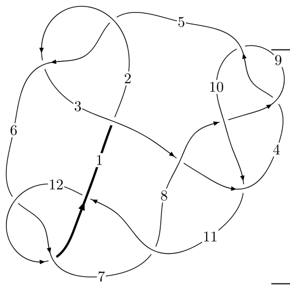
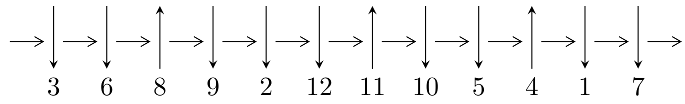
$12a_{0281}$ ($K12a_{0281}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 5u^{42} + 12u^{41} + \cdots + 8b - 19,\ 11u^{42} + 29u^{41} + \cdots + 8a - 44,\ u^{43} + u^{42} + \cdots + 2u + 1\rangle$$
$$I_2^u = \langle 2.26163 \times 10^{32}u^{69} - 1.52330 \times 10^{31}u^{68} + \cdots + 1.91814 \times 10^{32}b + 6.95419 \times 10^{32},$$
$$- 2.76673 \times 10^{33}u^{69} - 1.62384 \times 10^{33}u^{68} + \cdots + 9.59072 \times 10^{32}a - 2.22275 \times 10^{34},\ u^{70} + u^{69} + \cdots + 14u -$$
$$I_3^u = \langle 3a^3 + 14a^2 + 155b - 74a - 75,\ a^4 - 12a^2 + 4a + 65,\ u - 1\rangle$$
$$I_4^u = \langle -a^2 + b - 3a - 2,\ a^3 + 3a^2 + 3a + 1,\ u + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 120 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I_1^u = \langle 5u^{42}+12u^{41}+\cdots+8b-19,\ 11u^{42}+29u^{41}+\cdots+8a-44,\ u^{43}+u^{42}+\cdots+2u+1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.37500u^{42} - 3.62500u^{41} + \cdots + 10.8750u + 5.50000 \\ -\frac{5}{8}u^{42} - \frac{3}{2}u^{41} + \cdots + \frac{37}{8}u + \frac{19}{8} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{3}{4}u^{42} - \frac{17}{8}u^{41} + \cdots + \frac{25}{4}u + \frac{25}{8} \\ -\frac{5}{8}u^{42} - \frac{3}{2}u^{41} + \cdots + \frac{37}{8}u + \frac{19}{8} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{8}u^{42} + \frac{11}{8}u^{41} + \cdots - \frac{25}{8}u - \frac{3}{2} \\ \frac{1}{8}u^{42} + \frac{5}{4}u^{41} + \cdots - \frac{15}{8}u - \frac{11}{8} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{8}u^{41} - \frac{1}{8}u^{40} + \cdots - \frac{3}{4}u + \frac{1}{8} \\ -\frac{1}{8}u^{41} - \frac{1}{8}u^{40} + \cdots - \frac{3}{4}u + \frac{1}{8} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{1}{8}u^{41} - \frac{1}{8}u^{40} + \cdots - \frac{3}{4}u + \frac{1}{8} \\ -\frac{1}{8}u^{41} - \frac{1}{8}u^{40} + \cdots - \frac{3}{4}u + \frac{1}{8} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{1}{8}u^{42} + \frac{1}{8}u^{41} + \cdots - \frac{1}{8}u + 1 \\ \frac{1}{8}u^{42} + \frac{1}{8}u^{41} + \cdots + \frac{3}{4}u^2 - \frac{1}{8}u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{8}u^{42} + \frac{1}{8}u^{41} + \cdots - \frac{1}{8}u + 1 \\ \frac{1}{8}u^{42} + \frac{1}{8}u^{41} + \cdots + \frac{7}{4}u^2 - \frac{1}{8}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{7}{2}u^{42} - \frac{19}{4}u^{41} + \cdots - \frac{1}{2}u - \frac{49}{4}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{43} + 21u^{42} + \cdots + 10u + 1$
c_2, c_5, c_6 c_{12}	$u^{43} + u^{42} + \cdots + 2u + 1$
c_3	$u^{43} + 3u^{42} + \cdots + 238u + 194$
c_4, c_9	$u^{43} - 3u^{42} + \cdots - 6u + 2$
c_7	$u^{43} + 3u^{42} + \cdots + 256u + 256$
c_8	$u^{43} + 21u^{42} + \cdots + 4u + 4$
c_{10}	$u^{43} - 9u^{42} + \cdots - 118u + 38$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{43} + 11y^{42} + \cdots + 18y - 1$
