.561878I$ $b=0.399545+0.614052I$	$-5.25931+2.84561I$	0
$u=-1.52542-0.74509I$ $a=-0.213173-0.561878I$ $b=0.399545-0.614052I$	$-5.25931-2.84561I$	0
$u=-1.66173+0.53354I$ $a=-0.146022+0.665856I$ $b=0.319052+1.042020I$	$-5.25931+1.21416I$	0
$u=-1.66173-0.53354I$ $a=-0.146022-0.665856I$ $b=0.319052-1.042020I$	$-5.25931-1.21416I$	0
$u=1.58307+0.78427I$ $a=-0.183740-0.551400I$ $b=0.521737-0.632944I$	$-6.41764-8.10228I$	0
$u=1.58307-0.78427I$ $a=-0.183740+0.551400I$ $b=0.521737+0.632944I$	$-6.41764+8.10228I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.65518 + 0.67475I$ $a = -0.158684 - 0.601069I$ $b = 0.480098 - 0.861473I$	$-10.49270 - 2.02988I$	0
$u = 1.65518 - 0.67475I$ $a = -0.158684 + 0.601069I$ $b = 0.480098 + 0.861473I$	$-10.49270 + 2.02988I$	0
$u = -0.207602 + 0.022600I$ $a = 5.55991 + 3.54909I$ $b = -0.229911 - 0.767050I$	$-0.50419 - 2.40320I$	$-6.68370 - 0.93682I$
$u = -0.207602 - 0.022600I$ $a = 5.55991 - 3.54909I$ $b = -0.229911 + 0.767050I$	$-0.50419 + 2.40320I$	$-6.68370 + 0.93682I$
$u = 1.71763 + 0.56503I$ $a = -0.124770 - 0.644248I$ $b = 0.422238 - 1.071160I$	$-6.41764 + 4.04252I$	0
$u = 1.71763 - 0.56503I$ $a = -0.124770 + 0.644248I$ $b = 0.422238 + 1.071160I$	$-6.41764 - 4.04252I$	0
$u = 0.163725 + 0.088628I$ $a = 4.81994 - 6.15580I$ $b = -0.230010 + 0.889248I$	$-1.65238 + 8.02785I$	$-8.70834 - 3.80202I$
$u = 0.163725 - 0.088628I$ $a = 4.81994 + 6.15580I$ $b = -0.230010 - 0.889248I$	$-1.65238 - 8.02785I$	$-8.70834 + 3.80202I$
$u = -0.0071370 + 0.0339368I$ $a = 1.8260 - 36.6033I$ $b = -0.519741 - 0.826618I$	$-6.59138 - 1.93864I$	$-13.89349 + 0.33377I$
$u = -0.0071370 - 0.0339368I$ $a = 1.8260 + 36.6033I$ $b = -0.519741 + 0.826618I$	$-6.59138 + 1.93864I$	$-13.89349 - 0.33377I$

III. $I_3^u = \langle u^2 + b - 1,\ u^{19} + u^{18} + \cdots + a + 2,\ u^{20} + u^{19} + \cdots + 6u - 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -u^{19} - u^{18} + \cdots - u - 2 \\ -u^2 + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{17} - u^{16} + \cdots + u + 3 \\ u^2 - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{19} - u^{18} + \cdots - u - 3 \\ -u^2 + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{16} - u^{15} + \cdots + 3u + 1 \\ -u^5 + 3u^3 - 2u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{19} + u^{18} + \cdots + 2u + 3 \\ u^{12} - 7u^{10} + 20u^8 - 29u^6 + 21u^4 - 5u^2 - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{19} - u^{18} + \cdots - u - 2 \\ u^4 - 2u^2 + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^{18} - u^{17} + \cdots + 3u - 1 \\ u^5 - 3u^3 + 2u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{19} - u^{18} + \cdots - u - 3 \\ -u^{12} + 7u^{10} - 20u^8 + 29u^6 - 21u^4 + 5u^2 + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 3u^{19} + 2u^{18} - 34u^{17} - 22u^{16} + 176u^{15} + 110u^{14} - 539u^{13} - 322u^{12} + 1064u^{11} + 596u^{10} - 1384u^9 - 700u^8 + 1157u^7 + 488u^6 - 562u^5 - 157u^4 + 106u^3 - 8u^2 + 21u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{20} - 7u^{19} + \cdots - 4u + 1$
