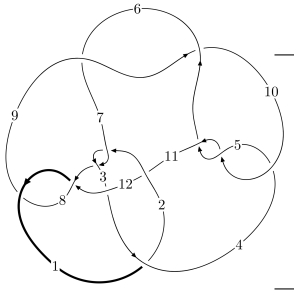
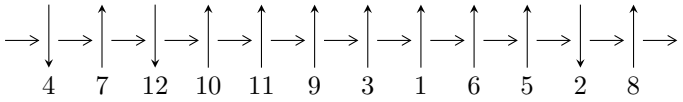
$12a_{1116}$ $(K12a_{1116})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b-u,\ 1.05217\times 10^{27}u^{39}+1.39337\times 10^{27}u^{38}+\cdots+7.10616\times 10^{26}a-1.70682\times 10^{27},$$
$$u^{40}+u^{39}+\cdots-2u+1\rangle$$
$$I_2^u = \langle -2.26032\times 10^{209}u^{71}+5.90990\times 10^{209}u^{70}+\cdots+4.11003\times 10^{210}b-1.25850\times 10^{213},$$
$$-1.04624\times 10^{212}u^{71}+2.60608\times 10^{212}u^{70}+\cdots+1.55912\times 10^{213}a-4.97927\times 10^{215},$$
$$u^{72}-u^{71}+\cdots-10866u+3667\rangle$$
$$I_3^u = \langle b+u,\ 2u^{19}+2u^{18}+\cdots+a-4,\ u^{20}+u^{19}+\cdots-4u-1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}}=0$, with total 132 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. $\boldsymbol{I_1^u = \langle b-u,\ 1.05\times 10^{27}u^{39}+1.39\times 10^{27}u^{38}+\cdots+7.11\times 10^{26}a-1.71\times 10^{27},\ u^{40}+u^{39}+\cdots-2u+1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix}0\\ u\end{pmatrix}$$

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

$$a_3 = \begin{pmatrix}-1.48065u^{39}-1.96079u^{38}+\cdots+1.35762u+2.40188\\ u\end{pmatrix}$$

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

$$a_7 = \begin{pmatrix}-0.480143u^{39}-1.10267u^{38}+\cdots-0.559408u+2.48065\\ u^2\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-0.858121u^{39}-1.37178u^{38}+\cdots-0.162740u+1.92174\\ -u^3+u\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-0.513657u^{39}-0.937281u^{38}+\cdots+0.205499u+1.85812\\ 0.0881220u^{39}-0.00106714u^{38}+\cdots-0.431317u+0.198901\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}0.170926u^{39}+0.314539u^{38}+\cdots+0.337548u+0.372176\\ -0.269415u^{39}-0.112280u^{38}+\cdots+1.12121u-0.412140\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}-0.858121u^{39}-1.37178u^{38}+\cdots+0.837260u+1.92174\\ -0.622525u^{39}-0.589010u^{38}+\cdots+1.52036u+0.480143\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}1.17203u^{39}+1.77115u^{38}+\cdots-0.353657u-2.38079\\ -0.313912u^{39}-0.399375u^{38}+\cdots+0.516397u+0.459050\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-1.61039u^{39}-2.45419u^{38}+\cdots+0.621411u+3.20931\\ 0.249610u^{39}-0.0431241u^{38}+\cdots-1.08313u+0.723404\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{151015313886743544528267445}{7106155614123134798717990 93}u^{39}-\frac{5435145327376777636687367 2}{7106155614123134798717990 93}u^{38}+\cdots-\frac{19646882228007014279446871 7}{7106155614123134798717990 93}u+\frac{7938621198965187441158388505}{7106155614123134798717990 93}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{40} + u^{39} + \cdots - 14u + 1$
c_2, c_7, c_8 c_{12}	$u^{40} + u^{39} + \cdots - 2u + 1$
c_3	$u^{40} + 35u^{39} + \cdots + 4063232u + 262144$
c_4, c_5, c_{10}	$u^{40} - 6u^{39} + \cdots + 14u + 4$
