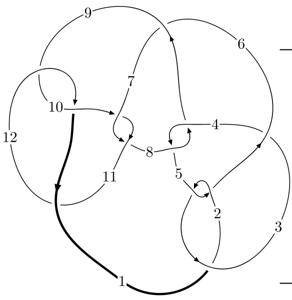
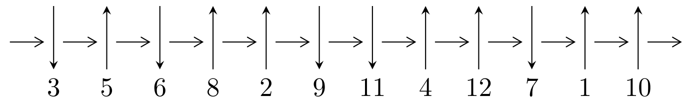
$12a_{0001}$ ($K12a_{0001}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 3.90724 \times 10^{78} u^{127} - 4.51726 \times 10^{79} u^{126} + \cdots + 5.58481 \times 10^{75} b - 1.43118 \times 10^{78},$$
$$4.97117 \times 10^{78} u^{127} - 5.50418 \times 10^{79} u^{126} + \cdots + 5.58481 \times 10^{75} a + 9.59232 \times 10^{77},\ u^{128} - 13u^{127} + \cdots - 3u$$
$$I_2^u = \langle b,\ -u^5 + u^3 a + 2u^4 - u^2 a + a^2 - 2u^2 + a + u,\ u^6 - u^5 - u^4 + 2u^3 - u + 1\rangle$$
$$I_3^u = \langle a^2 + b + a - 1,\ a^4 + a^3 - 2a^2 - a + 2,\ u + 1\rangle$$
$$I_4^u = \langle a^5 - 3a^4 + 4a^2 + b + a - 1,\ a^6 - 3a^5 + 5a^3 - a^2 - 2a + 1,\ u + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 150 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. $\boldsymbol{I_1^u = \langle 3.91 \times 10^{78}u^{127} - 4.52 \times 10^{79}u^{126} + \cdots + 5.58 \times 10^{75}b - 1.43 \times 10^{78},\ 4.97 \times 10^{78}u^{127} - 5.50 \times 10^{79}u^{126} + \cdots + 5.58 \times 10^{75}a + 9.59 \times 10^{77},\ u^{128} - 13u^{127} + \cdots - 3u + 1\rangle}$

(i) Arc colorings

$$a_9 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-890.124u^{127} + 9855.63u^{126} + \cdots - 533.258u - 171.757\\-699.620u^{127} + 8088.48u^{126} + \cdots - 995.384u + 256.262\end{pmatrix}$$
$$a_8 = \begin{pmatrix}726.036u^{127} - 9831.86u^{126} + \cdots + 2699.13u - 1698.98\\534.963u^{127} - 4792.44u^{126} + \cdots - 933.777u + 1212.53\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-1886.04u^{127} + 22618.7u^{126} + \cdots - 3435.20u + 1391.46\\-473.156u^{127} + 3944.04u^{126} + \cdots + 1228.16u - 1364.18\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1184.26u^{127} - 16846.3u^{126} + \cdots + 5432.79u - 3580.45\\421.670u^{127} - 3154.11u^{126} + \cdots - 1503.13u + 1602.68\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1605.93u^{127} - 20000.5u^{126} + \cdots + 3929.65u - 1977.77\\421.670u^{127} - 3154.11u^{126} + \cdots - 1503.13u + 1602.68\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-1994.18u^{127} + 23589.1u^{126} + \cdots - 3282.53u + 1117.67\\-165.031u^{127} + 388.300u^{126} + \cdots + 1669.75u - 1431.77\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-1938.13u^{127} + 22466.1u^{126} + \cdots - 2775.51u + 659.657\\490.496u^{127} - 6640.18u^{126} + \cdots + 1926.70u - 1129.42\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4093.96u^{127} + 45529.3u^{126} + \cdots - 3370.47u - 481.481$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{128} + 64u^{127} + \cdots + 8u + 1$
