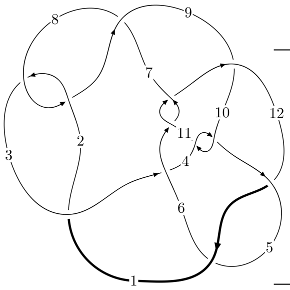
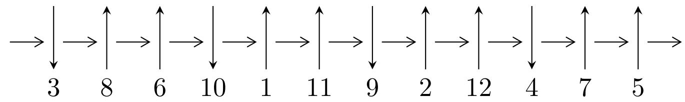
$12a_{0702}$ ($K12a_{0702}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -1.19038 \times 10^{83} u^{40} + 4.26853 \times 10^{83} u^{39} + \cdots + 1.55480 \times 10^{86} b - 1.07861 \times 10^{86}, \\
& -5.72981 \times 10^{85} u^{40} + 1.60933 \times 10^{86} u^{39} + \cdots + 3.88699 \times 10^{87} a - 9.00245 \times 10^{87}, \\
& u^{41} - 3u^{40} + \cdots - 434u + 50 \rangle \\
I_2^u = \langle & -u^2 a + b + 1,\ -2u^{26} a - 2u^{25} a + \cdots - 3a + 6,\ u^{27} + u^{26} + \cdots + 2u - 1 \rangle \\
I_3^u = \langle & u^3 - u^2 + 5b + 2u + 3,\ 3u^3 + 2u^2 + 10a - 14u - 6,\ u^4 - 2u^2 + 2 \rangle \\
I_4^u = \langle & b + a - 1,\ 8a^3 + 4a^2 u - 12a^2 - 4au + 2a + 1,\ u^2 + 1 \rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b + 1,\ v + 1 \rangle$$

* 5 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. $\boldsymbol{I_1^u = \langle -1.19 \times 10^{83}u^{40} + 4.27 \times 10^{83}u^{39} + \cdots + 1.55 \times 10^{86}b - 1.08 \times 10^{86},\ -5.73 \times 10^{85}u^{40} + 1.61 \times 10^{86}u^{39} + \cdots + 3.89 \times 10^{87}a - 9.00 \times 10^{87},\ u^{41} - 3u^{40} + \cdots - 434u + 50\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.0147410u^{40} - 0.0414030u^{39} + \cdots + 31.9284u + 2.31605 \\ 0.000765620u^{40} - 0.00274539u^{39} + \cdots + 1.07683u + 0.693733 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0115033u^{40} - 0.0353806u^{39} + \cdots + 46.5023u - 6.32310 \\ 0.00230652u^{40} - 0.00672063u^{39} + \cdots + 8.78658u - 0.731794 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0138747u^{40} - 0.0423896u^{39} + \cdots + 56.2419u - 7.09843 \\ 0.00281990u^{40} - 0.00776945u^{39} + \cdots + 8.71363u - 0.737049 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0146359u^{40} - 0.0416011u^{39} + \cdots + 31.6745u + 2.43461 \\ 0.000870716u^{40} - 0.00254730u^{39} + \cdots + 1.33067u + 0.575165 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0128297u^{40} - 0.0366995u^{39} + \cdots + 28.5656u + 1.49810 \\ 0.00113437u^{40} - 0.00267356u^{39} + \cdots + 2.04755u + 0.246021 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.00492043u^{40} - 0.0158956u^{39} + \cdots + 24.8003u - 4.18302 \\ 0.00178970u^{40} - 0.00537829u^{39} + \cdots + 7.06620u - 0.641486 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.000300319u^{40} + 0.00224674u^{39} + \cdots - 9.20295u + 3.52338 \\ -0.00108526u^{40} + 0.00257937u^{39} + \cdots - 2.40758u + 0.183564 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.00367128u^{40} - 0.00992859u^{39} + \cdots + 5.43318u + 0.814239 \\ 0.00134579u^{40} - 0.00361819u^{39} + \cdots + 3.39304u + 0.0150160 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0228051u^{40} + 0.0718802u^{39} + \cdots - 38.8520u + 4.20733$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{41} + 13u^{40} + \cdots - 1260u - 100$