c_6, c_9	$u^{40} + 18u^{39} + \cdots - 286u - 52$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{40} - 17y^{39} + \cdots - 104y + 1$
c_2, c_7, c_8 c_{12}	$y^{40} - 27y^{39} + \cdots - 6y + 1$
c_3	$y^{40} - 5y^{39} + \cdots - 738734374912y + 68719476736$
c_4, c_5, c_{10}	$y^{40} - 34y^{39} + \cdots - 76y + 16$
c_6, c_9	$y^{40} + 22y^{39} + \cdots - 227084y + 2704$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.829708 + 0.582758I$ $a = -0.335057 + 0.593668I$ $b = 0.829708 + 0.582758I$	$0.31185 + 6.62575I$	$5.80735 - 6.70847I$
$u = 0.829708 - 0.582758I$ $a = -0.335057 - 0.593668I$ $b = 0.829708 - 0.582758I$	$0.31185 - 6.62575I$	$5.80735 + 6.70847I$
$u = 0.950467 + 0.117799I$ $a = -2.79305 - 0.18733I$ $b = 0.950467 + 0.117799I$	$0.479393 + 0.290586I$	$9.02412 - 0.47721I$
$u = 0.950467 - 0.117799I$ $a = -2.79305 + 0.18733I$ $b = 0.950467 - 0.117799I$	$0.479393 - 0.290586I$	$9.02412 + 0.47721I$
$u = -1.045880 + 0.174408I$ $a = 2.78432 - 0.39606I$ $b = -1.045880 + 0.174408I$	$-1.95597 - 4.61343I$	$6.17888 + 5.30120I$
$u = -1.045880 - 0.174408I$ $a = 2.78432 + 0.39606I$ $b = -1.045880 - 0.174408I$	$-1.95597 + 4.61343I$	$6.17888 - 5.30120I$
$u = -1.06992$ $a = 3.35821$ $b = -1.06992$	8.23937	8.13250
$u = -0.709739 + 0.591170I$ $a = 0.136387 + 0.470227I$ $b = -0.709739 + 0.591170I$	$-3.66425 - 2.23553I$	$2.10476 + 3.41235I$
$u = -0.709739 - 0.591170I$ $a = 0.136387 - 0.470227I$ $b = -0.709739 - 0.591170I$	$-3.66425 + 2.23553I$	$2.10476 - 3.41235I$
$u = 1.099650 + 0.175182I$ $a = -2.79566 - 0.50433I$ $b = 1.099650 + 0.175182I$	$3.02582 + 8.81935I$	$10.62324 - 6.97053I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.099650 - 0.175182I$ $a = -2.79566 + 0.50433I$ $b = 1.099650 - 0.175182I$	$3.02582 - 8.81935I$	$10.62324 + 6.97053I$
$u = -0.301242 + 0.810427I$ $a = 1.231820 - 0.046364I$ $b = -0.301242 + 0.810427I$	$-1.68748 + 6.67297I$	$4.33952 - 4.30566I$
$u = -0.301242 - 0.810427I$ $a = 1.231820 + 0.046364I$ $b = -0.301242 - 0.810427I$	$-1.68748 - 6.67297I$	$4.33952 + 4.30566I$
$u = 0.575167 + 0.621713I$ $a = 0.009634 + 0.324370I$ $b = 0.575167 + 0.621713I$	$0.17012 - 2.02828I$	$6.28682 - 0.18788I$
$u = 0.575167 - 0.621713I$ $a = 0.009634 - 0.324370I$ $b = 0.575167 - 0.621713I$	$0.17012 + 2.02828I$	$6.28682 + 0.18788I$
$u = 0.347115 + 0.764028I$ $a = -1.348860 + 0.000533I$ $b = 0.347115 + 0.764028I$	$-5.94604 - 2.55676I$	$-0.337170 + 1.059387I$
$u = 0.347115 - 0.764028I$ $a = -1.348860 - 0.000533I$ $b = 0.347115 - 0.764028I$	$-5.94604 + 2.55676I$	$-0.337170 - 1.059387I$
$u = -0.408843 + 0.706524I$ $a = 1.51264 + 0.04027I$ $b = -0.408843 + 0.706524I$	$-2.38796 - 1.54380I$	$3.59940 + 3.55875I$
$u = -0.408843 - 0.706524I$ $a = 1.51264 - 0.04027I$ $b = -0.408843 - 0.706524I$	$-2.38796 + 1.54380I$	$3.59940 - 3.55875I$
$u = -0.744235$ $a = -1.54163$ $b = -0.744235$	7.13720	26.0990

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.233550+0.336291I$ $a=\ \ 1.58613+1.22068I$ $b=-1.233550+0.336291I$	$10.81870-1.65128I$	$14.7327+4.5795I$