c_2, c_5, c_6 c_{12}	$y^{43} - 21y^{42} + \cdots + 10y - 1$
c_3	$y^{43} + 3y^{42} + \cdots + 106308y - 37636$
c_4, c_9	$y^{43} - 21y^{42} + \cdots + 4y - 4$
c_7	$y^{43} + 23y^{42} + \cdots + 1441792y - 65536$
c_8	$y^{43} + 3y^{42} + \cdots + 80y - 16$
c_{10}	$y^{43} + 15y^{42} + \cdots - 31068y - 1444$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.748644 + 0.637641I$ $a = 0.080537 - 0.526871I$ $b = 1.013350 + 0.562622I$	$1.89821 - 0.96458I$	$-3.28074 - 0.62200I$
$u = -0.748644 - 0.637641I$ $a = 0.080537 + 0.526871I$ $b = 1.013350 - 0.562622I$	$1.89821 + 0.96458I$	$-3.28074 + 0.62200I$
$u = 0.804750 + 0.623565I$ $a = 0.222175 - 1.018610I$ $b = 0.529140 + 0.662060I$	$3.32140 - 3.80226I$	$-0.99469 + 6.39942I$
$u = 0.804750 - 0.623565I$ $a = 0.222175 + 1.018610I$ $b = 0.529140 - 0.662060I$	$3.32140 + 3.80226I$	$-0.99469 - 6.39942I$
$u = -0.900705 + 0.522951I$ $a = -1.36239 - 0.90089I$ $b = -1.035780 - 0.144530I$	$-1.80687 + 4.07167I$	$-9.95788 - 6.11472I$
$u = -0.900705 - 0.522951I$ $a = -1.36239 + 0.90089I$ $b = -1.035780 + 0.144530I$	$-1.80687 - 4.07167I$	$-9.95788 + 6.11472I$
$u = 0.894694 + 0.620124I$ $a = -0.903919 - 0.027255I$ $b = 0.412108 - 0.716509I$	$2.75595 - 5.96538I$	$-2.44764 + 6.68032I$
$u = 0.894694 - 0.620124I$ $a = -0.903919 + 0.027255I$ $b = 0.412108 + 0.716509I$	$2.75595 + 5.96538I$	$-2.44764 - 6.68032I$
$u = -0.929214 + 0.629305I$ $a = 1.48748 + 2.03173I$ $b = 1.082430 - 0.572492I$	$0.79286 + 10.89690I$	$-5.90232 - 10.97141I$
$u = -0.929214 - 0.629305I$ $a = 1.48748 - 2.03173I$ $b = 1.082430 + 0.572492I$	$0.79286 - 10.89690I$	$-5.90232 + 10.97141I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.821297 + 0.283255I$ $a = -2.93341 + 0.45122I$ $b = -1.139100 - 0.422179I$	$-4.79407 - 5.18096I$	$-10.28186 + 9.63354I$
$u = 0.821297 - 0.283255I$ $a = -2.93341 - 0.45122I$ $b = -1.139100 + 0.422179I$	$-4.79407 + 5.18096I$	$-10.28186 - 9.63354I$
$u = -0.230146 + 0.788552I$ $a = -1.13253 + 1.42685I$ $b = -1.118980 - 0.552972I$	$-0.99153 - 7.44962I$	$-4.80788 + 5.14749I$
$u = -0.230146 - 0.788552I$ $a = -1.13253 - 1.42685I$ $b = -1.118980 + 0.552972I$	$-0.99153 + 7.44962I$	$-4.80788 - 5.14749I$
$u = -0.469810 + 0.644333I$ $a = -0.302237 - 1.339690I$ $b = -0.975090 + 0.534458I$	$1.37306 + 3.64200I$	$-1.97274 - 6.09907I$
$u = -0.469810 - 0.644333I$ $a = -0.302237 + 1.339690I$ $b = -0.975090 - 0.534458I$	$1.37306 - 3.64200I$	$-1.97274 + 6.09907I$
$u = 0.766243 + 0.202401I$ $a = 2.75313 - 0.25431I$ $b = 1.137770 - 0.456668I$	$-4.56135 + 2.74808I$	$-8.63761 + 1.53004I$
$u = 0.766243 - 0.202401I$ $a = 2.75313 + 0.25431I$ $b = 1.137770 + 0.456668I$	$-4.56135 - 2.74808I$	$-8.63761 - 1.53004I$
$u = -0.735504 + 0.278747I$ $a = 0.282174 - 0.733558I$ $b = 0.039236 - 0.647029I$	$-1.56483 + 1.33884I$	$-5.91775 - 5.05918I$
$u = -0.735504 - 0.278747I$ $a = 0.282174 + 0.733558I$ $b = 0.039236 + 0.647029I$	$-1.56483 - 1.33884I$	$-5.91775 + 5.05918I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.244913 + 0.744578I$ $a = 0.531179 + 0.238214I$ $b = -0.323354 - 0.721542I$	$1.32443 + 2.58910I$	$-1.27516 - 1.34286I$
