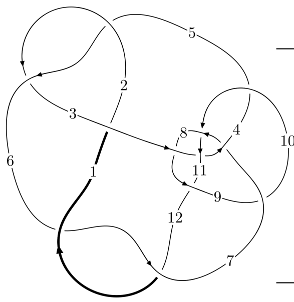
$12n_{0458}$ ($K12n_{0458}$)



A knot diagram[1]

Linearized knot diagam

$$\to \underset{3}{\downarrow} \to \underset{6}{\downarrow} \to \underset{11}{\downarrow} \to \underset{10}{\uparrow} \to \underset{2}{\downarrow} \to \underset{1}{\uparrow} \to \underset{4}{\downarrow} \to \underset{3}{\uparrow} \to \underset{7}{\uparrow} \to \underset{8}{\downarrow} \to \underset{9}{\uparrow} \to \underset{7}{\uparrow} \to$$

Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & 5.47880 \times 10^{25} u^{40} + 7.88111 \times 10^{25} u^{39} + \cdots + 1.50975 \times 10^{24} b + 6.96929 \times 10^{25}, \\
& -1.08127 \times 10^{26} u^{40} - 1.53797 \times 10^{26} u^{39} + \cdots + 1.50975 \times 10^{24} a - 1.21442 \times 10^{26},\ u^{41} + u^{40} + \cdots + 2u + \\
I^u_2 = \langle & -2.49556 \times 10^{86} u^{43} - 8.35365 \times 10^{86} u^{42} + \cdots + 3.43675 \times 10^{87} b + 3.73757 \times 10^{87}, \\
& 2.75946 \times 10^{87} u^{43} + 1.12653 \times 10^{88} u^{42} + \cdots + 5.84247 \times 10^{88} a + 3.07830 \times 10^{89},\ u^{44} + 4u^{43} + \cdots + 77u + \\
I^u_3 = \langle & -u^{18} + u^{17} + \cdots + b + 4u,\ -4u^{18} + 4u^{17} + \cdots + a - 1,\ u^{19} - u^{18} + \cdots - 4u^2 + 1 \rangle \\
I^u_4 = \langle & b - u - 1,\ a - u - 1,\ u^2 + u + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 106 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.

$\boldsymbol{I_1^u = \langle 5.48\times10^{25}u^{40}+7.88\times10^{25}u^{39}+\cdots+1.51\times10^{24}b+6.97\times10^{25},\ -1.08\times10^{26}u^{40}-1.54\times10^{26}u^{39}+\cdots+1.51\times10^{24}a-1.21\times10^{26},\ u^{41}+u^{40}+\cdots+2u+1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}71.6189u^{40}+101.869u^{39}+\cdots+340.999u+80.4384\\-36.2894u^{40}-52.2014u^{39}+\cdots-199.232u-46.1618\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-64.2074u^{40}-87.5660u^{39}+\cdots-425.889u-95.1075\\-18.2487u^{40}-25.7511u^{39}+\cdots-53.4475u-14.3937\end{pmatrix}$$
$$a_8 = \begin{pmatrix}107.908u^{40}+154.070u^{39}+\cdots+540.231u+126.600\\-36.2894u^{40}-52.2014u^{39}+\cdots-199.232u-46.1618\end{pmatrix}$$
$$a_7 = \begin{pmatrix}107.908u^{40}+154.070u^{39}+\cdots+541.231u+126.600\\-36.2894u^{40}-52.2014u^{39}+\cdots-199.232u-46.1618\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-197.492u^{40}-281.182u^{39}+\cdots-1214.12u-264.909\\-0.0153376u^{40}-1.23868u^{39}+\cdots+111.193u+23.1345\end{pmatrix}$$
$$a_6 = \begin{pmatrix}74.2253u^{40}+243.405u^{39}+\cdots+1398.14u+562.092\\39.9044u^{40}+24.6029u^{39}+\cdots-18.7145u-94.6713\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-197.477u^{40}-279.943u^{39}+\cdots-1325.31u-288.043\\-0.0153376u^{40}-1.23868u^{39}+\cdots+111.193u+23.1345\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-64.8577u^{40}-25.7158u^{39}+\cdots+90.6679u+163.055\\-22.8032u^{40}-1.56551u^{39}+\cdots+55.9091u+43.7009\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0.594704u^{40}+4.62146u^{39}+\cdots-162.562u-30.5253\\-46.5535u^{40}-66.4364u^{39}+\cdots-207.880u-50.1886\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{466097766556096025738047 