$u=-1.233550-0.336291I$ $a=\ \ 1.58613-1.22068I$ $b=-1.233550-0.336291I$	$10.81870+1.65128I$	$14.7327-4.5795I$
$u=\ \ 1.230890+0.434304I$ $a=-1.40654+0.97624I$ $b=\ \ 1.230890+0.434304I$	$4.92417+4.68998I$	$8.58815-3.67892I$
$u=\ \ 1.230890-0.434304I$ $a=-1.40654-0.97624I$ $b=\ \ 1.230890-0.434304I$	$4.92417-4.68998I$	$8.58815+3.67892I$
$u=-0.008320+0.688792I$ $a=-0.644264+0.267316I$ $b=-0.008320+0.688792I$	$3.24536-1.80566I$	$7.66277+3.84341I$
$u=-0.008320-0.688792I$ $a=-0.644264-0.267316I$ $b=-0.008320-0.688792I$	$3.24536+1.80566I$	$7.66277-3.84341I$
$u=\ \ 0.619486$ $a=-2.75105$ $b=\ \ 0.619486$	0.329159	14.0190
$u=-1.306240+0.490977I$ $a=\ \ 1.50397+0.75841I$ $b=-1.306240+0.490977I$	$5.64753-8.73681I$	$9.75964+8.45348I$
$u=-1.306240-0.490977I$ $a=\ \ 1.50397-0.75841I$ $b=-1.306240-0.490977I$	$5.64753+8.73681I$	$9.75964-8.45348I$
$u=\ \ 1.39043+0.46049I$ $a=-1.69234+0.71463I$ $b=\ \ 1.39043+0.46049I$	$12.1702+10.4927I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.39043 - 0.46049I$ $a = -1.69234 - 0.71463I$ $b = 1.39043 - 0.46049I$	$12.1702 - 10.4927I$	0
$u = -1.37616 + 0.58894I$ $a = 1.53982 + 0.51187I$ $b = -1.37616 + 0.58894I$	$3.95118 - 8.98770I$	0
$u = -1.37616 - 0.58894I$ $a = 1.53982 - 0.51187I$ $b = -1.37616 - 0.58894I$	$3.95118 + 8.98770I$	0
$u = -0.114437 + 0.486204I$ $a = 0.910358 + 0.962474I$ $b = -0.114437 + 0.486204I$	$-1.35206 + 0.83491I$	$-2.58594 - 2.82924I$
$u = -0.114437 - 0.486204I$ $a = 0.910358 - 0.962474I$ $b = -0.114437 - 0.486204I$	$-1.35206 - 0.83491I$	$-2.58594 + 2.82924I$
$u = 1.41567 + 0.59218I$ $a = -1.60292 + 0.47452I$ $b = 1.41567 + 0.59218I$	$1.03205 + 13.48300I$	0
$u = 1.41567 - 0.59218I$ $a = -1.60292 - 0.47452I$ $b = 1.41567 - 0.59218I$	$1.03205 - 13.48300I$	0
$u = -1.44142 + 0.58645I$ $a = 1.64842 + 0.46268I$ $b = -1.44142 + 0.58645I$	$5.7710 - 17.8215I$	0
$u = -1.44142 - 0.58645I$ $a = 1.64842 - 0.46268I$ $b = -1.44142 - 0.58645I$	$5.7710 + 17.8215I$	0
$u = 0.408146$ $a = 0.444839$ $b = 0.408146$	0.723836	14.2940

II. $I_2^u = \langle -2.26 \times 10^{209} u^{71} + 5.91 \times 10^{209} u^{70} + \cdots + 4.11 \times 10^{210} b - 1.26 \times 10^{213},\ -1.05 \times 10^{212} u^{71} + 2.61 \times 10^{212} u^{70} + \cdots + 1.56 \times 10^{213} a - 4.98 \times 10^{215},\ u^{72} - u^{71} + \cdots - 10866u + 3667 \rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 0.0671046u^{71} - 0.167151u^{70} + \cdots - 1109.95u + 319.364 \\ 0.0549952u^{71} - 0.143792u^{70} + \cdots - 1113.13u + 306.203 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -0.0301419u^{71} + 0.0293224u^{70} + \cdots + 395.244u - 87.4100 \\ 0.328648u^{71} - 0.521975u^{70} + \cdots - 3059.47u + 668.529 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.278968u^{71} - 0.729274u^{70} + \cdots - 5396.58u + 1506.02 \\ -0.454216u^{71} + 1.22463u^{70} + \cdots + 8943.08u - 2530.76 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.339538u^{71} + 0.567129u^{70} + \cdots + 3353.09u - 758.945 \\ 0.688383u^{71} - 1.16484u^{70} + \cdots - 6675.94u + 1506.11 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.541344u^{71} - 0.890028u^{70} + \cdots - 4490.24u + 952.255 \\ -0.342960u^{71} + 0.537379u^{70} + \cdots + 2175.57u - 399.573 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -0.0741667u^{71} + 0.182756u^{70} + \cdots + 1389.76u - 373.122 \\ 0.196267u^{71} - 0.493699u^{70} + \cdots - 3612.84u + 998.690 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.447909u^{71} - 1.21674u^{70} + \cdots - 8536.05u + 2445.31 \\ -0.367683u^{71} + 1.02998u^{70} + \cdots + 7199.69u - 2091.60 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.621670u^{71} - 1.32742u^{70} + \cdots - 8696.78u + 2258.81 \\ -0.208971u^{71} + 0.514036u^{70} + \cdots + 3370.06u - 922.984 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.552929u^{71} - 1.11719u^{70} + \cdots - 7329.04u + 1860.11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{72} - 19u^{71} + \cdots + 178u + 13$
c_2, c_7, c_8 c_{12}	$u^{72} - u^{71} + \cdots - 10866u + 3667$
c_3	$(u^2 - u + 1)^{36}$
c_4, c_5, c_{10}	$(u^{18} + u^{17} + \cdots - u - 1)^4$
c_6, c_9	$(u^{18} - 3u^{17} + \cdots - 3u + 3)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{72} + 11y^{71} + \cdots - 11560y + 169$
c_2, c_7, c_8 c_{12}	$y^{72} - 57y^{71} + \cdots - 103020588y + 13446889$
c_3	$(y^2 + y + 1)^{36}$
c_4, c_5, c_{10}	$(y^{18} - 15y^{17} + \cdots - 7y + 1)^4$
c_6, c_9	$(y^{18} + 13y^{17} + \cdots - 75y + 9)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.017220 + 0.027464I$ $a = 2.13206 - 0.52858I$ $b = -1.66385 - 0.33543I$	$2.50861 + 0.14420I$	0
$u = 1.017220 - 0.027464I$ $a = 2.13206 + 0.52858I$ $b = -1.66385 + 0.33543I$	$2.50861 - 0.14420I$	0
$u = 0.693662 + 0.751370I$ $a = 0.303778 + 0.388548I$ $b = 0.650141 - 0.173344I$	$-0.21034 - 1.47092I$	0
$u = 0.693662 - 0.751370I$ $a = 0.303778 - 0.388548I$ $b = 0.650141 + 0.173344I$	$-0.21034 + 1.47092I$	0
$u = 1.033500 + 0.072324I$ $a = 0.293773 - 0.211699I$ $b = 0.129307 - 0.655859I$	$1.58118 + 0.45801I$	0
$u = 1.033500 - 0.072324I$ $a = 0.293773 + 0.211699I$ $b = 0.129307 + 0.655859I$	$1.58118 - 0.45801I$	0
$u = 0.031660 + 0.944468I$ $a = 0.220232 - 0.330295I$ $b = -1.118420 - 0.229212I$	$1.58118 + 3.60176I$	$0. - 7.68480I$
$u = 0.031660 - 0.944468I$ $a = 0.220232 + 0.330295I$ $b = -1.118420 + 0.229212I$	$1.58118 - 3.60176I$	$0. + 7.68480I$
$u = -1.066340 + 0.019440I$ $a = -2.19706 + 0.41240I$ $b = 1.71352 + 0.39093I$	$6.82360 - 3.68439I$	0
$u = -1.066340 - 0.019440I$ $a = -2.19706 - 0.41240I$ $b = 1.71352 - 0.39093I$	$6.82360 + 3.68439I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.913482+0.085334I$ $a=-2.06764-0.75190I$ $b=\ 1.61282-0.23864I$	$6.06357-3.81683I$	$11.23943+0.I$
$u=-0.913482-0.085334I$ $a=-2.06764+0.75190I$ $b=\ 1.61282+0.23864I$	$6.06357+3.81683I$	$11.23943+0.I$
$u=-0.846987+0.697488I$ $a=-0.333673+0.483654I$ $b=-0.519849-0.164047I$	$-3.45249-2.84406I$	0