$u = 0.244913 - 0.744578I$ $a = 0.531179 - 0.238214I$ $b = -0.323354 + 0.721542I$	$1.32443 - 2.58910I$	$-1.27516 + 1.34286I$
$u = 1.156160 + 0.436646I$ $a = -2.27777 + 0.12084I$ $b = -1.157530 + 0.522173I$	$-8.54240 + 0.05443I$	$-13.25807 + 1.27713I$
$u = 1.156160 - 0.436646I$ $a = -2.27777 - 0.12084I$ $b = -1.157530 - 0.522173I$	$-8.54240 - 0.05443I$	$-13.25807 - 1.27713I$
$u = -1.151630 + 0.457340I$ $a = -0.353184 + 0.596905I$ $b = -0.199663 + 0.761913I$	$-5.75226 + 4.72408I$	$-9.80399 - 4.71758I$
$u = -1.151630 - 0.457340I$ $a = -0.353184 - 0.596905I$ $b = -0.199663 - 0.761913I$	$-5.75226 - 4.72408I$	$-9.80399 + 4.71758I$
$u = 0.368859 + 0.661669I$ $a = 0.306430 - 0.852800I$ $b = -0.587313 + 0.602075I$	$2.51319 + 0.87621I$	$0.614769 - 0.778636I$
$u = 0.368859 - 0.661669I$ $a = 0.306430 + 0.852800I$ $b = -0.587313 - 0.602075I$	$2.51319 - 0.87621I$	$0.614769 + 0.778636I$
$u = -1.139070 + 0.530786I$ $a = -0.355456 - 0.234216I$ $b = -0.851539 - 0.591728I$	$-2.78091 + 5.63282I$	$-7.68461 - 3.26690I$
$u = -1.139070 - 0.530786I$ $a = -0.355456 + 0.234216I$ $b = -0.851539 + 0.591728I$	$-2.78091 - 5.63282I$	$-7.68461 + 3.26690I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.140641 + 0.728292I$ $a = 1.221290 - 0.180259I$ $b = 1.104910 - 0.276140I$	$-2.87123 + 0.12831I$	$-7.71481 - 0.77840I$
$u = -0.140641 - 0.728292I$ $a = 1.221290 + 0.180259I$ $b = 1.104910 + 0.276140I$	$-2.87123 - 0.12831I$	$-7.71481 + 0.77840I$
$u = 1.178850 + 0.464753I$ $a = 2.75499 - 0.42952I$ $b = 1.173340 + 0.326229I$	$-9.87566 - 8.22613I$	$-14.9046 + 7.3441I$
$u = 1.178850 - 0.464753I$ $a = 2.75499 + 0.42952I$ $b = 1.173340 - 0.326229I$	$-9.87566 + 8.22613I$	$-14.9046 - 7.3441I$
$u = 1.165570 + 0.544375I$ $a = -1.09575 + 0.95090I$ $b = -0.701705 - 0.646518I$	$-2.33002 - 10.45450I$	$-6.00000 + 9.18893I$
$u = 1.165570 - 0.544375I$ $a = -1.09575 - 0.95090I$ $b = -0.701705 + 0.646518I$	$-2.33002 + 10.45450I$	$-6.00000 - 9.18893I$
$u = -1.206960 + 0.526147I$ $a = 2.05937 + 1.28523I$ $b = 1.169220 + 0.252610I$	$-8.97242 + 9.46345I$	$-14.0760 - 5.8340I$
$u = -1.206960 - 0.526147I$ $a = 2.05937 - 1.28523I$ $b = 1.169220 - 0.252610I$	$-8.97242 - 9.46345I$	$-14.0760 + 5.8340I$
$u = 1.203670 + 0.545583I$ $a = 0.839018 + 0.724019I$ $b = -0.298947 + 0.789061I$	$-4.36938 - 12.53960I$	$-6.00000 + 7.94110I$
$u = 1.203670 - 0.545583I$ $a = 0.839018 - 0.724019I$ $b = -0.298947 - 0.789061I$	$-4.36938 + 12.53960I$	$-6.00000 - 7.94110I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.214000 + 0.548661I$ $a = -2.58304 - 1.74814I$ $b = -1.144850 + 0.564961I$	$-6.8639 + 17.6023I$	$-6.00000 - 11.44619I$
$u = -1.214000 - 0.548661I$ $a = -2.58304 + 1.74814I$ $b = -1.144850 - 0.564961I$	$-6.8639 - 17.6023I$	$-6.00000 + 11.44619I$
$u = -0.477384$ $a = 1.52383$ $b = 0.744709$	-1.08036	-9.00420

II.