c_2, c_8	$u^{41} + 3u^{40} + \cdots - 10u + 10$
c_3, c_9	$64(64u^{41} + 256u^{40} + \cdots - 13u^2 - 1)$
c_4, c_{10}	$u^{41} - 3u^{40} + \cdots - 434u + 50$
c_5, c_6, c_{11} c_{12}	$u^{41} - u^{40} + \cdots + 14u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{41} + 33y^{40} + \cdots - 489200y - 10000$
c_2, c_8	$y^{41} + 13y^{40} + \cdots - 1260y - 100$
c_3, c_9	$4096(4096y^{41} - 147456y^{40} + \cdots - 26y - 1)$
c_4, c_{10}	$y^{41} + 25y^{40} + \cdots - 199044y - 2500$
c_5, c_6, c_{11} c_{12}	$y^{41} - 31y^{40} + \cdots - 96y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.455951 + 0.852881I$ $a = 0.728739 + 0.291805I$ $b = 0.139910 - 0.558255I$	$0.86494 + 1.62805I$	$5.67415 - 3.58289I$
$u = 0.455951 - 0.852881I$ $a = 0.728739 - 0.291805I$ $b = 0.139910 + 0.558255I$	$0.86494 - 1.62805I$	$5.67415 + 3.58289I$
$u = -0.021368 + 1.036750I$ $a = 1.161860 + 0.121316I$ $b = -1.236090 - 0.167032I$	$4.65548 + 2.80230I$	$13.48887 - 2.99820I$
$u = -0.021368 - 1.036750I$ $a = 1.161860 - 0.121316I$ $b = -1.236090 + 0.167032I$	$4.65548 - 2.80230I$	$13.48887 + 2.99820I$
$u = -0.850702 + 0.604796I$ $a = 1.089290 - 0.351516I$ $b = -0.364276 + 0.545866I$	$-0.16962 + 2.89326I$	$2.19290 - 0.10248I$
$u = -0.850702 - 0.604796I$ $a = 1.089290 + 0.351516I$ $b = -0.364276 - 0.545866I$	$-0.16962 - 2.89326I$	$2.19290 + 0.10248I$
$u = -0.471844 + 0.764313I$ $a = -0.121231 + 0.155243I$ $b = 0.127637 - 0.862325I$	$1.00547 + 1.41725I$	$6.32483 - 4.75240I$
$u = -0.471844 - 0.764313I$ $a = -0.121231 - 0.155243I$ $b = 0.127637 + 0.862325I$	$1.00547 - 1.41725I$	$6.32483 + 4.75240I$
$u = 0.676505 + 0.580935I$ $a = -0.636641 + 0.057470I$ $b = 0.388189 + 0.860067I$	$-0.01909 - 5.83785I$	$3.11476 + 10.68510I$
$u = 0.676505 - 0.580935I$ $a = -0.636641 - 0.057470I$ $b = 0.388189 - 0.860067I$	$-0.01909 + 5.83785I$	$3.11476 - 10.68510I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.106757 + 1.119200I$ $a = 0.407888 + 0.094333I$ $b = 0.707134 - 0.209548I$	$-0.743392 - 0.853731I$	$8.26894 + 8.56558I$
$u = 0.106757 - 1.119200I$ $a = 0.407888 - 0.094333I$ $b = 0.707134 + 0.209548I$	$-0.743392 + 0.853731I$	$8.26894 - 8.56558I$
$u = -0.135573 + 0.750401I$ $a = 0.497918 + 0.003694I$ $b = -0.087550 - 0.403450I$	$0.517216 + 0.980568I$	$7.41204 - 7.03124I$
$u = -0.135573 - 0.750401I$ $a = 0.497918 - 0.003694I$ $b = -0.087550 + 0.403450I$	$0.517216 - 0.980568I$	$7.41204 + 7.03124I$
$u = 0.015207 + 1.271930I$ $a = 0.258817 + 0.015105I$ $b = 1.052190 - 0.036306I$	$4.96111 - 3.02863I$	$13.36303 + 2.94764I$
$u = 0.015207 - 1.271930I$ $a = 0.258817 - 0.015105I$ $b = 1.052190 + 0.036306I$	$4.96111 + 3.02863I$	$13.36303 - 2.94764I$