$u=-0.846987-0.697488I$ $a=-0.333673-0.483654I$ $b=-0.519849+0.164047I$	$-3.45249+2.84406I$	0
$u=-0.289505+1.062300I$ $a=-0.594187-0.376086I$ $b=\ 1.233660-0.268864I$	$7.08808-5.25662I$	0
$u=-0.289505-1.062300I$ $a=-0.594187+0.376086I$ $b=\ 1.233660+0.268864I$	$7.08808+5.25662I$	0
$u=-1.118420+0.229212I$ $a=-0.308403+0.113424I$ $b=\ 0.031660-0.944468I$	$1.58118-3.60176I$	0
$u=-1.118420-0.229212I$ $a=-0.308403-0.113424I$ $b=\ 0.031660+0.944468I$	$1.58118+3.60176I$	0
$u=\ 0.955436+0.668372I$ $a=\ 0.353081+0.532513I$ $b=\ 0.424031-0.169720I$	$1.04456+7.10521I$	0
$u=\ 0.955436-0.668372I$ $a=\ 0.353081-0.532513I$ $b=\ 0.424031+0.169720I$	$1.04456-7.10521I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.098140+0.393816I$ $a=-0.078496+0.425133I$ $b=-0.074344-1.268570I$	$-0.21034-2.58885I$	0
$u=-1.098140-0.393816I$ $a=-0.078496-0.425133I$ $b=-0.074344+1.268570I$	$-0.21034+2.58885I$	0
$u=-1.187800+0.128492I$ $a=-0.522626+0.383206I$ $b=\ \ 0.028590+0.292450I$	$7.08808-1.19685I$	0
$u=-1.187800-0.128492I$ $a=-0.522626-0.383206I$ $b=\ \ 0.028590-0.292450I$	$7.08808+1.19685I$	0
$u=\ \ 1.137940+0.411255I$ $a=\ \ 0.137911+0.514671I$ $b=\ \ 0.007450-1.328250I$	$-3.45249+6.90382I$	0
$u=\ \ 1.137940-0.411255I$ $a=\ \ 0.137911-0.514671I$ $b=\ \ 0.007450+1.328250I$	$-3.45249-6.90382I$	0
$u=-1.224820+0.174181I$ $a=-1.71777-0.24428I$ $b=\ \ 1.41620-0.50567I$	$5.55672-2.02988I$	0
$u=-1.224820-0.174181I$ $a=-1.71777+0.24428I$ $b=\ \ 1.41620+0.50567I$	$5.55672+2.02988I$	0
$u=-1.166860+0.418865I$ $a=-0.188865+0.570472I$ $b=\ \ 0.045286-1.364190I$	$1.04456-11.16500I$	0
$u=-1.166860-0.418865I$ $a=-0.188865-0.570472I$ $b=\ \ 0.045286+1.364190I$	$1.04456+11.16500I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.248510 + 0.052716I$ $a = 1.95056 - 0.08236I$ $b = -1.58003 - 0.62693I$	$10.76740 + 2.02988I$	0
$u = 1.248510 - 0.052716I$ $a = 1.95056 + 0.08236I$ $b = -1.58003 + 0.62693I$	$10.76740 - 2.02988I$	0
$u = 1.233660 + 0.268864I$ $a = 0.530370 + 0.307807I$ $b = -0.289505 - 1.062300I$	$7.08808 + 5.25662I$	0
$u = 1.233660 - 0.268864I$ $a = 0.530370 - 0.307807I$ $b = -0.289505 + 1.062300I$	$7.08808 - 5.25662I$	0
$u = -0.074344 + 1.268570I$ $a = 0.394783 + 0.040892I$ $b = -1.098140 - 0.393816I$	$-0.21034 + 2.58885I$	0
$u = -0.074344 - 1.268570I$ $a = 0.394783 - 0.040892I$ $b = -1.098140 + 0.393816I$	$-0.21034 - 2.58885I$	0
$u = 0.650141 + 0.173344I$ $a = -0.307229 - 0.683719I$ $b = 0.693662 - 0.751370I$	$-0.21034 + 1.47092I$	$7.51114 - 3.72400I$
$u = 0.650141 - 0.173344I$ $a = -0.307229 + 0.683719I$ $b = 0.693662 + 0.751370I$	$-0.21034 - 1.47092I$	$7.51114 + 3.72400I$
$u = 0.007450 + 1.328250I$ $a = -0.483846 + 0.038488I$ $b = 1.137940 - 0.411255I$	$-3.45249 - 6.90382I$	0
$u = 0.007450 - 1.328250I$ $a = -0.483846 - 0.038488I$ $b = 1.137940 + 0.411255I$	$-3.45249 + 6.90382I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.129307 + 0.655859I$ $a = 0.382215 - 0.410916I$ $b = 1.033500 - 0.072324I$	$1.58118 - 0.45801I$	$7.80878 - 0.75660I$