c_2, c_5	$u^{128} + 8u^{127} + \cdots + 8u + 1$
c_3	$u^{128} - 8u^{127} + \cdots - 97068u + 41508$
c_4, c_8	$u^{128} - 2u^{127} + \cdots + 8192u + 4096$
c_6	$u^{128} - 4u^{127} + \cdots - 59111052u + 3579401$
c_7, c_{10}	$u^{128} + 3u^{127} + \cdots + 6144u + 1024$
c_9, c_{12}	$u^{128} + 13u^{127} + \cdots + 3u + 1$
c_{11}	$u^{128} - 59u^{127} + \cdots + 37u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{128} + 8y^{127} + \cdots + 64y + 1$
c_2, c_5	$y^{128} + 64y^{127} + \cdots + 8y + 1$
c_3	$y^{128} - 48y^{127} + \cdots + 110992594392y + 1722914064$
c_4, c_8	$y^{128} + 70y^{127} + \cdots + 520093696y + 16777216$
c_6	$y^{128} - 56y^{127} + \cdots - 158438371667520y + 12812111518801$
c_7, c_{10}	$y^{128} - 69y^{127} + \cdots - 27787264y + 1048576$
c_9, c_{12}	$y^{128} - 59y^{127} + \cdots + 37y + 1$
c_{11}	$y^{128} + 33y^{127} + \cdots - 4663y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.467216 + 0.888765I$ $a = -0.262139 - 0.326352I$ $b = -1.174290 - 0.314881I$	$-5.57599 - 5.97894I$	0
$u = 0.467216 - 0.888765I$ $a = -0.262139 + 0.326352I$ $b = -1.174290 + 0.314881I$	$-5.57599 + 5.97894I$	0
$u = 0.884815 + 0.447263I$ $a = 0.736525 + 0.098393I$ $b = -0.646072 + 0.807347I$	$1.78444 + 0.33658I$	0
$u = 0.884815 - 0.447263I$ $a = 0.736525 - 0.098393I$ $b = -0.646072 - 0.807347I$	$1.78444 - 0.33658I$	0
$u = 0.903432 + 0.456730I$ $a = 1.332140 - 0.440260I$ $b = -0.785831 - 0.652425I$	$1.86792 + 3.29651I$	0
$u = 0.903432 - 0.456730I$ $a = 1.332140 + 0.440260I$ $b = -0.785831 + 0.652425I$	$1.86792 - 3.29651I$	0
$u = 0.549415 + 0.856556I$ $a = -0.314902 - 0.196049I$ $b = -1.170170 + 0.054456I$	$-6.12700 + 1.81309I$	0
$u = 0.549415 - 0.856556I$ $a = -0.314902 + 0.196049I$ $b = -1.170170 - 0.054456I$	$-6.12700 - 1.81309I$	0
$u = 0.421809 + 0.932088I$ $a = -0.16666 - 1.56984I$ $b = 0.574257 - 1.264840I$	$-6.12043 - 7.30221I$	0
$u = 0.421809 - 0.932088I$ $a = -0.16666 + 1.56984I$ $b = 0.574257 + 1.264840I$	$-6.12043 + 7.30221I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.465799 + 0.851706I$ $a = -0.17541 - 2.04875I$ $b = 0.259022 - 1.027760I$	$-3.31867 - 4.55381I$	0
$u = 0.465799 - 0.851706I$ $a = -0.17541 + 2.04875I$ $b = 0.259022 + 1.027760I$	$-3.31867 + 4.55381I$	0
$u = -0.926528 + 0.448937I$ $a = -0.503695 + 0.895385I$ $b = -0.775401 - 0.266682I$	$1.78403 - 1.66122I$	0
$u = -0.926528 - 0.448937I$ $a = -0.503695 - 0.895385I$ $b = -0.775401 + 0.266682I$	$1.78403 + 1.66122I$	0