$u = 1.267430 + 0.165148I$ $a = -1.57147 - 0.04495I$ $b = 0.523699 + 0.462735I$	$10.5970 - 11.3672I$	$9.96311 + 7.10557I$
$u = 1.267430 - 0.165148I$ $a = -1.57147 + 0.04495I$ $b = 0.523699 - 0.462735I$	$10.5970 + 11.3672I$	$9.96311 - 7.10557I$
$u = -1.303430 + 0.145939I$ $a = -1.59455 + 0.04931I$ $b = 0.546188 - 0.390643I$	$11.47150 + 4.79100I$	$11.44614 - 2.44954I$
$u = -1.303430 - 0.145939I$ $a = -1.59455 - 0.04931I$ $b = 0.546188 + 0.390643I$	$11.47150 - 4.79100I$	$11.44614 + 2.44954I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.48598$ $a=-1.70628$ $b=\ 0.809440$	6.30192	14.4050
$u=\ 0.346910+0.359461I$ $a=-0.044452+0.984431I$ $b=\ 0.444124+0.546475I$	$-2.78156-0.97104I$	$-4.60139+3.38415I$
$u=\ 0.346910-0.359461I$ $a=-0.044452-0.984431I$ $b=\ 0.444124-0.546475I$	$-2.78156+0.97104I$	$-4.60139-3.38415I$
$u=\ 1.54269+0.18278I$ $a=-1.72780-0.12223I$ $b=\ 0.941440+0.289062I$	$2.02994-4.70447I$	$11.23439+5.82932I$
$u=\ 1.54269-0.18278I$ $a=-1.72780+0.12223I$ $b=\ 0.941440-0.289062I$	$2.02994+4.70447I$	$11.23439-5.82932I$
$u=\ 0.52762+1.47752I$ $a=-0.21972+1.74763I$ $b=\ 0.20870-2.77021I$	$15.8147-17.6250I$	0
$u=\ 0.52762-1.47752I$ $a=-0.21972-1.74763I$ $b=\ 0.20870+2.77021I$	$15.8147+17.6250I$	0
$u=-0.53754+1.48742I$ $a=-0.19175-1.71682I$ $b=\ 0.21292+2.73453I$	$16.6893+11.2011I$	0
$u=-0.53754-1.48742I$ $a=-0.19175+1.71682I$ $b=\ 0.21292-2.73453I$	$16.6893-11.2011I$	0
$u=\ 0.50522+1.54544I$ $a=-0.04761+1.80771I$ $b=\ 0.06833-2.69458I$	$7.92273-11.59880I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.50522 - 1.54544I$ $a = -0.04761 - 1.80771I$ $b = 0.06833 + 2.69458I$	$7.92273 + 11.59880I$	0
$u = -0.56045 + 1.56650I$ $a = 0.03187 - 1.69887I$ $b = 0.08948 + 2.57599I$	$11.62590 + 7.27779I$	0
$u = -0.56045 - 1.56650I$ $a = 0.03187 + 1.69887I$ $b = 0.08948 - 2.57599I$	$11.62590 - 7.27779I$	0
$u = -0.68168 + 1.55704I$ $a = 0.25317 - 1.45413I$ $b = 0.08907 + 2.25581I$	$15.8034 + 2.5637I$	0
$u = -0.68168 - 1.55704I$ $a = 0.25317 + 1.45413I$ $b = 0.08907 - 2.25581I$	$15.8034 - 2.5637I$	0
$u = 0.71972 + 1.54565I$ $a = 0.34306 + 1.40038I$ $b = 0.04686 - 2.15261I$	$14.6951 + 4.0355I$	0
$u = 0.71972 - 1.54565I$ $a = 0.34306 - 1.40038I$ $b = 0.04686 + 2.15261I$	$14.6951 - 4.0355I$	0
$u = 0.58769 + 1.64814I$ $a = 0.20254 + 1.74524I$ $b = -0.04962 - 2.50192I$	$7.14307 - 3.31046I$	0
$u = 0.58769 - 1.64814I$ $a = 0.20254 - 1.74524I$ $b = -0.04962 + 2.50192I$	$7.14307 + 3.31046I$	0
$u = 0.053861 + 0.132763I$ $a = 4.65323 + 2.55602I$ $b = 0.746943 + 0.099019I$	$1.42567 + 2.78320I$	$0.79755 - 2.69383I$

	Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.053861 - 0.132763I$		
$a =$	$4.65323 - 2.55602I$	$1.42567 - 2.78320I$	$0.79755 + 2.69383I$
$b =$	$0.746943 - 0.099019I$		

II.