$u = 0.129307 - 0.655859I$ $a = 0.382215 + 0.410916I$ $b = 1.033500 + 0.072324I$	$1.58118 + 0.45801I$	$7.80878 + 0.75660I$
$u = 0.045286 + 1.364190I$ $a = 0.544891 + 0.031701I$ $b = -1.166860 - 0.418865I$	$1.04456 + 11.16500I$	0
$u = 0.045286 - 1.364190I$ $a = 0.544891 - 0.031701I$ $b = -1.166860 + 0.418865I$	$1.04456 - 11.16500I$	0
$u = 1.370090 + 0.136727I$ $a = 1.61237 + 0.18879I$ $b = -1.31349 - 0.85071I$	$2.50861 + 3.91557I$	0
$u = 1.370090 - 0.136727I$ $a = 1.61237 - 0.18879I$ $b = -1.31349 + 0.85071I$	$2.50861 - 3.91557I$	0
$u = -1.372800 + 0.107076I$ $a = -1.71771 + 0.21747I$ $b = 1.40460 - 0.87274I$	$6.82360 - 7.74416I$	0
$u = -1.372800 - 0.107076I$ $a = -1.71771 - 0.21747I$ $b = 1.40460 + 0.87274I$	$6.82360 + 7.74416I$	0
$u = -1.377880 + 0.171851I$ $a = -1.44111 + 0.19069I$ $b = 1.16098 - 0.85415I$	$6.06357 - 0.24294I$	0
$u = -1.377880 - 0.171851I$ $a = -1.44111 - 0.19069I$ $b = 1.16098 + 0.85415I$	$6.06357 + 0.24294I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.16098 + 0.85415I$ $a = 1.301240 - 0.517704I$ $b = -1.377880 - 0.171851I$	$6.06357 + 0.24294I$	0
$u = 1.16098 - 0.85415I$ $a = 1.301240 + 0.517704I$ $b = -1.377880 + 0.171851I$	$6.06357 - 0.24294I$	0
$u = -0.519849 + 0.164047I$ $a = 0.450371 - 1.093590I$ $b = -0.846987 - 0.697488I$	$-3.45249 + 2.84406I$	$4.47320 - 0.13726I$
$u = -0.519849 - 0.164047I$ $a = 0.450371 + 1.093590I$ $b = -0.846987 + 0.697488I$	$-3.45249 - 2.84406I$	$4.47320 + 0.13726I$
$u = 1.41620 + 0.50567I$ $a = 1.34430 - 0.47999I$ $b = -1.224820 - 0.174181I$	$5.55672 + 2.02988I$	0
$u = 1.41620 - 0.50567I$ $a = 1.34430 + 0.47999I$ $b = -1.224820 + 0.174181I$	$5.55672 - 2.02988I$	0
$u = 0.424031 + 0.169720I$ $a = -0.64369 - 1.49877I$ $b = 0.955436 - 0.668372I$	$1.04456 - 7.10521I$	$8.98695 + 2.40068I$
$u = 0.424031 - 0.169720I$ $a = -0.64369 + 1.49877I$ $b = 0.955436 + 0.668372I$	$1.04456 + 7.10521I$	$8.98695 - 2.40068I$
$u = -1.31349 + 0.85071I$ $a = -1.33743 - 0.50145I$ $b = 1.370090 - 0.136727I$	$2.50861 - 3.91557I$	0
$u = -1.31349 - 0.85071I$ $a = -1.33743 + 0.50145I$ $b = 1.370090 + 0.136727I$	$2.50861 + 3.91557I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.61282 + 0.23864I$ $a = 1.139110 - 0.485015I$ $b = -0.913482 - 0.085334I$	$6.06357 + 3.81683I$	0
$u = 1.61282 - 0.23864I$ $a = 1.139110 + 0.485015I$ $b = -0.913482 + 0.085334I$	$6.06357 - 3.81683I$	0
$u = 1.40460 + 0.87274I$ $a = 1.35323 - 0.49733I$ $b = -1.372800 - 0.107076I$	$6.82360 + 7.74416I$	0
$u = 1.40460 - 0.87274I$ $a = 1.35323 + 0.49733I$ $b = -1.372800 + 0.107076I$	$6.82360 - 7.74416I$	0
$u = -1.66385 + 0.33543I$ $a = -1.205150 - 0.530920I$ $b = 1.017220 - 0.027464I$	$2.50861 - 0.14420I$	0
$u = -1.66385 - 0.33543I$ $a = -1.205150 + 0.530920I$ $b = 1.017220 + 0.027464I$	$2.50861 + 0.14420I$	0
$u = -1.58003 + 0.62693I$ $a = -1.33401 - 0.52932I$ $b = 1.248510 - 0.052716I$	$10.76740 - 2.02988I$	0