41}{1509752124425304287631895}u^{40} - \frac{5558447123533309082564389 68}{1509752124425304287631895}u^{39} + \cdots - \frac{42707716018235303197525746 08}{1509752124425304287631895}u - \frac{20761427985650927849717647 01}{1509752124425304287631895}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{41} + 19u^{40} + \cdots + 89u + 16$
c_2, c_5	$u^{41} + 5u^{40} + \cdots + 7u + 4$
c_3, c_7	$u^{41} + u^{40} + \cdots + 2u + 1$
c_4, c_8	$u^{41} - 9u^{39} + \cdots - 69u + 17$
c_6, c_{12}	$u^{41} + 15u^{40} + \cdots + 87u + 4$
c_9, c_{11}	$u^{41} - 4u^{40} + \cdots + 27u + 1$
c_{10}	$u^{41} - 26u^{40} + \cdots + 23u - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{41} + 9y^{40} + \cdots - 3311y - 256$
c_2, c_5	$y^{41} - 19y^{40} + \cdots + 89y - 16$
c_3, c_7	$y^{41} + 17y^{40} + \cdots - 36y - 1$
c_4, c_8	$y^{41} - 18y^{40} + \cdots + 5577y - 289$
c_6, c_{12}	$y^{41} + y^{40} + \cdots + 633y - 16$
c_9, c_{11}	$y^{41} - 58y^{40} + \cdots + 333y - 1$
c_{10}	$y^{41} + 68y^{39} + \cdots + 81y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.347021 + 1.021800I$ $a = 0.446471 + 0.717252I$ $b = 0.856068 + 0.901582I$	$2.01077 + 1.97128I$	0
$u = 0.347021 - 1.021800I$ $a = 0.446471 - 0.717252I$ $b = 0.856068 - 0.901582I$	$2.01077 - 1.97128I$	0
$u = -0.517326 + 0.952123I$ $a = -0.494773 + 0.392816I$ $b = -1.002680 + 0.556094I$	$2.33608 + 2.70211I$	0
$u = -0.517326 - 0.952123I$ $a = -0.494773 - 0.392816I$ $b = -1.002680 - 0.556094I$	$2.33608 - 2.70211I$	0
$u = -0.380066 + 0.811067I$ $a = 0.82614 + 1.79073I$ $b = 0.853726 - 0.187521I$	$4.94484 - 5.32421I$	$4.21074 + 0.90918I$
$u = -0.380066 - 0.811067I$ $a = 0.82614 - 1.79073I$ $b = 0.853726 + 0.187521I$	$4.94484 + 5.32421I$	$4.21074 - 0.90918I$
$u = 0.054668 + 1.145580I$ $a = 0.106091 + 1.208380I$ $b = 0.17829 + 1.44060I$	$1.57207 - 1.96637I$	0
$u = 0.054668 - 1.145580I$ $a = 0.106091 - 1.208380I$ $b = 0.17829 - 1.44060I$	$1.57207 + 1.96637I$	0
$u = 0.358415 + 0.770361I$ $a = -0.68843 + 2.01808I$ $b = -0.906548 - 0.088949I$	$6.85307 + 0.06384I$	$7.45973 + 4.03926I$
$u = 0.358415 - 0.770361I$ $a = -0.68843 - 2.01808I$ $b = -0.906548 + 0.088949I$	$6.85307 - 0.06384I$	$7.45973 - 4.03926I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.045169 + 0.822753I$ $a = -0.154528 + 1.094100I$ $b = 0.346455 + 0.374027I$	$1.46454 + 1.46331I$	$5.06919 - 4.70044I$
$u = -0.045169 - 0.822753I$ $a = -0.154528 - 1.094100I$ $b = 0.346455 - 0.374027I$	$1.46454 - 1.46331I$	$5.06919 + 4.70044I$
$u = -0.229168 + 0.751258I$ $a = -0.04740 + 1.82480I$ $b = 0.739876 + 0.180844I$	$1.64581 + 1.65716I$	$2.62674 - 4.29220I$
$u = -0.229168 - 0.751258I$ $a = -0.04740 - 1.82480I$ $b = 0.739876 - 0.180844I$	$1.64581 - 1.65716I$	$2.62674 + 4.29220I$
$u = 0.325313 + 0.680386I$ $a = -0.29563 + 2.60667I$ $b = -1.039970 + 0.122963I$	$7.08787 - 2.96529I$	$8.51449 + 5.47804I$