$\boldsymbol{I_2^u = \langle 2.26\times 10^{32}u^{69} - 1.52\times 10^{31}u^{68} + \cdots + 1.92\times 10^{32}b + 6.95\times 10^{32},\ -2.77\times 10^{33}u^{69} - 1.62\times 10^{33}u^{68} + \cdots + 9.59\times 10^{32}a - 2.22\times 10^{34},\ u^{70} + u^{69} + \cdots + 14u + 5\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2.88480u^{69} + 1.69314u^{68} + \cdots + 45.6456u + 23.1760 \\ -1.17907u^{69} + 0.0794152u^{68} + \cdots - 5.46180u - 3.62548 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 4.06388u^{69} + 1.61372u^{68} + \cdots + 51.1074u + 26.8015 \\ -1.17907u^{69} + 0.0794152u^{68} + \cdots - 5.46180u - 3.62548 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -2.48460u^{69} - 1.83539u^{68} + \cdots - 42.8103u - 20.1308 \\ 0.313075u^{69} - 0.0137492u^{68} + \cdots + 0.361832u + 3.97119 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1.01374u^{69} + 1.31338u^{68} + \cdots + 16.8630u + 10.0091 \\ -0.802260u^{69} - 0.995297u^{68} + \cdots - 18.0333u - 8.31468 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1.07882u^{69} + 1.15734u^{68} + \cdots + 21.7282u + 11.2174 \\ -1.17518u^{69} - 1.49537u^{68} + \cdots - 26.6216u - 8.81004 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1.17026u^{69} - 1.03708u^{68} + \cdots - 17.8795u - 14.3278 \\ -0.0599899u^{69} + 0.0501336u^{68} + \cdots + 11.0870u + 8.41410 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1.60497u^{69} - 1.02250u^{68} + \cdots - 11.2062u - 7.83476 \\ -0.241672u^{69} - 0.176589u^{68} + \cdots + 3.75637u + 2.48177 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -7.12152u^{69} - 2.74694u^{68} + \cdots - 113.643u - 66.9331$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{70} + 41u^{69} + \cdots + 116u + 25$
c_2, c_5, c_6 c_{12}	$u^{70} + u^{69} + \cdots + 14u + 5$
c_3	$(u^{35} - u^{34} + \cdots - 8u + 1)^2$
c_4, c_9	$(u^{35} + u^{34} + \cdots + 2u + 1)^2$
c_7	$(u^{35} + 3u^{34} + \cdots + 14u + 5)^2$
c_8	$(u^{35} + 17u^{34} + \cdots + 2u + 1)^2$
c_{10}	$(u^{35} + 3u^{34} + \cdots + 58u + 7)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{70} - 25y^{69} + \cdots - 22056y + 625$
c_2, c_5, c_6 c_{12}	$y^{70} - 41y^{69} + \cdots - 116y + 25$
c_3	$(y^{35} - y^{34} + \cdots + 34y - 1)^2$
c_4, c_9	$(y^{35} - 17y^{34} + \cdots + 2y - 1)^2$
c_7	$(y^{35} + 23y^{34} + \cdots + 166y - 25)^2$
c_8	$(y^{35} + 3y^{34} + \cdots - 14y - 1)^2$
c_{10}	$(y^{35} + 11y^{34} + \cdots + 1446y - 49)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.793674+0.627689I$ $a=-0.99722-1.98668I$ $b=-1.053770+0.564883I$	$1.77010+5.85664I$	$-3.47437-5.76903I$
$u=-0.793674-0.627689I$ $a=-0.99722+1.98668I$ $b=-1.053770-0.564883I$	$1.77010-5.85664I$	$-3.47437+5.76903I$
$u=-0.921362+0.317106I$ $a=\ 0.691410-1.228980I$ $b=-0.996188-0.423828I$	$-4.82753-1.71623I$	$-11.26691+0.I$