$u = -1.58003 - 0.62693I$ $a = -1.33401 + 0.52932I$ $b = 1.248510 + 0.052716I$	$10.76740 + 2.02988I$	0
$u = 0.028590 + 0.292450I$ $a = -1.57989 - 2.10875I$ $b = -1.187800 + 0.128492I$	$7.08808 - 1.19685I$	$13.05526 + 0.16546I$
$u = 0.028590 - 0.292450I$ $a = -1.57989 + 2.10875I$ $b = -1.187800 - 0.128492I$	$7.08808 + 1.19685I$	$13.05526 - 0.16546I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.71352 + 0.39093I$		
$a = 1.234100 - 0.563121I$	$6.82360 - 3.68439I$	0
$b = -1.066340 + 0.019440I$		
$u = 1.71352 - 0.39093I$		
$a = 1.234100 + 0.563121I$	$6.82360 + 3.68439I$	0
$b = -1.066340 - 0.019440I$		

III. $I_3^u = \langle b+u,\ 2u^{19}+2u^{18}+\cdots+a-4,\ u^{20}+u^{19}+\cdots-4u-1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -2u^{19}-2u^{18}+\cdots-3u+4 \\ -u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u^{18}+u^{17}+\cdots+4u+3 \\ u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^{19}-u^{18}+\cdots-23u^2+4 \\ u^3-u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^4-3u^2+2 \\ u^{18}+u^{17}+\cdots+4u+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^8-5u^6+9u^4-6u^2+1 \\ -u^{18}-u^{17}+\cdots-8u-2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u^{19}-u^{18}+\cdots-u+4 \\ -u^{19}-u^{18}+\cdots-4u^2-3u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{19}+u^{18}+\cdots-2u-4 \\ u^5-2u^3+2u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^{18}-u^{17}+\cdots-4u+4 \\ 2u^{18}+2u^{17}+\cdots+8u+2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^{19}-7u^{18}+3u^{17}+65u^{16}+20u^{15}-268u^{14}-151u^{13}+623u^{12}+438u^{11}-868u^{10}-705u^9+708u^8+674u^7-305u^6-385u^5+57u^4+140u^3-34u-7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{20} + y^{19} + \cdots - 6y + 1$
c_2, c_7, c_8 c_{12}	$y^{20} - 21y^{19} + \cdots - 20y + 1$
c_3	$y^{20} - 6y^{19} + \cdots + y + 1$
c_4, c_5, c_{10}	$y^{20} - 19y^{19} + \cdots + 13y + 1$
c_6, c_9	$y^{20} + 9y^{19} + \cdots + 7y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.668831+0.463717I$ $a=\ \ 0.572743+0.372465I$ $b=\ \ 0.668831-0.463717I$	$0.99019-8.34686I$	$8.11381+8.96345I$
$u=-0.668831-0.463717I$ $a=\ \ 0.572743-0.372465I$ $b=\ \ 0.668831+0.463717I$	$0.99019+8.34686I$	$8.11381-8.96345I$
$u=\ \ 1.258910+0.181820I$ $a=\ \ 1.99407-0.63175I$ $b=-1.258910-0.181820I$	$9.55967+0.46214I$	$14.09005-0.25844I$
$u=\ \ 1.258910-0.181820I$ $a=\ \ 1.99407+0.63175I$ $b=-1.258910+0.181820I$	$9.55967-0.46214I$	$14.09005+0.25844I$
$u=\ \ 0.725943$ $a=-2.18632$ $b=-0.725943$	6.91929	-11.6540
$u=-1.236350+0.313248I$ $a=-1.46303-0.54202I$ $b=\ \ 1.236350-0.313248I$	$4.72409-1.84698I$	$6.40432+0.80024I$
$u=-1.236350-0.313248I$ $a=-1.46303+0.54202I$ $b=\ \ 1.236350+0.313248I$	$4.72409+1.84698I$	$6.40432-0.80024I$
$u=\ \ 1.204020+0.427966I$ $a=\ \ 1.139070-0.304352I$ $b=-1.204020-0.427966I$	$8.43027+3.23489I$	$15.8353-3.8708I$
$u=\ \ 1.204020-0.427966I$ $a=\ \ 1.139070+0.304352I$ $b=-1.204020+0.427966I$	$8.43027-3.23489I$	$15.8353+3.8708I$