c_2	$u^{20} - u^{19} + \cdots - 2u^2 + 1$
c_3	$u^{20} + u^{19} + \cdots + 2u + 1$
c_4, c_9	$u^{20} - u^{19} + \cdots - 6u - 1$
c_5, c_{11}	$u^{20} + u^{19} + \cdots + 6u - 1$
c_6	$u^{20} + u^{19} + \cdots - 2u^2 + 1$
c_7	$u^{20} + 7u^{19} + \cdots + 4u + 1$
c_8, c_{10}	$u^{20} - 3u^{19} + \cdots + 3u - 1$
c_{12}	$u^{20} + 3u^{19} + \cdots - 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{20} + 13y^{19} + \cdots + 8y + 1$
c_2, c_6	$y^{20} - 7y^{19} + \cdots - 4y + 1$
c_3	$y^{20} - 11y^{19} + \cdots - 10y + 1$
c_4, c_5, c_9 c_{11}	$y^{20} - 23y^{19} + \cdots - 24y + 1$
c_8, c_{10}	$y^{20} + 3y^{19} + \cdots + 3y + 1$
c_{12}	$y^{20} + 3y^{19} + \cdots + 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.939258 + 0.398954I$ $a = -1.43385 - 1.17399I$ $b = 0.276960 - 0.749442I$	$-1.05097 - 3.58416I$	$-10.08066 + 5.25033I$
$u = 0.939258 - 0.398954I$ $a = -1.43385 + 1.17399I$ $b = 0.276960 + 0.749442I$	$-1.05097 + 3.58416I$	$-10.08066 - 5.25033I$
$u = -0.947941 + 0.465885I$ $a = -1.36124 + 1.00192I$ $b = 0.318455 + 0.883263I$	$-2.14551 + 9.38795I$	$-10.8753 - 9.3467I$
$u = -0.947941 - 0.465885I$ $a = -1.36124 - 1.00192I$ $b = 0.318455 - 0.883263I$	$-2.14551 - 9.38795I$	$-10.8753 + 9.3467I$
$u = -1.126380 + 0.446389I$ $a = -0.931640 + 0.989707I$ $b = -0.069458 + 1.005600I$	$-7.49729 + 3.61397I$	$-16.6966 - 4.7869I$
$u = -1.126380 - 0.446389I$ $a = -0.931640 - 0.989707I$ $b = -0.069458 - 1.005600I$	$-7.49729 - 3.61397I$	$-16.6966 + 4.7869I$
$u = 1.237350 + 0.209212I$ $a = -0.036037 - 1.024230I$ $b = -0.487275 - 0.517740I$	$-4.63892 - 1.50200I$	$-7.43539 + 0.19830I$
$u = 1.237350 - 0.209212I$ $a = -0.036037 + 1.024230I$ $b = -0.487275 + 0.517740I$	$-4.63892 + 1.50200I$	$-7.43539 - 0.19830I$
$u = -1.272310 + 0.476641I$ $a = -0.758938 + 0.746667I$ $b = -0.391574 + 1.212870I$	$-4.50767 - 1.76829I$	$-12.48170 + 2.85072I$
$u = -1.272310 - 0.476641I$ $a = -0.758938 - 0.746667I$ $b = -0.391574 - 1.212870I$	$-4.50767 + 1.76829I$	$-12.48170 - 2.85072I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.346880 + 0.241262I$ $a = -0.239350 - 0.653997I$ $b = -0.755888 - 0.649902I$	$-4.64130 - 1.40542I$	$-9.24155 - 0.59867I$
$u = 1.346880 - 0.241262I$ $a = -0.239350 + 0.653997I$ $b = -0.755888 + 0.649902I$	$-4.64130 + 1.40542I$	$-9.24155 + 0.59867I$