$u = 0.506875 + 0.826946I$ $a = -0.08559 + 2.23069I$ $b = -0.064227 + 0.999070I$	$-3.61244 + 0.86916I$	0
$u = 0.506875 - 0.826946I$ $a = -0.08559 - 2.23069I$ $b = -0.064227 - 0.999070I$	$-3.61244 - 0.86916I$	0
$u = -0.737819 + 0.621082I$ $a = 0.93612 + 2.04262I$ $b = 0.268137 + 1.346520I$	$-6.39276 - 1.42340I$	0
$u = -0.737819 - 0.621082I$ $a = 0.93612 - 2.04262I$ $b = 0.268137 - 1.346520I$	$-6.39276 + 1.42340I$	0
$u = 0.408451 + 0.952232I$ $a = 0.14412 + 1.47260I$ $b = -0.66863 + 1.31884I$	$-8.8015 - 12.5693I$	0
$u = 0.408451 - 0.952232I$ $a = 0.14412 - 1.47260I$ $b = -0.66863 - 1.31884I$	$-8.8015 + 12.5693I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.862643 + 0.428421I$ $a = -1.21199 - 2.91585I$ $b = 0.062599 - 0.793471I$	$1.108160 + 0.710643I$	0
$u = -0.862643 - 0.428421I$ $a = -1.21199 + 2.91585I$ $b = 0.062599 + 0.793471I$	$1.108160 - 0.710643I$	0
$u = -0.919358 + 0.483575I$ $a = 1.59445 + 2.58825I$ $b = -0.285476 + 0.894692I$	$1.44266 - 4.40723I$	0
$u = -0.919358 - 0.483575I$ $a = 1.59445 - 2.58825I$ $b = -0.285476 - 0.894692I$	$1.44266 + 4.40723I$	0
$u = 0.918229 + 0.497793I$ $a = -0.788010 - 0.432152I$ $b = 0.615333 - 0.754332I$	$0.54839 + 5.39329I$	0
$u = 0.918229 - 0.497793I$ $a = -0.788010 + 0.432152I$ $b = 0.615333 + 0.754332I$	$0.54839 - 5.39329I$	0
$u = 0.472353 + 0.826605I$ $a = 0.199203 + 0.250333I$ $b = 0.943077 + 0.193062I$	$-2.84693 - 1.72799I$	0
$u = 0.472353 - 0.826605I$ $a = 0.199203 - 0.250333I$ $b = 0.943077 - 0.193062I$	$-2.84693 + 1.72799I$	0
$u = 0.460270 + 0.946554I$ $a = 0.01204 + 1.62062I$ $b = -0.44420 + 1.39719I$	$-11.01500 - 3.84928I$	0
$u = 0.460270 - 0.946554I$ $a = 0.01204 - 1.62062I$ $b = -0.44420 - 1.39719I$	$-11.01500 + 3.84928I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.831926 + 0.448912I$ $a = -1.55091 + 0.63092I$ $b = 0.825714 + 0.605979I$	$0.17233 - 1.51959I$	0
$u = 0.831926 - 0.448912I$ $a = -1.55091 - 0.63092I$ $b = 0.825714 - 0.605979I$	$0.17233 + 1.51959I$	0
$u = -0.910580 + 0.533390I$ $a = 0.623441 - 1.010220I$ $b = 1.072100 + 0.299027I$	$-0.61836 - 5.74521I$	0
$u = -0.910580 - 0.533390I$ $a = 0.623441 + 1.010220I$ $b = 1.072100 - 0.299027I$	$-0.61836 + 5.74521I$	0
$u = -1.056700 + 0.121003I$ $a = 1.40180 - 2.12162I$ $b = -0.246674 - 0.447064I$	$1.97936 - 2.35936I$	0
$u = -1.056700 - 0.121003I$ $a = 1.40180 + 2.12162I$ $b = -0.246674 + 0.447064I$	$1.97936 + 2.35936I$	0
$u = -0.782301 + 0.501067I$ $a = 0.514821 - 1.161720I$ $b = 1.024760 - 0.105409I$	$-1.05662 + 1.51276I$	0