$u = 0.325313 - 0.680386I$ $a = -0.29563 - 2.60667I$ $b = -1.039970 - 0.122963I$	$7.08787 + 2.96529I$	$8.51449 - 5.47804I$
$u = -0.314460 + 0.648327I$ $a = 0.08581 + 2.85549I$ $b = 1.088460 + 0.205257I$	$5.38587 + 8.24752I$	$6.33209 - 10.48383I$
$u = -0.314460 - 0.648327I$ $a = 0.08581 - 2.85549I$ $b = 1.088460 - 0.205257I$	$5.38587 - 8.24752I$	$6.33209 + 10.48383I$
$u = 1.054420 + 0.767365I$ $a = 0.225727 - 0.075550I$ $b = 0.757531 - 0.087155I$	$-5.03812 + 0.55979I$	0
$u = 1.054420 - 0.767365I$ $a = 0.225727 + 0.075550I$ $b = 0.757531 + 0.087155I$	$-5.03812 - 0.55979I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.954640+0.895605I$ $a=-0.323203-0.114281I$ $b=-0.907475-0.104542I$	$-1.12434+3.55718I$	0
$u=-0.954640-0.895605I$ $a=-0.323203+0.114281I$ $b=-0.907475+0.104542I$	$-1.12434-3.55718I$	0
$u=-0.652653$ $a=-0.0877425$ $b=-0.483905$	-1.46612	-7.06880
$u=-0.001515+0.601854I$ $a=-0.852039+0.542047I$ $b=\quad 0.481262+0.639634I$	$0.81408+1.37351I$	$2.99559-3.76838I$
$u=-0.001515-0.601854I$ $a=-0.852039-0.542047I$ $b=\quad 0.481262-0.639634I$	$0.81408-1.37351I$	$2.99559+3.76838I$
$u=\quad 1.03621+0.97465I$ $a=\quad 0.272897-0.206391I$ $b=\quad 0.879946-0.246548I$	$-4.42034-8.30464I$	0
$u=\quad 1.03621-0.97465I$ $a=\quad 0.272897+0.206391I$ $b=\quad 0.879946+0.246548I$	$-4.42034+8.30464I$	0
$u=\quad 0.051342+0.543114I$ $a=\quad 1.57833+0.32834I$ $b=-0.542371+0.798966I$	$-1.14789-5.43637I$	$-0.71682+6.54388I$
$u=\quad 0.051342-0.543114I$ $a=\quad 1.57833-0.32834I$ $b=-0.542371-0.798966I$	$-1.14789+5.43637I$	$-0.71682-6.54388I$
$u=-0.005268+0.490051I$ $a=\quad 0.720841-0.530154I$ $b=-0.243798+0.805884I$	$-2.19779+1.00862I$	$-5.99392-1.40222I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.005268 - 0.490051I$ $a = 0.720841 + 0.530154I$ $b = -0.243798 - 0.805884I$	$-2.19779 - 1.00862I$	$-5.99392 + 1.40222I$
$u = -0.92388 + 1.21329I$ $a = -0.693432 - 0.848976I$ $b = -1.60443 - 0.79675I$	$7.22406 + 2.19782I$	0
$u = -0.92388 - 1.21329I$ $a = -0.693432 + 0.848976I$ $b = -1.60443 + 0.79675I$	$7.22406 - 2.19782I$	0
$u = 0.93985 + 1.21945I$ $a = 0.624751 - 0.961319I$ $b = 1.57161 - 0.93510I$	$8.66754 - 7.90114I$	0
$u = 0.93985 - 1.21945I$ $a = 0.624751 + 0.961319I$ $b = 1.57161 + 0.93510I$	$8.66754 + 7.90114I$	0
$u = -0.96302 + 1.20795I$ $a = -0.367468 - 0.971278I$ $b = -1.31719 - 1.03611I$	$1.99155 + 9.34995I$	0
$u = -0.96302 - 1.20795I$ $a = -0.367468 + 0.971278I$ $b = -1.31719 + 1.03611I$	$1.99155 - 9.34995I$	0
$u = 0.96655 + 1.22224I$ $a = 0.421833 - 1.155040I$ $b = 1.43574 - 1.19661I$	$7.8645 - 11.8540I$	0
$u = 0.96655 - 1.22224I$ $a = 0.421833 + 1.155040I$ $b = 1.43574 + 1.19661I$	$7.8645 + 11.8540I$	0
$u = -0.97295 + 1.22134I$ $a = -0.348119 - 1.207570I$ $b = -1.38255 - 1.27245I$	$5.7918 + 17.4569I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.97295 - 1.22134I$ $a = -0.348119 + 1.207570I$ $b = -1.38255 + 1.27245I$	$5.7918 - 17.4569I$	0