$u = 1.306860 + 0.436137I$ $a = -0.669741 - 0.727268I$ $b = -0.517656 - 1.139940I$	$-3.84788 - 3.18017I$	$-10.94771 + 2.51139I$
$u = 1.306860 - 0.436137I$ $a = -0.669741 + 0.727268I$ $b = -0.517656 + 1.139940I$	$-3.84788 + 3.18017I$	$-10.94771 - 2.51139I$
$u = -1.39060$ $a = 0.0709202$ $b = -0.933776$	-9.78835	-16.3090
$u = -1.42403 + 0.16860I$ $a = -0.187077 + 0.390574I$ $b = -0.999423 + 0.480180I$	$-5.88975 + 6.42130I$	$-11.88741 - 5.06498I$
$u = -1.42403 - 0.16860I$ $a = -0.187077 - 0.390574I$ $b = -0.999423 - 0.480180I$	$-5.88975 - 6.42130I$	$-11.88741 + 5.06498I$
$u = 0.047592 + 0.332418I$ $a = -1.90160 - 0.02574I$ $b = 1.108240 - 0.031641I$	$4.25390 - 2.70046I$	$-4.09941 + 2.64710I$
$u = 0.047592 - 0.332418I$ $a = -1.90160 + 0.02574I$ $b = 1.108240 + 0.031641I$	$4.25390 + 2.70046I$	$-4.09941 - 2.64710I$
$u = 0.176012$ $a = -2.03197$ $b = 0.969020$	0.631930	3.80050

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{20}-7u^{19}+\cdots-4u+1)(u^{20}+7u^{19}+\cdots+6u+1)^4$ $\cdot(u^{42}+14u^{41}+\cdots+92u+16)$
c_2	$(u^{20}-u^{19}+\cdots-2u^2+1)(u^{20}+u^{19}+\cdots+3u^2-1)^4$ $\cdot(u^{42}-6u^{41}+\cdots+26u-4)$
c_3	$((u^{20}-u^{19}+\cdots+4u-1)^4)(u^{20}+u^{19}+\cdots+2u+1)$ $\cdot(u^{42}+6u^{41}+\cdots-97086u-58612)$
c_4, c_9	$(u^{20}-u^{19}+\cdots-6u-1)(u^{42}+u^{41}+\cdots+5u+1)$ $\cdot(u^{80}-u^{79}+\cdots+16u+1)$
c_5, c_{11}	$(u^{20}+u^{19}+\cdots+6u-1)(u^{42}+u^{41}+\cdots+5u+1)$ $\cdot(u^{80}-u^{79}+\cdots+16u+1)$
c_6	$((u^{20}+u^{19}+\cdots+3u^2-1)^4)(u^{20}+u^{19}+\cdots-2u^2+1)$ $\cdot(u^{42}-6u^{41}+\cdots+26u-4)$
c_7	$(u^{20}+7u^{19}+\cdots+4u+1)(u^{20}+7u^{19}+\cdots+6u+1)^4$ $\cdot(u^{42}+14u^{41}+\cdots+92u+16)$
c_8, c_{10}	$(u^{20}-3u^{19}+\cdots+3u-1)(u^{42}-3u^{41}+\cdots-4u-1)$ $\cdot(u^{80}+23u^{79}+\cdots+798776u+37537)$
c_{12}	$((u^2+u+1)^{40})(u^{20}+3u^{19}+\cdots-3u-1)$ $\cdot(u^{42}-44u^{41}+\cdots+18874368u-1048576)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$((y^{20}+13y^{19}+\cdots-6y+1)^4)(y^{20}+13y^{19}+\cdots+8y+1)$ $\cdot(y^{42}+26y^{41}+\cdots+10512y+256)$
c_2, c_6	$((y^{20}-7y^{19}+\cdots-6y+1)^4)(y^{20}-7y^{19}+\cdots-4y+1)$ $\cdot(y^{42}-14y^{41}+\cdots-92y+16)$
c_3	$((y^{20}-11y^{19}+\cdots-6y+1)^4)(y^{20}-11y^{19}+\cdots-10y+1)$ $\cdot(y^{42}-22y^{41}+\cdots-37177652828y+3435366544)$
c_4, c_5, c_9 c_{11}	$(y^{20}-23y^{19}+\cdots-24y+1)(y^{42}-33y^{41}+\cdots-5y+1)$ $\cdot(y^{80}-69y^{79}+\cdots+1440y+1)$
c_8, c_{10}	$(y^{20}+3y^{19}+\cdots+3y+1)(y^{42}+5y^{41}+\cdots-102y+1)$ $\cdot(y^{80}+27y^{79}+\cdots+9352736088y+1409026369)$
c_{12}	$((y^2+y+1)^{40})(y^{20}+3y^{19}+\cdots+3y+1)$ $\cdot(y^{42}+4y^{41}+\cdots-24739011624960y+1099511627776)$