$u=\ \ 0.578178+0.423999I$ $a=-0.840664+0.576748I$ $b=-0.578178-0.423999I$	$-3.69104+4.05229I$	$2.53314-6.60174I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.578178 - 0.423999I$ $a = -0.840664 - 0.576748I$ $b = -0.578178 + 0.423999I$	$-3.69104 - 4.05229I$	$2.53314 + 6.60174I$
$u = -1.38058 + 0.41854I$ $a = -1.51557 - 0.07010I$ $b = \quad 1.38058 - 0.41854I$	$6.22565 + 1.09815I$	$12.16495 - 2.52978I$
$u = -1.38058 - 0.41854I$ $a = -1.51557 + 0.07010I$ $b = \quad 1.38058 + 0.41854I$	$6.22565 - 1.09815I$	$12.16495 + 2.52978I$
$u = \quad 1.39961 + 0.36809I$ $a = \quad 1.61183 - 0.11089I$ $b = -1.39961 - 0.36809I$	$2.44488 + 2.56909I$	$7.07712 - 1.16744I$
$u = \quad 1.39961 - 0.36809I$ $a = \quad 1.61183 + 0.11089I$ $b = -1.39961 + 0.36809I$	$2.44488 - 2.56909I$	$7.07712 + 1.16744I$
$u = -0.421666 + 0.351150I$ $a = \quad 1.27891 + 1.05193I$ $b = \quad 0.421666 - 0.351150I$	$-0.757748 + 0.237341I$	$4.04858 + 0.92208I$
$u = -0.421666 - 0.351150I$ $a = \quad 1.27891 - 1.05193I$ $b = \quad 0.421666 + 0.351150I$	$-0.757748 - 0.237341I$	$4.04858 - 0.92208I$
$u = -1.42948 + 0.32689I$ $a = -1.70399 - 0.10936I$ $b = \quad 1.42948 - 0.32689I$	$6.63079 - 6.29581I$	$12.13979 + 4.17305I$
$u = -1.42948 - 0.32689I$ $a = -1.70399 + 0.10936I$ $b = \quad 1.42948 + 0.32689I$	$6.63079 + 6.29581I$	$12.13979 - 4.17305I$
$u = -0.333578$ $a = \quad 3.03956$ $b = \quad 0.333578$	-0.365832	0.839520

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^{20}+u^{19}+\cdots-2u+1)(u^{40}+u^{39}+\cdots-14u+1)$ $\cdot(u^{72}-19u^{71}+\cdots+178u+13)$
c_2, c_8	$(u^{20}+u^{19}+\cdots-4u-1)(u^{40}+u^{39}+\cdots-2u+1)$ $\cdot(u^{72}-u^{71}+\cdots-10866u+3667)$
c_3	$((u^2-u+1)^{36})(u^{20}+2u^{19}+\cdots-u+1)$ $\cdot(u^{40}+35u^{39}+\cdots+4063232u+262144)$
c_4, c_5	$((u^{18}+u^{17}+\cdots-u-1)^4)(u^{20}-u^{19}+\cdots+u-1)$ $\cdot(u^{40}-6u^{39}+\cdots+14u+4)$
c_6	$((u^{18}-3u^{17}+\cdots-3u+3)^4)(u^{20}+3u^{19}+\cdots+3u+1)$ $\cdot(u^{40}+18u^{39}+\cdots-286u-52)$
c_7, c_{12}	$(u^{20}-u^{19}+\cdots+4u-1)(u^{40}+u^{39}+\cdots-2u+1)$ $\cdot(u^{72}-u^{71}+\cdots-10866u+3667)$
c_9	$((u^{18}-3u^{17}+\cdots-3u+3)^4)(u^{20}-3u^{19}+\cdots-3u+1)$ $\cdot(u^{40}+18u^{39}+\cdots-286u-52)$
c_{10}	$((u^{18}+u^{17}+\cdots-u-1)^4)(u^{20}+u^{19}+\cdots-u-1)$ $\cdot(u^{40}-6u^{39}+\cdots+14u+4)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^{20}+y^{19}+\cdots-6y+1)(y^{40}-17y^{39}+\cdots-104y+1)$ $\cdot(y^{72}+11y^{71}+\cdots-11560y+169)$
c_2, c_7, c_8 c_{12}	$(y^{20}-21y^{19}+\cdots-20y+1)(y^{40}-27y^{39}+\cdots-6y+1)$ $\cdot(y^{72}-57y^{71}+\cdots-103020588y+13446889)$
c_3	$((y^2+y+1)^{36})(y^{20}-6y^{19}+\cdots+y+1)$ $\cdot(y^{40}-5y^{39}+\cdots-738734374912y+68719476736)$
c_4, c_5, c_{10}	$((y^{18}-15y^{17}+\cdots-7y+1)^4)(y^{20}-19y^{19}+\cdots+13y+1)$ $\cdot(y^{40}-34y^{39}+\cdots-76y+16)$
c_6, c_9	$((y^{18}+13y^{17}+\cdots-75y+9)^4)(y^{20}+9y^{19}+\cdots+7y+1)$ $\cdot(y^{40}+22y^{39}+\cdots-227084y+2704)$