II. $\boldsymbol{I_2^u = \langle -2.50 \times 10^{86} u^{43} - 8.35 \times 10^{86} u^{42} + \cdots + 3.44 \times 10^{87} b + 3.74 \times 10^{87},\ 2.76 \times 10^{87} u^{43} + 1.13 \times 10^{88} u^{42} + \cdots + 5.84 \times 10^{88} a + 3.08 \times 10^{89},\ u^{44} + 4u^{43} + \cdots + 77u + 17 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} -0.0472311u^{43} - 0.192817u^{42} + \cdots - 14.3118u - 5.26884 \\ 0.0726141u^{43} + 0.243068u^{42} + \cdots - 1.78608u - 1.08753 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0360992u^{43} - 0.157605u^{42} + \cdots - 15.0581u - 5.83261 \\ 0.0702088u^{43} + 0.234463u^{42} + \cdots - 1.55171u - 1.42798 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.119845u^{43} - 0.435885u^{42} + \cdots - 12.5257u - 4.18131 \\ 0.0726141u^{43} + 0.243068u^{42} + \cdots - 1.78608u - 1.08753 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0588235u^{43} - 0.235294u^{42} + \cdots - 13u - 4.52941 \\ 0.0610217u^{43} + 0.200591u^{42} + \cdots + 0.525708u - 0.348105 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.101101u^{43} - 0.408588u^{42} + \cdots - 18.6194u - 7.52962 \\ 0.00441605u^{43} - 0.0127382u^{42} + \cdots - 3.21768u - 1.61521 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0490639u^{43} - 0.254746u^{42} + \cdots - 9.79483u - 5.26468 \\ 0.0362894u^{43} + 0.127630u^{42} + \cdots - 0.376828u - 1.15074 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.105517u^{43} - 0.395849u^{42} + \cdots - 15.4017u - 5.91441 \\ 0.00441605u^{43} - 0.0127382u^{42} + \cdots - 3.21768u - 1.61521 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.142243u^{43} + 0.513366u^{42} + \cdots + 14.5329u + 3.09094 \\ -0.00902369u^{43} - 0.0430917u^{42} + \cdots - 3.30811u - 1.10503 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0606353u^{43} - 0.229405u^{42} + \cdots - 7.19891u - 3.39724 \\ -0.0456727u^{43} - 0.162664u^{42} + \cdots - 4.30750u - 1.00739 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.861289u^{43} - 3.44599u^{42} + \cdots - 97.7115u - 26.0425$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{22} + 10u^{21} + \cdots + 6u^2 + 1)^2$
c_2, c_5	$(u^{22} - 2u^{21} + \cdots - 5u^3 + 1)^2$
c_3, c_7	$u^{44} + 4u^{43} + \cdots + 77u + 17$
c_4, c_8	$u^{44} + 2u^{43} + \cdots - 7681u + 1663$
c_6, c_{12}	$(u^{22} - 9u^{21} + \cdots - 27u + 8)^2$
c_9, c_{11}	$u^{44} - 3u^{43} + \cdots - 5634u + 459$
c_{10}	$(u^{22} + 9u^{21} + \cdots + u + 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{22}+6y^{21}+\cdots+12y+1)^2$
c_2, c_5	$(y^{22}-10y^{21}+\cdots+6y^2+1)^2$
c_3, c_7	$y^{44}-8y^{43}+\cdots+1585y+289$
c_4, c_8	$y^{44}-20y^{43}+\cdots+60881257y+2765569$
c_6, c_{12}	$(y^{22}-5y^{21}+\cdots-137y+64)^2$
c_9, c_{11}	$y^{44}-23y^{43}+\cdots+46259586y+210681$
c_{10}	$(y^{22}+3y^{21}+\cdots+43y+4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.466106 + 0.845310I$ $a = 0.120142 + 0.417834I$ $b = 1.67800 + 0.61371I$	$-0.49172 + 7.76222I$	$0.81633 - 10.97056I$
$u = -0.466106 - 0.845310I$ $a = 0.120142 - 0.417834I$ $b = 1.67800 - 0.61371I$	$-0.49172 - 7.76222I$	$0.81633 + 10.97056I$