$\boldsymbol{I_2^u = \langle -u^2a + b + 1,\ -2u^{26}a - 2u^{25}a + \cdots - 3a + 6,\ u^{27} + u^{26} + \cdots + 2u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ u^2a - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^{26} + 3u^{25} + \cdots + 2au - 4u \\ -2u^{25} - 2u^{24} + \cdots - u + 2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^{26} + 3u^{25} + \cdots + au - 2u \\ -2u^{25} - 2u^{24} + \cdots - u + 2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^4a - u^2a + u^2 + a \\ u^4a + 2u^2a - u^2 - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^{26}a + 4u^{26} + \cdots - a + 5 \\ 2u^{26}a - 2u^{26} + \cdots + 8u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^{25}a - 3u^{26} + \cdots - 2a + 2 \\ -2u^{25}a + 2u^{26} + \cdots + 2a - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -2u^{26}a + 4u^{26} + \cdots + a + 3 \\ 2u^{26}a - 2u^{26} + \cdots + 8u - 3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2u^{25}a - u^{26} + \cdots - 2a + 6 \\ -2u^{25}a + 2u^{26} + \cdots + 2a - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{25} - 4u^{24} - 44u^{23} - 40u^{22} - 208u^{21} - 168u^{20} - 536u^{19} - 372u^{18} - 772u^{17} - 432u^{16} - 508u^{15} - 184u^{14} + 100u^{13} + 92u^{12} + 340u^{11} + 72u^{10} + 68u^9 - 48u^8 - 144u^7 - 28u^6 - 76u^5 + 12u^4 + 16u^3 + 20u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^{27} + 7u^{26} + \cdots - 2u - 1)^2$
c_2, c_8	$(u^{27} - u^{26} + \cdots - u^2 - 1)^2$
c_3, c_9	$u^{54} - 7u^{53} + \cdots - 168722854u - 19874761$
c_4, c_{10}	$(u^{27} + u^{26} + \cdots + 2u - 1)^2$
c_5, c_6, c_{11} c_{12}	$u^{54} - u^{53} + \cdots - 532u - 53$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^{27} + 27y^{26} + \cdots + 14y - 1)^2$
c_2, c_8	$(y^{27} + 7y^{26} + \cdots - 2y - 1)^2$
c_3, c_9	$y^{54} - 37y^{53} + \cdots - 8208746653844232y + 395006124807121$
c_4, c_{10}	$(y^{27} + 23y^{26} + \cdots - 2y - 1)^2$
c_5, c_6, c_{11} c_{12}	$y^{54} - 41y^{53} + \cdots - 143528y + 2809$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.278071 + 0.956556I$ $a = 2.36487 + 0.60631I$ $b = -2.65845 - 1.76596I$	$7.99009 - 3.05015I$	$9.08831 + 1.99178I$
$u = -0.278071 + 0.956556I$ $a = -0.31543 + 2.83300I$ $b = 0.77133 - 2.20533I$	$7.99009 - 3.05015I$	$9.08831 + 1.99178I$
$u = -0.278071 - 0.956556I$ $a = 2.36487 - 0.60631I$ $b = -2.65845 + 1.76596I$	$7.99009 + 3.05015I$	$9.08831 - 1.99178I$
$u = -0.278071 - 0.956556I$ $a = -0.31543 - 2.83300I$ $b = 0.77133 + 2.20533I$	$7.99009 + 3.05015I$	$9.08831 - 1.99178I$
$u = 0.260338 + 0.833668I$ $a = 2.60824 + 0.53025I$ $b = -2.86613 + 0.79958I$	$8.16912 - 2.83072I$	$9.79804 + 3.74350I$
$u = 0.260338 + 0.833668I$ $a = 0.66908 - 3.18206I$ $b = -0.03843 + 2.28630I$	$8.16912 - 2.83072I$	$9.79804 + 3.74350I$
$u = 0.260338 - 0.833668I$ $a = 2.60824 - 0.53025I$ $b = -2.86613 - 0.79958I$	$8.16912 + 2.83072I$	$9.79804 - 3.74350I$