$u = -0.782301 - 0.501067I$ $a = 0.514821 + 1.161720I$ $b = 1.024760 + 0.105409I$	$-1.05662 - 1.51276I$	0
$u = 0.637614 + 0.871450I$ $a = -0.50478 + 1.83058I$ $b = 0.380560 + 1.312160I$	$-7.55837 + 2.76750I$	0
$u = 0.637614 - 0.871450I$ $a = -0.50478 - 1.83058I$ $b = 0.380560 - 1.312160I$	$-7.55837 - 2.76750I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.664691 + 0.620912I$ $a = 0.0740313 - 0.0478021I$ $b = 0.641222 - 0.618829I$	$-3.24131 + 0.01631I$	0
$u = 0.664691 - 0.620912I$ $a = 0.0740313 + 0.0478021I$ $b = 0.641222 + 0.618829I$	$-3.24131 - 0.01631I$	0
$u = -0.642929 + 0.634338I$ $a = 0.70955 + 1.92950I$ $b = 0.539215 + 1.287990I$	$-4.76631 + 7.04658I$	0
$u = -0.642929 - 0.634338I$ $a = 0.70955 - 1.92950I$ $b = 0.539215 - 1.287990I$	$-4.76631 - 7.04658I$	0
$u = 0.608648 + 0.912650I$ $a = 0.39418 - 1.78668I$ $b = -0.23220 - 1.45855I$	$-12.00690 - 1.08932I$	0
$u = 0.608648 - 0.912650I$ $a = 0.39418 + 1.78668I$ $b = -0.23220 + 1.45855I$	$-12.00690 + 1.08932I$	0
$u = -0.926319 + 0.604861I$ $a = -1.47167 - 2.09294I$ $b = 0.394748 - 1.334950I$	$-5.81461 - 3.40517I$	0
$u = -0.926319 - 0.604861I$ $a = -1.47167 + 2.09294I$ $b = 0.394748 + 1.334950I$	$-5.81461 + 3.40517I$	0
$u = 0.929829 + 0.599892I$ $a = -0.826514 + 0.810044I$ $b = 0.838781 + 0.511078I$	$-2.49531 + 4.79440I$	0
$u = 0.929829 - 0.599892I$ $a = -0.826514 - 0.810044I$ $b = 0.838781 - 0.511078I$	$-2.49531 - 4.79440I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.834599 + 0.317293I$ $a = 0.607611 - 0.429842I$ $b = -0.607666 + 0.987525I$	$0.79205 - 1.96703I$	0
$u = 0.834599 - 0.317293I$ $a = 0.607611 + 0.429842I$ $b = -0.607666 - 0.987525I$	$0.79205 + 1.96703I$	0
$u = 0.848804 + 0.266513I$ $a = -0.632048 + 0.603499I$ $b = 0.613884 - 1.086290I$	$-1.41894 - 6.93011I$	0
$u = 0.848804 - 0.266513I$ $a = -0.632048 - 0.603499I$ $b = 0.613884 + 1.086290I$	$-1.41894 + 6.93011I$	0
$u = -0.667096 + 0.585551I$ $a = -0.72206 - 2.07304I$ $b = -0.429340 - 1.193630I$	$-2.01099 + 2.08594I$	0
$u = -0.667096 - 0.585551I$ $a = -0.72206 + 2.07304I$ $b = -0.429340 + 1.193630I$	$-2.01099 - 2.08594I$	0
$u = 0.671246 + 0.887919I$ $a = 0.52699 - 1.75239I$ $b = -0.50667 - 1.39349I$	$-10.56640 + 7.80081I$	0
$u = 0.671246 - 0.887919I$ $a = 0.52699 + 1.75239I$ $b = -0.50667 + 1.39349I$	$-10.56640 - 7.80081I$	0
$u = -1.040140 + 0.399543I$ $a = -0.640041 + 0.567994I$ $b = -0.394283 - 0.566210I$	$2.19825 - 1.39363I$	0