$u = -0.612747 + 0.847167I$ $a = -0.309849 + 0.822684I$ $b = 1.14999 + 1.06245I$	$-2.01009 + 2.56491I$	$-5.72976 - 4.00419I$
$u = -0.612747 - 0.847167I$ $a = -0.309849 - 0.822684I$ $b = 1.14999 - 1.06245I$	$-2.01009 - 2.56491I$	$-5.72976 + 4.00419I$
$u = 0.899310 + 0.535213I$ $a = 1.22496 + 1.07887I$ $b = -0.208918 + 0.720383I$	$-2.01009 - 2.56491I$	$-5.72976 + 4.00419I$
$u = 0.899310 - 0.535213I$ $a = 1.22496 - 1.07887I$ $b = -0.208918 - 0.720383I$	$-2.01009 + 2.56491I$	$-5.72976 - 4.00419I$
$u = 0.667133 + 0.876190I$ $a = 0.565670 + 0.915397I$ $b = -0.73275 + 1.28707I$	$-2.61181 - 5.56778I$	$-6.67774 + 6.14625I$
$u = 0.667133 - 0.876190I$ $a = 0.565670 - 0.915397I$ $b = -0.73275 - 1.28707I$	$-2.61181 + 5.56778I$	$-6.67774 - 6.14625I$
$u = 0.420458 + 0.759517I$ $a = 0.0506571 + 0.0690852I$ $b = -1.51754 + 0.25724I$	$0.63374 - 3.32247I$	$4.93738 + 4.78079I$
$u = 0.420458 - 0.759517I$ $a = 0.0506571 - 0.0690852I$ $b = -1.51754 - 0.25724I$	$0.63374 + 3.32247I$	$4.93738 - 4.78079I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.592653 + 0.967467I$ $a = 0.548691 + 0.593530I$ $b = -0.351079 + 1.129330I$	$-2.49866 + 0.61650I$	$-5.58678 - 1.76375I$
$u = 0.592653 - 0.967467I$ $a = 0.548691 - 0.593530I$ $b = -0.351079 - 1.129330I$	$-2.49866 - 0.61650I$	$-5.58678 + 1.76375I$
$u = -0.510707 + 0.679843I$ $a = -0.82932 - 1.56718I$ $b = -1.70942 - 1.64533I$	$4.38951 + 8.87036I$	$2.10374 - 11.14588I$
$u = -0.510707 - 0.679843I$ $a = -0.82932 + 1.56718I$ $b = -1.70942 + 1.64533I$	$4.38951 - 8.87036I$	$2.10374 + 11.14588I$
$u = -0.748334 + 0.350797I$ $a = -1.67537 + 0.57034I$ $b = 0.087323 + 0.207716I$	$-2.61181 + 5.56778I$	$-6.67774 - 6.14625I$
$u = -0.748334 - 0.350797I$ $a = -1.67537 - 0.57034I$ $b = 0.087323 - 0.207716I$	$-2.61181 - 5.56778I$	$-6.67774 + 6.14625I$
$u = 0.438421 + 0.674226I$ $a = 0.90058 - 1.59216I$ $b = 1.81717 - 1.62217I$	$6.45761 - 3.23482I$	$6.36482 + 6.95069I$
$u = 0.438421 - 0.674226I$ $a = 0.90058 + 1.59216I$ $b = 1.81717 + 1.62217I$	$6.45761 + 3.23482I$	$6.36482 - 6.95069I$
$u = -0.784806 + 0.951389I$ $a = -0.431263 + 0.864629I$ $b = 0.541102 + 0.996237I$	$-0.29493 + 2.91734I$	$2.41857 - 2.23849I$
$u = -0.784806 - 0.951389I$ $a = -0.431263 - 0.864629I$ $b = 0.541102 - 0.996237I$	$-0.29493 - 2.91734I$	$2.41857 + 2.23849I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.149975+0.738011I$ $a=-0.89919-1.49365I$ $b=-2.06203-1.36914I$	$5.86334-6.33920I$	$7.62789+3.75640I$
$u=-0.149975-0.738011I$ $a=-0.89919+1.49365I$ $b=-2.06203+1.36914I$	$5.86334+6.33920I$	$7.62789-3.75640I$
$u=\ \ 0.229621+0.711467I$ $a=\ \ 0.93052-1.58410I$ $b=\ \ 2.01034-1.49221I$	$7.29150+0.70655I$	$9.80660+2.74214I$
$u=\ \ 0.229621-0.711467I$ $a=\ \ 0.93052+1.58410I$ $b=\ \ 2.01034+1.49221I$	$7.29150-0.70655I$	$9.80660-2.74214I$
$u=\ \ 1.057640+0.711303I$ $a=\ \ 0.72238+1.49263I$ $b=-0.394766+1.085170I$	$-0.49172-7.76222I$	$0.+10.97056I$
$u=\ \ 1.057640-0.711303I$ $a=\ \ 0.72238-1.49263I$ $b=-0.394766-1.085170I$	$-0.49172+7.76222I$	$0.-10.97056I$