$u = 0.260338 - 0.833668I$ $a = 0.66908 + 3.18206I$ $b = -0.03843 - 2.28630I$	$8.16912 + 2.83072I$	$9.79804 - 3.74350I$
$u = -0.768863 + 0.186622I$ $a = 0.767167 - 0.556376I$ $b = -0.732874 - 0.529681I$	$5.58232 + 7.02686I$	$5.81546 - 6.08794I$
$u = -0.768863 + 0.186622I$ $a = 1.47566 + 0.78554I$ $b = 0.0463708 + 0.0135400I$	$5.58232 + 7.02686I$	$5.81546 - 6.08794I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.768863-0.186622I$ $a=0.767167+0.556376I$ $b=-0.732874+0.529681I$	$5.58232-7.02686I$	$5.81546+6.08794I$
$u=-0.768863-0.186622I$ $a=1.47566-0.78554I$ $b=0.0463708-0.0135400I$	$5.58232-7.02686I$	$5.81546+6.08794I$
$u=0.738973+0.201195I$ $a=0.724890+0.569525I$ $b=-0.802846+0.503503I$	$6.04391-0.96140I$	$6.72916+1.18503I$
$u=0.738973+0.201195I$ $a=1.55361-0.82203I$ $b=0.0299440+0.0463562I$	$6.04391-0.96140I$	$6.72916+1.18503I$
$u=0.738973-0.201195I$ $a=0.724890-0.569525I$ $b=-0.802846-0.503503I$	$6.04391+0.96140I$	$6.72916-1.18503I$
$u=0.738973-0.201195I$ $a=1.55361+0.82203I$ $b=0.0299440-0.0463562I$	$6.04391+0.96140I$	$6.72916-1.18503I$
$u=-0.291604+1.207020I$ $a=-0.661099+0.685256I$ $b=0.389321-0.474702I$	$2.46677+0.98697I$	$3.17341+0.25321I$
$u=-0.291604+1.207020I$ $a=0.48769+1.53601I$ $b=-0.58778-2.45051I$	$2.46677+0.98697I$	$3.17341+0.25321I$
$u=-0.291604-1.207020I$ $a=-0.661099-0.685256I$ $b=0.389321+0.474702I$	$2.46677-0.98697I$	$3.17341-0.25321I$
$u=-0.291604-1.207020I$ $a=0.48769-1.53601I$ $b=-0.58778+2.45051I$	$2.46677-0.98697I$	$3.17341-0.25321I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.750412+0.064416I$ $a=\ \ 0.856575-0.332457I$ $b=-0.553343-0.268644I$	$-1.00899+2.79673I$	$-0.25981-4.61920I$
$u=-0.750412+0.064416I$ $a=\ \ 1.42141+0.41171I$ $b=-0.165674+0.092715I$	$-1.00899+2.79673I$	$-0.25981-4.61920I$
$u=-0.750412-0.064416I$ $a=\ \ 0.856575+0.332457I$ $b=-0.553343+0.268644I$	$-1.00899-2.79673I$	$-0.25981+4.61920I$
$u=-0.750412-0.064416I$ $a=\ \ 1.42141-0.41171I$ $b=-0.165674-0.092715I$	$-1.00899-2.79673I$	$-0.25981+4.61920I$
$u=\ \ 0.082485+1.285040I$ $a=-1.23688+0.88472I$ $b=\ \ 0.84651-1.71714I$	$7.63181-2.01066I$	$12.08108+3.90758I$
$u=\ \ 0.082485+1.285040I$ $a=-0.56330-1.80575I$ $b=\ \ 0.30916+2.85016I$	$7.63181-2.01066I$	$12.08108+3.90758I$
$u=\ \ 0.082485-1.285040I$ $a=-1.23688-0.88472I$ $b=\ \ 0.84651+1.71714I$	$7.63181+2.01066I$	$12.08108-3.90758I$
$u=\ \ 0.082485-1.285040I$ $a=-0.56330+1.80575I$ $b=\ \ 0.30916-2.85016I$	$7.63181+2.01066I$	$12.08108-3.90758I$
$u=\ \ 0.257867+1.292320I$ $a=-0.657719-0.061377I$ $b=\ \ 0.095618-0.339940I$	$5.83412-3.27708I$	$11.27794+2.87566I$
$u=\ \ 0.257867+1.292320I$ $a=\ \ 0.16467-1.58727I$ $b=-0.20616+2.65508I$	$5.83412-3.27708I$	$11.27794+2.87566I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.257867 - 1.292320I$ $a = -0.657719 + 0.061377I$ $b = 0.095618 + 0.339940I$	$5.83412 + 3.27708I$	$11.27794 - 2.87566I$
$u = 0.257867 - 1.292320I$ $a = 0.16467 + 1.58727I$ $b = -0.20616 - 2.65508I$	$5.83412 + 3.27708I$	$11.27794 - 2.87566I$