$u = -1.040140 - 0.399543I$ $a = -0.640041 - 0.567994I$ $b = -0.394283 + 0.566210I$	$2.19825 + 1.39363I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.016570 + 0.457027I$ $a = 1.032610 - 0.035620I$ $b = -0.575478 - 0.767072I$	$1.86462 + 5.09781I$	0
$u = 1.016570 - 0.457027I$ $a = 1.032610 + 0.035620I$ $b = -0.575478 + 0.767072I$	$1.86462 - 5.09781I$	0
$u = -0.965962 + 0.579568I$ $a = 1.61748 + 2.11047I$ $b = -0.544207 + 1.210720I$	$-1.10137 - 6.74666I$	0
$u = -0.965962 - 0.579568I$ $a = 1.61748 - 2.11047I$ $b = -0.544207 - 1.210720I$	$-1.10137 + 6.74666I$	0
$u = -0.983318 + 0.599046I$ $a = -1.62754 - 2.03045I$ $b = 0.63195 - 1.28165I$	$-3.74035 - 11.90180I$	0
$u = -0.983318 - 0.599046I$ $a = -1.62754 + 2.03045I$ $b = 0.63195 + 1.28165I$	$-3.74035 + 11.90180I$	0
$u = 1.065750 + 0.442801I$ $a = -0.997127 - 0.204455I$ $b = 0.456080 + 0.926673I$	$0.00932 + 9.64129I$	0
$u = 1.065750 - 0.442801I$ $a = -0.997127 + 0.204455I$ $b = 0.456080 - 0.926673I$	$0.00932 - 9.64129I$	0
$u = -1.162860 + 0.135909I$ $a = -1.323840 - 0.086207I$ $b = 0.645634 - 0.381020I$	$2.61757 - 0.40705I$	0
$u = -1.162860 - 0.135909I$ $a = -1.323840 + 0.086207I$ $b = 0.645634 + 0.381020I$	$2.61757 + 0.40705I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.150830 + 0.264016I$ $a = -1.040540 + 0.117585I$ $b = 0.346991 - 0.669629I$	$2.55173 - 0.89115I$	0
$u = -1.150830 - 0.264016I$ $a = -1.040540 - 0.117585I$ $b = 0.346991 + 0.669629I$	$2.55173 + 0.89115I$	0
$u = 0.347912 + 0.738078I$ $a = -0.054770 + 0.273114I$ $b = 0.424981 + 0.531973I$	$-1.87900 - 1.84140I$	0
$u = 0.347912 - 0.738078I$ $a = -0.054770 - 0.273114I$ $b = 0.424981 - 0.531973I$	$-1.87900 + 1.84140I$	0
$u = -1.181750 + 0.099439I$ $a = -0.883504 + 0.917778I$ $b = 0.300620 + 0.738938I$	$2.43308 + 2.28422I$	0
$u = -1.181750 - 0.099439I$ $a = -0.883504 - 0.917778I$ $b = 0.300620 - 0.738938I$	$2.43308 - 2.28422I$	0
$u = -1.142850 + 0.407232I$ $a = 0.938805 - 0.516089I$ $b = 0.189205 + 0.995087I$	$0.18861 + 2.20753I$	0
$u = -1.142850 - 0.407232I$ $a = 0.938805 + 0.516089I$ $b = 0.189205 - 0.995087I$	$0.18861 - 2.20753I$	0
$u = 1.118090 + 0.519341I$ $a = -0.561461 - 0.424753I$ $b = -0.082616 + 0.814985I$	$-0.91707 + 3.27060I$	0
$u = 1.118090 - 0.519341I$ $a = -0.561461 + 0.424753I$ $b = -0.082616 - 0.814985I$	$-0.91707 - 3.27060I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.202380 + 0.331291I$ $a = 1.105400 - 0.337621I$ $b = -0.266903 + 1.018850I$	$0.37432 - 4.83030I$	0
$u = -1.202380 - 0.331291I$ $a = 1.105400 + 0.337621I$ $b = -0.266903 - 1.018850I$	$0.37432 + 4.83030I$	0