$u=-1.010300+0.819633I$ $a=-0.496055+1.296710I$ $b=\ \ 0.521329+1.021470I$	$0.63374+3.32247I$	$4.93738-4.78079I$
$u=-1.010300-0.819633I$ $a=-0.496055-1.296710I$ $b=\ \ 0.521329-1.021470I$	$0.63374-3.32247I$	$4.93738+4.78079I$
$u=\ \ 0.456405+0.493869I$ $a=\ \ 1.008840-0.278321I$ $b=-0.785235-0.137592I$	$-0.29493-2.91734I$	$2.41857+2.23849I$
$u=\ \ 0.456405-0.493869I$ $a=\ \ 1.008840+0.278321I$ $b=-0.785235+0.137592I$	$-0.29493+2.91734I$	$2.41857-2.23849I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.352482+0.507121I$ $a=-1.07753-1.61193I$ $b=-1.91155-1.49298I$	$0.543309+0.646462I$	$7.41895-11.49115I$
$u=-0.352482-0.507121I$ $a=-1.07753+1.61193I$ $b=-1.91155+1.49298I$	$0.543309-0.646462I$	$7.41895+11.49115I$
$u=-0.439360+0.215788I$ $a=-2.17643-0.43074I$ $b=\ \ 0.249933-0.497594I$	$-2.49866-0.61650I$	$-5.58678+1.76375I$
$u=-0.439360-0.215788I$ $a=-2.17643+0.43074I$ $b=\ \ 0.249933+0.497594I$	$-2.49866+0.61650I$	$-5.58678-1.76375I$
$u=-1.42727+1.17674I$ $a=\ \ 0.732491+0.810544I$ $b=\ \ 0.999624+0.416425I$	$5.86334+6.33920I$	0
$u=-1.42727-1.17674I$ $a=\ \ 0.732491-0.810544I$ $b=\ \ 0.999624-0.416425I$	$5.86334-6.33920I$	0
$u=-1.58647+1.01845I$ $a=\ \ 0.919715+0.087483I$ $b=\ \ 0.855383-0.305806I$	$4.38951-8.87036I$	0
$u=-1.58647-1.01845I$ $a=\ \ 0.919715-0.087483I$ $b=\ \ 0.855383+0.305806I$	$4.38951+8.87036I$	0
$u=\ \ 1.49066+1.18106I$ $a=-0.792313+0.634501I$ $b=-0.974820+0.249567I$	$7.29150-0.70655I$	0
$u=\ \ 1.49066-1.18106I$ $a=-0.792313-0.634501I$ $b=-0.974820-0.249567I$	$7.29150+0.70655I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.59443 + 1.07242I$ $a = -0.889783 + 0.221269I$ $b = -0.883190 - 0.162509I$	$6.45761 + 3.23482I$	0
$u = 1.59443 - 1.07242I$ $a = -0.889783 - 0.221269I$ $b = -0.883190 + 0.162509I$	$6.45761 - 3.23482I$	0
$u = -1.75816 + 1.21062I$ $a = 0.587756 + 0.268789I$ $b = 0.621112 + 0.027345I$	$0.543309 - 0.646462I$	0
$u = -1.75816 - 1.21062I$ $a = 0.587756 - 0.268789I$ $b = 0.621112 - 0.027345I$	$0.543309 + 0.646462I$	0

III.

$$\boldsymbol{I_3^u = \langle -u^{18}+u^{17}+\cdots+b+4u,\ -4u^{18}+4u^{17}+\cdots+a-1,\ u^{19}-u^{18}+\cdots-4u^2+1\rangle}$$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} 4u^{18} - 4u^{17} + \cdots - 8u + 1 \\ u^{18} - u^{17} + \cdots + u^2 - 4u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -8u^{18} + 9u^{17} + \cdots + 14u - 4 \\ -4u^{18} + 4u^{17} + \cdots + 9u - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 3u^{18} - 3u^{17} + \cdots - 4u + 1 \\ u^{18} - u^{17} + \cdots + u^2 - 4u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 3u^{18} - 3u^{17} + \cdots - 5u + 1 \\ u^{18} - u^{17} + \cdots + u^2 - 4u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{18} + 2u^{16} + \cdots + 5u^2 - 2 \\ 2u^{18} - 3u^{17} + \cdots - 3u + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -4u^{18} + 5u^{17} + \cdots - 6u^2 + 8u \\ 3u^{18} - 3u^{17} + \cdots + 9u^3 - 3u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -3u^{18} + 