$u = -0.317436 + 1.304880I$ $a = 0.20283 + 1.46123I$ $b = -0.11439 - 2.50885I$	$3.27233 + 6.65682I$	$5.19788 - 7.22011I$
$u = -0.317436 + 1.304880I$ $a = -0.350883 + 0.118774I$ $b = -0.339506 + 0.100412I$	$3.27233 + 6.65682I$	$5.19788 - 7.22011I$
$u = -0.317436 - 1.304880I$ $a = 0.20283 - 1.46123I$ $b = -0.11439 + 2.50885I$	$3.27233 - 6.65682I$	$5.19788 + 7.22011I$
$u = -0.317436 - 1.304880I$ $a = -0.350883 - 0.118774I$ $b = -0.339506 - 0.100412I$	$3.27233 - 6.65682I$	$5.19788 + 7.22011I$
$u = 0.649647$ $a = 0.553820$ $b = -0.766265$	1.77816	5.74170
$u = 0.649647$ $a = 1.85261$ $b = -0.218123$	1.77816	5.74170
$u = 0.307012 + 1.374630I$ $a = 0.11853 - 1.41160I$ $b = -0.02134 + 2.63436I$	$11.02600 - 4.75862I$	$11.32590 + 2.41055I$
$u = 0.307012 + 1.374630I$ $a = -0.301203 + 0.156502I$ $b = -0.591333 - 0.535207I$	$11.02600 - 4.75862I$	$11.32590 + 2.41055I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.307012 - 1.374630I$ $a = 0.11853 + 1.41160I$ $b = -0.02134 - 2.63436I$	$11.02600 + 4.75862I$	$11.32590 - 2.41055I$
$u = 0.307012 - 1.374630I$ $a = -0.301203 - 0.156502I$ $b = -0.591333 + 0.535207I$	$11.02600 + 4.75862I$	$11.32590 - 2.41055I$
$u = -0.322115 + 1.372980I$ $a = 0.135135 + 1.402660I$ $b = -0.00005 - 2.61810I$	$10.5129 + 10.9775I$	$10.31167 - 7.27184I$
$u = -0.322115 + 1.372980I$ $a = -0.257057 - 0.132543I$ $b = -0.659339 + 0.463470I$	$10.5129 + 10.9775I$	$10.31167 - 7.27184I$
$u = -0.322115 - 1.372980I$ $a = 0.135135 - 1.402660I$ $b = -0.00005 + 2.61810I$	$10.5129 - 10.9775I$	$10.31167 + 7.27184I$
$u = -0.322115 - 1.372980I$ $a = -0.257057 + 0.132543I$ $b = -0.659339 - 0.463470I$	$10.5129 - 10.9775I$	$10.31167 + 7.27184I$
$u = 0.01000 + 1.42794I$ $a = -0.476092 + 1.070440I$ $b = -0.05987 - 2.19612I$	$15.0119 - 3.1530I$	$13.82291 + 2.60032I$
$u = 0.01000 + 1.42794I$ $a = -0.447560 - 1.123330I$ $b = -0.05538 + 2.27757I$	$15.0119 - 3.1530I$	$13.82291 + 2.60032I$
$u = 0.01000 - 1.42794I$ $a = -0.476092 - 1.070440I$ $b = -0.05987 + 2.19612I$	$15.0119 + 3.1530I$	$13.82291 - 2.60032I$
$u = 0.01000 - 1.42794I$ $a = -0.447560 + 1.123330I$ $b = -0.05538 - 2.27757I$	$15.0119 + 3.1530I$	$13.82291 - 2.60032I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.247000 + 0.300914I$ $a = 0.24147 + 2.21936I$ $b = -1.337040 - 0.029666I$	$2.93764 - 0.95364I$	$5.76719 + 7.10310I$
$u = 0.247000 + 0.300914I$ $a = 2.77217 - 2.52780I$ $b = -0.706130 + 0.486758I$	$2.93764 - 0.95364I$	$5.76719 + 7.10310I$
$u = 0.247000 - 0.300914I$ $a = 0.24147 - 2.21936I$ $b = -1.337040 + 0.029666I$	$2.93764 + 0.95364I$	$5.76719 - 7.10310I$
$u = 0.247000 - 0.300914I$ $a = 2.77217 + 2.52780I$ $b = -0.706130 - 0.486758I$	$2.93764 + 0.95364I$	$5.76719 - 7.10310I$