$u=-0.921362-0.317106I$ $a=\ 0.691410+1.228980I$ $b=-0.996188+0.423828I$	$-4.82753+1.71623I$	$-11.26691+0.I$
$u=\ 0.739547+0.624054I$ $a=\ 0.820919-0.310599I$ $b=-0.460984+0.678579I$	$3.50734-1.04155I$	$-60.10+0.572954I$
$u=\ 0.739547-0.624054I$ $a=\ 0.820919+0.310599I$ $b=-0.460984-0.678579I$	$3.50734+1.04155I$	$-60.10-0.572954I$
$u=\ 0.630984+0.657903I$ $a=\ 0.122104+0.833410I$ $b=-0.460984-0.678579I$	$3.50734+1.04155I$	$-0.146267-0.572954I$
$u=\ 0.630984-0.657903I$ $a=\ 0.122104-0.833410I$ $b=-0.460984+0.678579I$	$3.50734-1.04155I$	$-0.146267+0.572954I$
$u=-0.586712+0.693730I$ $a=-0.303058+0.936732I$ $b=-1.053770-0.564883I$	$1.77010-5.85664I$	$-3.47437+5.76903I$
$u=-0.586712-0.693730I$ $a=-0.303058-0.936732I$ $b=-1.053770+0.564883I$	$1.77010+5.85664I$	$-3.47437-5.76903I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.178332+0.886392I$ $a=1.31932-1.25242I$ $b=1.134940+0.561389I$	$-3.75035-12.38410I$	$-8.15786+8.57579I$
$u=-0.178332-0.886392I$ $a=1.31932+1.25242I$ $b=1.134940-0.561389I$	$-3.75035+12.38410I$	$-8.15786-8.57579I$
$u=0.185862+0.864939I$ $a=-0.416310-0.083692I$ $b=0.308085+0.766136I$	$-1.32397+7.38977I$	$-4.98434-5.00078I$
$u=0.185862-0.864939I$ $a=-0.416310+0.083692I$ $b=0.308085-0.766136I$	$-1.32397-7.38977I$	$-4.98434+5.00078I$
$u=-0.144791+0.848190I$ $a=-1.42439+0.13590I$ $b=-1.146120+0.254789I$	$-5.81015-4.45397I$	$-11.15239+2.81525I$
$u=-0.144791-0.848190I$ $a=-1.42439-0.13590I$ $b=-1.146120-0.254789I$	$-5.81015+4.45397I$	$-11.15239-2.81525I$
$u=-1.029850+0.501579I$ $a=0.184614+0.230509I$ $b=0.890522+0.542191I$	$-0.250501+0.838616I$	0
$u=-1.029850-0.501579I$ $a=0.184614-0.230509I$ $b=0.890522-0.542191I$	$-0.250501-0.838616I$	0
$u=1.094160+0.367378I$ $a=-1.35264+1.51551I$ $b=-0.688085-0.531421I$	$-4.07070-2.01862I$	0
$u=1.094160-0.367378I$ $a=-1.35264-1.51551I$ $b=-0.688085+0.531421I$	$-4.07070+2.01862I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.237931 + 0.803328I$ $a = -0.006775 + 0.772034I$ $b = 0.665614 - 0.623440I$	$0.41242 + 5.45820I$	$-3.39004 - 5.96309I$
$u = 0.237931 - 0.803328I$ $a = -0.006775 - 0.772034I$ $b = 0.665614 + 0.623440I$	$0.41242 - 5.45820I$	$-3.39004 + 5.96309I$
$u = -1.164710 + 0.016951I$ $a = 0.367943 - 0.438805I$ $b = 0.396163 - 0.521609I$	$-2.19805 - 0.44632I$	0
$u = -1.164710 - 0.016951I$ $a = 0.367943 + 0.438805I$ $b = 0.396163 + 0.521609I$	$-2.19805 + 0.44632I$	0
$u = -1.125860 + 0.332862I$ $a = 0.336942 - 0.575199I$ $b = 0.217277 - 0.699987I$	$-2.69753 + 0.59945I$	0
$u = -1.125860 - 0.332862I$ $a = 0.336942 + 0.575199I$ $b = 0.217277 + 0.699987I$	$-2.69753 - 0.59945I$	0
$u = 1.188300 + 0.142603I$ $a = -2.52952 + 0.58517I$ $b = -0.996188 - 0.423828I$	$-4.82753 - 1.71623I$	0