3u^{17} + \cdots + 3u - 4 \\ 2u^{18} - 3u^{17} + \cdots - 3u + 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2u^{18} + 3u^{17} + \cdots - 3u^3 - 1 \\ -u^{18} + 4u^{17} + \cdots + 3u - 5 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{18} + 2u^{17} + \cdots + 2u - 2 \\ -3u^{18} + 3u^{17} + \cdots + 5u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^{18} + 12u^{17} + u^{16} - 22u^{15} - 16u^{14} + 59u^{13} - 18u^{12} - 76u^{11} + 20u^{10} + 87u^9 - 54u^8 - 93u^7 + 68u^6 + 56u^5 - 50u^4 - 29u^3 + 45u^2 + 11u - 15$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{19} - 10u^{18} + \cdots + 4u - 1$
c_2	$u^{19} + 2u^{18} + \cdots - 2u - 1$
c_3, c_7	$u^{19} - u^{18} + \cdots - 4u^2 + 1$
c_4, c_8	$u^{19} - 4u^{17} + \cdots - u + 1$
c_5	$u^{19} - 2u^{18} + \cdots - 2u + 1$
c_6	$u^{19} - 6u^{18} + \cdots + 14u - 3$
c_9, c_{11}	$u^{19} - 8u^{18} + \cdots + 5u - 1$
c_{10}	$u^{19} + 11u^{18} + \cdots + u - 3$
c_{12}	$u^{19} + 6u^{18} + \cdots + 14u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{19} + 2y^{18} + \cdots + 74y^3 - 1$
c_2, c_5	$y^{19} - 10y^{18} + \cdots + 4y - 1$
c_3, c_7	$y^{19} - 5y^{18} + \cdots + 8y - 1$
c_4, c_8	$y^{19} - 8y^{18} + \cdots + 5y - 1$
c_6, c_{12}	$y^{19} + 6y^{18} + \cdots + 88y - 9$
c_9, c_{11}	$y^{19} - 16y^{17} + \cdots - 19y - 1$
c_{10}	$y^{19} - 3y^{18} + \cdots + 217y - 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.571670 + 0.772339I$ $a = 1.062330 + 0.376696I$ $b = -0.619150 + 0.836486I$	$-1.93329 - 0.79135I$	$-1.90450 + 1.96423I$
$u = 0.571670 - 0.772339I$ $a = 1.062330 - 0.376696I$ $b = -0.619150 - 0.836486I$	$-1.93329 + 0.79135I$	$-1.90450 - 1.96423I$
$u = -0.691700 + 0.817412I$ $a = -0.700220 + 0.415999I$ $b = 0.603256 + 0.712894I$	$-0.67906 + 4.36107I$	$0.50991 - 7.74806I$
$u = -0.691700 - 0.817412I$ $a = -0.700220 - 0.415999I$ $b = 0.603256 - 0.712894I$	$-0.67906 - 4.36107I$	$0.50991 + 7.74806I$
$u = -0.694686 + 0.594925I$ $a = -0.687377 + 1.111670I$ $b = 0.830443 + 0.711186I$	$-0.66120 + 2.86463I$	$-0.58084 - 3.68051I$
$u = -0.694686 - 0.594925I$ $a = -0.687377 - 1.111670I$ $b = 0.830443 - 0.711186I$	$-0.66120 - 2.86463I$	$-0.58084 + 3.68051I$
$u = -0.901419$ $a = 1.36528$ $b = 1.10936$	0.308220	-0.909270
$u = 0.590402 + 0.625214I$ $a = 1.20330 + 1.01252I$ $b = -0.798416 + 0.845493I$	$-1.76829 - 6.62156I$	$-2.87860 + 10.87292I$
$u = 0.590402 - 0.625214I$ $a = 1.20330 - 1.01252I$ $b = -0.798416 - 0.845493I$	$-1.76829 + 6.62156I$	$-2.87860 - 10.87292I$
$u = 0.769919 + 0.066620I$ $a = -2.09450 + 0.55481I$ $b = -1.289190 + 0.111552I$	$6.31789 - 1.80381I$	$3.64499 + 0.37370I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.769919 - 0.066620I$ $a = -2.09450 - 0.55481I$ $b = -1.289190 - 0.111552I$	$6.31789 + 1.80381I$	$3.64499 - 0.37370I$
$u = -0.756714 + 0.118401I$ $a = 1.98867 + 0.99926I$ $b = 1.289920 + 0.201830I$	$4.58239 + 7.30195I$	$0.96040 - 5.11591I$
$u = -0.756714 - 0.118401I$ $a = 1.98867 - 0.99926I$ $b = 1.289920 - 0.201830I$	$4.58239 - 7.30195I$	$0.96040 + 5.11591I$