III. $\boldsymbol{I^u_3 = \langle u^3 - u^2 + 5b + 2u + 3,\ 3u^3 + 2u^2 + 10a - 14u - 6,\ u^4 - 2u^2 + 2\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{3}{10}u^3 - \frac{1}{5}u^2 + \frac{7}{5}u + \frac{3}{5} \\ -\frac{1}{5}u^3 + \frac{1}{5}u^2 - \frac{2}{5}u - \frac{3}{5} \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -\frac{3}{10}u^3 - \frac{1}{5}u^2 + \frac{2}{5}u + \frac{3}{5} \\ -\frac{1}{5}u^3 + \frac{1}{5}u^2 + \frac{3}{5}u - \frac{3}{5} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{3}{10}u^3 - \frac{1}{5}u^2 + \frac{2}{5}u - \frac{2}{5} \\ -\frac{1}{5}u^3 - \frac{4}{5}u^2 + \frac{3}{5}u - \frac{3}{5} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{3}{10}u^3 - \frac{1}{5}u^2 + \frac{2}{5}u + \frac{3}{5} \\ -\frac{1}{5}u^3 + \frac{1}{5}u^2 + \frac{3}{5}u - \frac{3}{5} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{1}{50}u^3 + \frac{4}{25}u + 1 \\ \frac{8}{25}u^3 - \frac{1}{5}u^2 - \frac{14}{25}u + \frac{3}{5} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{3}{10}u^3 + \frac{8}{25}u^2 - \frac{2}{5}u - \frac{14}{25} \\ -\frac{3}{25}u^2 + u - \frac{1}{25} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{10}u^3 - \frac{3}{25}u^2 + \frac{4}{5}u - \frac{1}{25} \\ \frac{4}{5}u^3 - \frac{2}{25}u^2 - \frac{2}{5}u - \frac{9}{25} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{9}{50}u^3 + \frac{4}{5}u^2 + \frac{11}{25}u - \frac{2}{5} \\ -\frac{3}{25}u^3 - \frac{3}{5}u^2 - \frac{1}{25}u - \frac{1}{5} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^2 + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^2 - 2u + 2)^2$
c_2, c_8	$u^4 + 2u^2 + 2$
c_3, c_9	$25(25u^4 + 40u^3 + 12u^2 - 4u + 1)$
c_4, c_{10}	$u^4 - 2u^2 + 2$
c_5, c_{11}	$(u + 1)^4$
c_6, c_{12}	$(u - 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^2+4)^2$
c_2, c_8	$(y^2+2y+2)^2$
c_3, c_9	$625(625y^4-1000y^3+514y^2+8y+1)$
c_4, c_{10}	$(y^2-2y+2)^2$
c_5, c_6, c_{11} c_{12}	$(y-1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.098680 + 0.455090I$ $a = 1.74508 - 0.02901I$ $b = -0.968192 - 0.292791I$	$0.82247 - 3.66386I$	$8.00000 + 4.00000I$
$u = 1.098680 - 0.455090I$ $a = 1.74508 + 0.02901I$ $b = -0.968192 + 0.292791I$	$0.82247 + 3.66386I$	$8.00000 - 4.00000I$
$u = -1.098680 + 0.455090I$ $a = -0.945079 + 0.370994I$ $b = 0.168192 - 0.692791I$	$0.82247 + 3.66386I$	$8.00000 - 4.00000I$
$u = -1.098680 - 0.455090I$ $a = -0.945079 - 0.370994I$ $b = 0.168192 + 0.692791I$	$0.82247 - 3.66386I$	$8.00000 + 4.00000I$

IV. $\boldsymbol{I^u_4 = \langle b + a - 1,\ 8a^3 + 4a^2u - 12a^2 - 4au + 2a + 1,\ u^2 + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -a + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} au - u \\ -au + 2u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} au \\ -au + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} a + 1 \\ -a \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -a^2 - a + 1 \\ a^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a^2u - 2au + u \\ -a^2u + 3au - u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a^2u + 2a^2 - au - \frac{5}{2}a + \frac{5}{4} \\ -a^2u - 4a^2 + au + \frac{7}{2}a - \frac{1}{4} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -4a^2u - a^2 + \frac{9}{2}au + a - \frac{3}{4}u \\ 2a^2u + a^2 - \frac{3}{2}au - a + \frac{3}{4}u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 16a^2 + 8au - 16a - 4u + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^3 - u^2 + 2u - 1)^2$