$u = 1.188300 - 0.142603I$ $a = -2.52952 - 0.58517I$ $b = -0.996188 + 0.423828I$	$-4.82753 + 1.71623I$	0
$u = 1.087540 + 0.520480I$ $a = 0.98039 - 1.12342I$ $b = 0.665614 + 0.623440I$	$0.41242 - 5.45820I$	0
$u = 1.087540 - 0.520480I$ $a = 0.98039 + 1.12342I$ $b = 0.665614 - 0.623440I$	$0.41242 + 5.45820I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.209060 + 0.033666I$ $a = 2.36745 + 0.25960I$ $b = 1.059800 - 0.502369I$	$-4.09889 + 4.67146I$	0
$u = 1.209060 - 0.033666I$ $a = 2.36745 - 0.25960I$ $b = 1.059800 + 0.502369I$	$-4.09889 - 4.67146I$	0
$u = -0.279476 + 0.738470I$ $a = 0.380082 + 1.009830I$ $b = 0.890522 - 0.542191I$	$-0.250501 - 0.838616I$	$-4.53860 - 0.32367I$
$u = -0.279476 - 0.738470I$ $a = 0.380082 - 1.009830I$ $b = 0.890522 + 0.542191I$	$-0.250501 + 0.838616I$	$-4.53860 + 0.32367I$
$u = 1.170540 + 0.309953I$ $a = 2.31769 - 0.03429I$ $b = 1.131430 - 0.520956I$	$-5.29071 + 4.02658I$	0
$u = 1.170540 - 0.309953I$ $a = 2.31769 + 0.03429I$ $b = 1.131430 + 0.520956I$	$-5.29071 - 4.02658I$	0
$u = -1.195020 + 0.281595I$ $a = -0.424932 - 0.412941I$ $b = -0.688085 - 0.531421I$	$-4.07070 - 2.01862I$	0
$u = -1.195020 - 0.281595I$ $a = -0.424932 + 0.412941I$ $b = -0.688085 + 0.531421I$	$-4.07070 + 2.01862I$	0
$u = 1.166680 + 0.383023I$ $a = -2.78317 + 0.44147I$ $b = -1.141570 - 0.325389I$	$-6.61464 - 3.85709I$	0
$u = 1.166680 - 0.383023I$ $a = -2.78317 - 0.44147I$ $b = -1.141570 + 0.325389I$	$-6.61464 + 3.85709I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.149290 + 0.441973I$ $a = 1.121900 + 0.806342I$ $b = -0.276974 + 0.740238I$	$-5.86442 - 3.36312I$	0
$u = 1.149290 - 0.441973I$ $a = 1.121900 - 0.806342I$ $b = -0.276974 - 0.740238I$	$-5.86442 + 3.36312I$	0
$u = -0.698993 + 0.306329I$ $a = -0.45204 + 3.09002I$ $b = 1.059800 - 0.502369I$	$-4.09889 + 4.67146I$	$-8.51273 - 7.37463I$
$u = -0.698993 - 0.306329I$ $a = -0.45204 - 3.09002I$ $b = 1.059800 + 0.502369I$	$-4.09889 - 4.67146I$	$-8.51273 + 7.37463I$
$u = -1.155970 + 0.462646I$ $a = -2.75547 - 2.20046I$ $b = -1.134810 + 0.545503I$	$-8.35620 + 8.22097I$	0
$u = -1.155970 - 0.462646I$ $a = -2.75547 + 2.20046I$ $b = -1.134810 - 0.545503I$	$-8.35620 - 8.22097I$	0
$u = -0.623001 + 0.405449I$ $a = 1.237280 + 0.532014I$ $b = 0.903342$	-0.945432	$-7.85887 + 0.I$
$u = -0.623001 - 0.405449I$ $a = 1.237280 - 0.532014I$ $b = 0.903342$	-0.945432	$-7.85887 + 0.I$
$u = -1.184780 + 0.432685I$ $a = 2.03697 + 1.61827I$ $b = 1.142990 + 0.287310I$	$-10.10360 + 0.30557I$	0
$u = -1.184780 - 0.432685I$ $a = 2.03697 - 1.61827I$ $b = 1.142990 - 0.287310I$	$-10.10360 - 0.30557I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.035280 + 0.733280I$ $a = -1.39985 + 0.49717I$ $b = -1.141570 + 0.325389I$	$-6.61464 + 3.85709I$	$-12.01107 - 3.91391I$