$u = -1.248640 + 0.065178I$ $a = 1.45455 - 0.01017I$ $b = -0.988655 + 0.241802I$	$0.56813 + 3.46508I$	0
$u = -1.248640 - 0.065178I$ $a = 1.45455 + 0.01017I$ $b = -0.988655 - 0.241802I$	$0.56813 - 3.46508I$	0
$u = 1.112560 + 0.572551I$ $a = 0.226403 + 0.533712I$ $b = 0.456794 - 0.519543I$	$0.34343 + 6.81837I$	0
$u = 1.112560 - 0.572551I$ $a = 0.226403 - 0.533712I$ $b = 0.456794 + 0.519543I$	$0.34343 - 6.81837I$	0
$u = 1.022840 + 0.725245I$ $a = 0.796455 - 1.101220I$ $b = 0.283234 - 1.322490I$	$-6.38720 + 3.12375I$	0
$u = 1.022840 - 0.725245I$ $a = 0.796455 + 1.101220I$ $b = 0.283234 + 1.322490I$	$-6.38720 - 3.12375I$	0
$u = 1.006350 + 0.755132I$ $a = -0.805448 + 0.924099I$ $b = -0.42006 + 1.40957I$	$-9.54640 - 1.76865I$	0
$u = 1.006350 - 0.755132I$ $a = -0.805448 - 0.924099I$ $b = -0.42006 - 1.40957I$	$-9.54640 + 1.76865I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.088460 + 0.649545I$ $a = 1.19797 - 1.79880I$ $b = -0.188248 - 1.021790I$	$-1.85825 + 4.64991I$	0
$u = 1.088460 - 0.649545I$ $a = 1.19797 + 1.79880I$ $b = -0.188248 + 1.021790I$	$-1.85825 - 4.64991I$	0
$u = 1.073230 + 0.677577I$ $a = 0.175564 - 0.949380I$ $b = -1.171710 + 0.054354I$	$-4.53924 + 3.88030I$	0
$u = 1.073230 - 0.677577I$ $a = 0.175564 + 0.949380I$ $b = -1.171710 - 0.054354I$	$-4.53924 - 3.88030I$	0
$u = 1.103920 + 0.641568I$ $a = -0.018596 + 0.835541I$ $b = 0.991239 - 0.304457I$	$-0.95037 + 7.21793I$	0
$u = 1.103920 - 0.641568I$ $a = -0.018596 - 0.835541I$ $b = 0.991239 + 0.304457I$	$-0.95037 - 7.21793I$	0
$u = 0.678394 + 0.228741I$ $a = -0.177693 + 0.606218I$ $b = 0.329747 - 0.994777I$	$-3.53910 + 0.43298I$	0
$u = 0.678394 - 0.228741I$ $a = -0.177693 - 0.606218I$ $b = 0.329747 + 0.994777I$	$-3.53910 - 0.43298I$	0
$u = 1.112960 + 0.648845I$ $a = -1.44793 + 1.70769I$ $b = 0.353521 + 1.057330I$	$-1.37015 + 10.13200I$	0
$u = 1.112960 - 0.648845I$ $a = -1.44793 - 1.70769I$ $b = 0.353521 - 1.057330I$	$-1.37015 - 10.13200I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.059890 + 0.738559I$ $a = -1.01328 + 1.11251I$ $b = -0.14030 + 1.46845I$	$-10.63320 + 7.14080I$	0
$u = 1.059890 - 0.738559I$ $a = -1.01328 - 1.11251I$ $b = -0.14030 - 1.46845I$	$-10.63320 - 7.14080I$	0
$u = 0.117684 + 0.685153I$ $a = 0.413155 - 0.527878I$ $b = -0.050087 - 1.018590I$	$-3.55848 + 1.17274I$	0
$u = 0.117684 - 0.685153I$ $a = 0.413155 + 0.527878I$ $b = -0.050087 + 1.018590I$	$-3.55848 - 1.17274I$	0
$u = 1.123940 + 0.663598I$ $a = -0.023494 - 0.950137I$ $b = -1.178890 + 0.396849I$	$-3.58743 + 11.70610I$	0