c_2, c_8	$u^6 + u^4 + 2u^2 + 1$
c_3, c_9	$64(64u^6 + 192u^5 + 192u^4 + 64u^3 - 4u^2 - 4u + 1)$
c_4, c_5, c_6 c_{10}, c_{11}, c_{12}	$(u^2 + 1)^3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^3+3y^2+2y-1)^2$
c_2, c_8	$(y^3+y^2+2y+1)^2$
c_3, c_9	$4096(4096y^6-12288y^5+11776y^4-3968y^3+912y^2-24y+1)$
c_4, c_5, c_6 c_{10}, c_{11}, c_{12}	$(y+1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 1.153570 - 0.107540I$ $b = -0.153571 + 0.107540I$	$3.02413 - 2.82812I$	$7.50976 + 2.97945I$
$u = 1.000000I$ $a = 0.500000 - 0.284920I$ $b = 0.500000 + 0.284920I$	-1.11345	$-60.980489 + 0.10I$
$u = 1.000000I$ $a = -0.153571 - 0.107540I$ $b = 1.153570 + 0.107540I$	$3.02413 + 2.82812I$	$7.50976 - 2.97945I$
$u = -1.000000I$ $a = 1.153570 + 0.107540I$ $b = -0.153571 - 0.107540I$	$3.02413 + 2.82812I$	$7.50976 - 2.97945I$
$u = -1.000000I$ $a = 0.500000 + 0.284920I$ $b = 0.500000 - 0.284920I$	-1.11345	$-60.980489 + 0.10I$
$u = -1.000000I$ $a = -0.153571 + 0.107540I$ $b = 1.153570 - 0.107540I$	$3.02413 - 2.82812I$	$7.50976 + 2.97945I$

V. $I_1^v = \langle a,\ b+1,\ v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = \quad 0$ $b = -1.00000$	3.28987	12.0000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$u(u^2-2u+2)^2(u^3-u^2+2u-1)^2(u^{27}+7u^{26}+\cdots-2u-1)^2$ $\cdot(u^{41}+13u^{40}+\cdots-1260u-100)$
c_2, c_8	$u(u^4+2u^2+2)(u^6+u^4+2u^2+1)(u^{27}-u^{26}+\cdots-u^2-1)^2$ $\cdot(u^{41}+3u^{40}+\cdots-10u+10)$
c_3, c_9	$102400(u+1)(25u^4+40u^3+12u^2-4u+1)$ $\cdot(64u^6+192u^5+192u^4+64u^3-4u^2-4u+1)$ $\cdot(64u^{41}+256u^{40}+\cdots-13u^2-1)$ $\cdot(u^{54}-7u^{53}+\cdots-168722854u-19874761)$
c_4, c_{10}	$u(u^2+1)^3(u^4-2u^2+2)(u^{27}+u^{26}+\cdots+2u-1)^2$ $\cdot(u^{41}-3u^{40}+\cdots-434u+50)$
c_5, c_{11}	$(u-1)(u+1)^4(u^2+1)^3(u^{41}-u^{40}+\cdots+14u-1)$ $\cdot(u^{54}-u^{53}+\cdots-532u-53)$
c_6, c_{12}	$((u-1)^4)(u+1)(u^2+1)^3(u^{41}-u^{40}+\cdots+14u-1)$ $\cdot(u^{54}-u^{53}+\cdots-532u-53)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y(y^2+4)^2(y^3+3y^2+2y-1)^2(y^{27}+27y^{26}+\cdots+14y-1)^2$ $\cdot (y^{41}+33y^{40}+\cdots-489200y-10000)$
c_2, c_8	$y(y^2+2y+2)^2(y^3+y^2+2y+1)^2(y^{27}+7y^{26}+\cdots-2y-1)^2$ $\cdot (y^{41}+13y^{40}+\cdots-1260y-100)$
c_3, c_9	$10485760000(y-1)(625y^4-1000y^3+514y^2+8y+1)$ $\cdot (4096y^6-12288y^5+11776y^4-3968y^3+912y^2-24y+1)$ $\cdot (4096y^{41}-147456y^{40}+\cdots-26y-1)$ $\cdot (y^{54}-37y^{53}+\cdots-8208746653844232y+395006124807121)$
c_4, c_{10}	$y(y+1)^6(y^2-2y+2)^2(y^{27}+23y^{26}+\cdots-2y-1)^2$ $\cdot (y^{41}+25y^{40}+\cdots-199044y-2500)$
c_5, c_6, c_{11} c_{12}	$((y-1)^5)(y+1)^6(y^{41}-31y^{40}+\cdots-96y-1)$ $\cdot (y^{54}-41y^{53}+\cdots-143528y+2809)$