$u = 0.035280 - 0.733280I$ $a = -1.39985 - 0.49717I$ $b = -1.141570 - 0.325389I$	$-6.61464 - 3.85709I$	$-12.01107 + 3.91391I$
$u = 1.149890 + 0.529483I$ $a = -0.943407 - 0.655113I$ $b = 0.308085 - 0.766136I$	$-1.32397 - 7.38977I$	0
$u = 1.149890 - 0.529483I$ $a = -0.943407 + 0.655113I$ $b = 0.308085 + 0.766136I$	$-1.32397 + 7.38977I$	0
$u = -1.164290 + 0.498574I$ $a = -1.93672 - 1.37737I$ $b = -1.146120 - 0.254789I$	$-5.81015 + 4.45397I$	0
$u = -1.164290 - 0.498574I$ $a = -1.93672 + 1.37737I$ $b = -1.146120 + 0.254789I$	$-5.81015 - 4.45397I$	0
$u = -1.165560 + 0.537682I$ $a = 2.49847 + 1.93336I$ $b = 1.134940 - 0.561389I$	$-3.75035 + 12.38410I$	0
$u = -1.165560 - 0.537682I$ $a = 2.49847 - 1.93336I$ $b = 1.134940 + 0.561389I$	$-3.75035 - 12.38410I$	0
$u = -1.257860 + 0.336624I$ $a = -0.370212 + 0.569226I$ $b = -0.276974 + 0.740238I$	$-5.86442 - 3.36312I$	0
$u = -1.257860 - 0.336624I$ $a = -0.370212 - 0.569226I$ $b = -0.276974 - 0.740238I$	$-5.86442 + 3.36312I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.248730+0.369448I$ $a = 2.80639-0.41145I$ $b = 1.142990+0.287310I$	$-10.10360+0.30557I$	0
$u = 1.248730-0.369448I$ $a = 2.80639+0.41145I$ $b = 1.142990-0.287310I$	$-10.10360-0.30557I$	0
$u = 0.674686+0.151897I$ $a = -1.80142+1.47569I$ $b = 0.396163-0.521609I$	$-2.19805-0.44632I$	$-3.26109+2.08073I$
$u = 0.674686-0.151897I$ $a = -1.80142-1.47569I$ $b = 0.396163+0.521609I$	$-2.19805+0.44632I$	$-3.26109-2.08073I$
$u = 1.276560+0.342849I$ $a = -2.23310+0.02681I$ $b = -1.134810+0.545503I$	$-8.35620+8.22097I$	0
$u = 1.276560-0.342849I$ $a = -2.23310-0.02681I$ $b = -1.134810-0.545503I$	$-8.35620-8.22097I$	0
$u = -0.041921+0.655776I$ $a = 1.62553-1.90135I$ $b = 1.131430+0.520956I$	$-5.29071-4.02658I$	$-10.01018+2.90516I$
$u = -0.041921-0.655776I$ $a = 1.62553+1.90135I$ $b = 1.131430-0.520956I$	$-5.29071+4.02658I$	$-10.01018-2.90516I$
$u = -0.032872+0.638178I$ $a = -0.785149+0.173061I$ $b = 0.217277+0.699987I$	$-2.69753-0.59945I$	$-6.70115+0.74081I$
$u = -0.032872-0.638178I$ $a = -0.785149-0.173061I$ $b = 0.217277-0.699987I$	$-2.69753+0.59945I$	$-6.70115-0.74081I$

III. $\boldsymbol{I^u_3 = \langle 3a^3 + 14a^2 + 155b - 74a - 75,\ a^4 - 12a^2 + 4a + 65,\ u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} a \\ -0.0193548a^3 - 0.0903226a^2 + 0.477419a + 0.483871 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0193548a^3 + 0.0903226a^2 + 0.522581a - 0.483871 \\ -0.0193548a^3 - 0.0903226a^2 + 0.477419a + 0.483871 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0903226a^3 - 0.245161a^2 - 0.561290a - 0.258065 \\ 0.0645161a^3 - 0.0322581a^2 - 0.258065a - 0.612903 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0258065a^3 - 0.212903a^2 - 0.303226a + 2.35484 \\ 0.0258065a^3 - 0.212903a^2 - 0.303226a + 1.35484 