$u = 1.123940 - 0.663598I$ $a = -0.023494 + 0.950137I$ $b = -1.178890 - 0.396849I$	$-3.58743 - 11.70610I$	0
$u = -1.308590 + 0.115968I$ $a = -0.696518 - 0.024469I$ $b = 0.503697 + 1.177980I$	$0.02376 + 4.17701I$	0
$u = -1.308590 - 0.115968I$ $a = -0.696518 + 0.024469I$ $b = 0.503697 - 1.177980I$	$0.02376 - 4.17701I$	0
$u = -1.328070 + 0.073496I$ $a = 0.423249 + 0.065006I$ $b = -0.336189 - 1.309520I$	$-4.50996 + 0.84886I$	0
$u = -1.328070 - 0.073496I$ $a = 0.423249 - 0.065006I$ $b = -0.336189 + 1.309520I$	$-4.50996 - 0.84886I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.651715+0.142686I$ $a=-0.14238+1.83709I$ $b=-0.532495+0.403697I$	$0.73525-1.44550I$	0
$u=-0.651715-0.142686I$ $a=-0.14238-1.83709I$ $b=-0.532495-0.403697I$	$0.73525+1.44550I$	0
$u=1.157540+0.662046I$ $a=-1.64394+1.41344I$ $b=0.626325+1.249550I$	$-3.88140+13.13440I$	0
$u=1.157540-0.662046I$ $a=-1.64394-1.41344I$ $b=0.626325-1.249550I$	$-3.88140-13.13440I$	0
$u=1.148410+0.683905I$ $a=1.52729-1.35239I$ $b=-0.50851-1.37155I$	$-8.91379+9.80389I$	0
$u=1.148410-0.683905I$ $a=1.52729+1.35239I$ $b=-0.50851+1.37155I$	$-8.91379-9.80389I$	0
$u=-1.332240+0.128823I$ $a=0.716970+0.179971I$ $b=-0.593328-1.265060I$	$-2.61751+9.23119I$	0
$u=-1.332240-0.128823I$ $a=0.716970-0.179971I$ $b=-0.593328+1.265060I$	$-2.61751-9.23119I$	0
$u=1.170360+0.663622I$ $a=1.68279-1.35634I$ $b=-0.70945-1.29439I$	$-6.4759+18.4604I$	0
$u=1.170360-0.663622I$ $a=1.68279+1.35634I$ $b=-0.70945+1.29439I$	$-6.4759-18.4604I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.097770 + 0.629296I$ $a = 0.672848 - 0.846263I$ $b = 0.345787 - 1.103930I$	$-2.87414 - 6.16357I$	0
$u = -0.097770 - 0.629296I$ $a = 0.672848 + 0.846263I$ $b = 0.345787 + 1.103930I$	$-2.87414 + 6.16357I$	0
$u = -0.058852 + 0.480634I$ $a = -0.976506 + 0.713958I$ $b = -0.320328 + 0.882356I$	$-0.41306 - 1.86476I$	$-0.08533 + 4.23574I$
$u = -0.058852 - 0.480634I$ $a = -0.976506 - 0.713958I$ $b = -0.320328 - 0.882356I$	$-0.41306 + 1.86476I$	$-0.08533 - 4.23574I$
$u = -0.237248 + 0.001998I$ $a = -1.10814 - 3.21322I$ $b = -0.481437 - 0.479931I$	$0.67709 + 1.37274I$	$2.95642 - 4.45072I$
$u = -0.237248 - 0.001998I$ $a = -1.10814 + 3.21322I$ $b = -0.481437 + 0.479931I$	$0.67709 - 1.37274I$	$2.95642 + 4.45072I$
$u = 0.014595 + 0.145747I$ $a = -3.38942 + 4.27535I$ $b = 0.580802 + 0.221013I$	$-0.25476 - 2.59885I$	$1.68242 + 3.17530I$
$u = 0.014595 - 0.145747I$ $a = -3.38942 - 4.27535I$ $b = 0.580802 - 0.221013I$	$-0.25476 + 2.59885I$	$1.68242 - 3.17530I$

II.