$u = -0.966965 + 0.774347I$ $a = -0.231110 + 0.472518I$ $b = 0.630095 + 0.504581I$	$-2.00054 + 3.89777I$	$-3.98253 - 5.34580I$
$u = -0.966965 - 0.774347I$ $a = -0.231110 - 0.472518I$ $b = 0.630095 - 0.504581I$	$-2.00054 - 3.89777I$	$-3.98253 + 5.34580I$
$u = 1.100580 + 0.706359I$ $a = 0.062826 + 0.442679I$ $b = -0.643531 + 0.413021I$	$-5.47313 + 0.16274I$	$-9.10286 + 4.27042I$
$u = 1.100580 - 0.706359I$ $a = 0.062826 - 0.442679I$ $b = -0.643531 - 0.413021I$	$-5.47313 - 0.16274I$	$-9.10286 - 4.27042I$
$u = 1.028200 + 0.886045I$ $a = 0.213453 + 0.338188I$ $b = -0.558115 + 0.480952I$	$-5.11861 - 8.27352I$	$-8.71133 + 6.81608I$
$u = 1.028200 - 0.886045I$ $a = 0.213453 - 0.338188I$ $b = -0.558115 - 0.480952I$	$-5.11861 + 8.27352I$	$-8.71133 - 6.81608I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = 0.500000 + 0.866025I$ $b = 0.500000 + 0.866025I$	0	-3.00000
$u = -0.500000 - 0.866025I$ $a = 0.500000 - 0.866025I$ $b = 0.500000 - 0.866025I$	0	-3.00000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^{19}-10u^{18}+\cdots+4u-1)(u^{22}+10u^{21}+\cdots+6u^2+1)^2$ $\cdot(u^{41}+19u^{40}+\cdots+89u+16)$
c_2	$((u-1)^2)(u^{19}+2u^{18}+\cdots-2u-1)(u^{22}-2u^{21}+\cdots-5u^3+1)^2$ $\cdot(u^{41}+5u^{40}+\cdots+7u+4)$
c_3, c_7	$(u^2+u+1)(u^{19}-u^{18}+\cdots-4u^2+1)(u^{41}+u^{40}+\cdots+2u+1)$ $\cdot(u^{44}+4u^{43}+\cdots+77u+17)$
c_4, c_8	$(u^2+u+1)(u^{19}-4u^{17}+\cdots-u+1)(u^{41}-9u^{39}+\cdots-69u+17)$ $\cdot(u^{44}+2u^{43}+\cdots-7681u+1663)$
c_5	$((u+1)^2)(u^{19}-2u^{18}+\cdots-2u+1)(u^{22}-2u^{21}+\cdots-5u^3+1)^2$ $\cdot(u^{41}+5u^{40}+\cdots+7u+4)$
c_6	$u^2(u^{19}-6u^{18}+\cdots+14u-3)(u^{22}-9u^{21}+\cdots-27u+8)^2$ $\cdot(u^{41}+15u^{40}+\cdots+87u+4)$
c_9, c_{11}	$((u-1)^2)(u^{19}-8u^{18}+\cdots+5u-1)(u^{41}-4u^{40}+\cdots+27u+1)$ $\cdot(u^{44}-3u^{43}+\cdots-5634u+459)$
c_{10}	$u^2(u^{19}+11u^{18}+\cdots+u-3)(u^{22}+9u^{21}+\cdots+u+2)^2$ $\cdot(u^{41}-26u^{40}+\cdots+23u-2)$
c_{12}	$u^2(u^{19}+6u^{18}+\cdots+14u+3)(u^{22}-9u^{21}+\cdots-27u+8)^2$ $\cdot(u^{41}+15u^{40}+\cdots+87u+4)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^2)(y^{19}+2y^{18}+\cdots+74y^3-1)(y^{22}+6y^{21}+\cdots+12y+1)^2$ $\cdot\,(y^{41}+9y^{40}+\cdots-3311y-256)$
c_2, c_5	$((y-1)^2)(y^{19}-10y^{18}+\cdots+4y-1)(y^{22}-10y^{21}+\cdots+6y^2+1)^2$ $\cdot\,(y^{41}-19y^{40}+\cdots+89y-16)$
c_3, c_7	$(y^2+y+1)(y^{19}-5y^{18}+\cdots+8y-1)(y^{41}+17y^{40}+\cdots-36y-1)$ $\cdot\,(y^{44}-8y^{43}+\cdots+1585y+289)$
c_4, c_8	$(y^2+y+1)(y^{19}-8y^{18}+\cdots+5y-1)(y^{41}-18y^{40}+\cdots+5577y-289)$ $\cdot\,(y^{44}-20y^{43}+\cdots+60881257y+2765569)$
c_6, c_{12}	$y^2(y^{19}+6y^{18}+\cdots+88y-9)(y^{22}-5y^{21}+\cdots-137y+64)^2$ $\cdot\,(y^{41}+y^{40}+\cdots+633y-16)$
c_9, c_{11}	$((y-1)^2)(y^{19}-16y^{17}+\cdots-19y-1)(y^{41}-58y^{40}+\cdots+333y-1)$ $\cdot\,(y^{44}-23y^{43}+\cdots+46259586y+210681)$
c_{10}	$y^2(y^{19}-3y^{18}+\cdots+217y-9)(y^{22}+3y^{21}+\cdots+43y+4)^2$ $\cdot\,(y^{41}+68y^{39}+\cdots+81y-4)$