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.0258065a^3 - 0.212903a^2 - 0.303226a + 3.35484 \\ 0.0258065a^3 - 0.212903a^2 - 0.303226a + 2.35484 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0258065a^3 + 0.212903a^2 + 0.303226a - 2.35484 \\ -0.0258065a^3 + 0.212903a^2 + 0.303226a - 1.35484 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0258065a^3 + 0.212903a^2 + 0.303226a - 2.35484 \\ -0.0258065a^3 + 0.212903a^2 + 0.303226a - 1.35484 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{8}{31}a^3 + \frac{4}{31}a^2 + \frac{32}{31}a - \frac{544}{31}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -2.65246 + 0.81150I$ $b = -1.098680 + 0.455090I$	$-5.75727 + 3.66386I$	$-16.0000 - 4.0000I$
$u = 1.00000$ $a = -2.65246 - 0.81150I$ $b = -1.098680 - 0.455090I$	$-5.75727 - 3.66386I$	$-16.0000 + 4.0000I$
$u = 1.00000$ $a = 2.65246 + 1.18850I$ $b = 1.098680 - 0.455090I$	$-5.75727 + 3.66386I$	$-16.0000 - 4.0000I$
$u = 1.00000$ $a = 2.65246 - 1.18850I$ $b = 1.098680 + 0.455090I$	$-5.75727 - 3.66386I$	$-16.0000 + 4.0000I$

IV. $\boldsymbol{I_4^u = \langle -a^2 + b - 3a - 2,\ a^3 + 3a^2 + 3a + 1,\ u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4a^2 + 8a - 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = 0$	-3.28987	-12.0000
$u = -1.00000$ $a = -1.00000$ $b = 0$	-3.28987	-12.0000
$u = -1.00000$ $a = -1.00000$ $b = 0$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$((u-1)^7)(u^{43}+21u^{42}+\cdots+10u+1)(u^{70}+41u^{69}+\cdots+116u+25)$
c_2, c_6	$((u-1)^3)(u+1)^4(u^{43}+u^{42}+\cdots+2u+1)(u^{70}+u^{69}+\cdots+14u+5)$
c_3	$u^3(u^4+2u^2+2)(u^{35}-u^{34}+\cdots-8u+1)^2$ $\cdot(u^{43}+3u^{42}+\cdots+238u+194)$
c_4, c_9	$u^3(u^4-2u^2+2)(u^{35}+u^{34}+\cdots+2u+1)^2(u^{43}-3u^{42}+\cdots-6u+2)$
c_5, c_{12}	$((u-1)^4)(u+1)^3(u^{43}+u^{42}+\cdots+2u+1)(u^{70}+u^{69}+\cdots+14u+5)$
c_7	$u^7(u^{35}+3u^{34}+\cdots+14u+5)^2(u^{43}+3u^{42}+\cdots+256u+256)$
c_8	$u^3(u^2-2u+2)^2(u^{35}+17u^{34}+\cdots+2u+1)^2$ $\cdot(u^{43}+21u^{42}+\cdots+4u+4)$
c_{10}	$u^3(u^4+2u^2+2)(u^{35}+3u^{34}+\cdots+58u+7)^2$ $\cdot(u^{43}-9u^{42}+\cdots-118u+38)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$((y-1)^7)(y^{43}+11y^{42}+\cdots+18y-1)$ $\cdot(y^{70}-25y^{69}+\cdots-22056y+625)$
c_2, c_5, c_6 c_{12}	$((y-1)^7)(y^{43}-21y^{42}+\cdots+10y-1)(y^{70}-41y^{69}+\cdots-116y+25)$
c_3	$y^3(y^2+2y+2)^2(y^{35}-y^{34}+\cdots+34y-1)^2$ $\cdot(y^{43}+3y^{42}+\cdots+106308y-37636)$
c_4, c_9	$y^3(y^2-2y+2)^2(y^{35}-17y^{34}+\cdots+2y-1)^2$ $\cdot(y^{43}-21y^{42}+\cdots+4y-4)$
c_7	$y^7(y^{35}+23y^{34}+\cdots+166y-25)^2$ $\cdot(y^{43}+23y^{42}+\cdots+1441792y-65536)$
c_8	$y^3(y^2+4)^2(y^{35}+3y^{34}+\cdots-14y-1)^2(y^{43}+3y^{42}+\cdots+80y-16)$
c_{10}	$y^3(y^2+2y+2)^2(y^{35}+11y^{34}+\cdots+1446y-49)^2$ $\cdot(y^{43}+15y^{42}+\cdots-31068y-1444)$