$$\boldsymbol{I^u_2 = \langle b,\ -u^5+u^3a+2u^4-u^2a+a^2-2u^2+a+u,\ u^6-u^5-u^4+2u^3-u+1\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^5a+u^4a-u^5+8u^3a-2u^4-3u^2a-5au+2u^2+3a-3u-2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.002190 + 0.295542I$ $a = -0.93136 - 1.30101I$ $b = 0$	$1.89061 + 1.10558I$	$6.66783 - 4.72351I$
$u = -1.002190 + 0.295542I$ $a = 1.59239 - 0.15607I$ $b = 0$	$1.89061 - 2.95419I$	$2.82220 + 4.67955I$
$u = -1.002190 - 0.295542I$ $a = -0.93136 + 1.30101I$ $b = 0$	$1.89061 - 1.10558I$	$6.66783 + 4.72351I$
$u = -1.002190 - 0.295542I$ $a = 1.59239 + 0.15607I$ $b = 0$	$1.89061 + 2.95419I$	$2.82220 - 4.67955I$
$u = 0.428243 + 0.664531I$ $a = 0.045720 + 0.914831I$ $b = 0$	$-1.89061 - 2.95419I$	$-2.90246 + 4.54482I$
$u = 0.428243 + 0.664531I$ $a = -0.815127 - 0.417821I$ $b = 0$	$-1.89061 + 1.10558I$	$0.30406 - 2.63469I$
$u = 0.428243 - 0.664531I$ $a = 0.045720 - 0.914831I$ $b = 0$	$-1.89061 + 2.95419I$	$-2.90246 - 4.54482I$
$u = 0.428243 - 0.664531I$ $a = -0.815127 + 0.417821I$ $b = 0$	$-1.89061 - 1.10558I$	$0.30406 + 2.63469I$
$u = 1.073950 + 0.558752I$ $a = -0.679704 + 0.059778I$ $b = 0$	$3.66314I$	$3.68173 - 3.33422I$
$u = 1.073950 + 0.558752I$ $a = 0.288082 - 0.618530I$ $b = 0$	$7.72290I$	$-0.57335 - 9.26831I$

Solutions to I_2^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$1.073950 - 0.558752I$		
$a =$	$-0.679704 - 0.059778I$	$-3.66314I$	$3.68173 + 3.33422I$
$b =$	0		
$u =$	$1.073950 - 0.558752I$		
$a =$	$0.288082 + 0.618530I$	$-7.72290I$	$-0.57335 + 9.26831I$
$b =$	0		

III. $I_3^u = \langle a^2+b+a-1,\ a^4+a^3-2a^2-a+2,\ u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5a^3-6a^2+a+6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^4 + 2y^3 + 7y^2 + 5y + 1$
c_2, c_4, c_5 c_8	$y^4 + 2y^3 + 3y^2 + y + 1$
c_3	$y^4 - y^3 + 2y^2 + 7y + 4$
c_7, c_{10}	y^4
c_9, c_{11}, c_{12}	$(y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.899232 + 0.400532I$ $b = -0.547424 - 1.120870I$	$-0.98010 + 7.64338I$	$1.53830 - 8.45840I$
$u = -1.00000$ $a = \quad 0.899232 - 0.400532I$ $b = -0.547424 + 1.120870I$	$-0.98010 - 7.64338I$	$1.53830 + 8.45840I$
$u = -1.00000$ $a = -1.39923 + 0.32564I$ $b = \quad 0.547424 + 0.585652I$	$2.62503 + 1.39709I$	$4.96170 - 3.59727I$
$u = -1.00000$ $a = -1.39923 - 0.32564I$ $b = \quad 0.547424 - 0.585652I$	$2.62503 - 1.39709I$	$4.96170 + 3.59727I$

IV. $\boldsymbol{I_4^u = \langle a^5 - 3a^4 + 4a^2 + b + a - 1,\ a^6 - 3a^5 + 5a^3 - a^2 - 2a + 1,\ u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3a^4 + 8a^3 - 8a + 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^6 - y^5 + 4y^4 - 2y^3 + 8y^2 + 1$
c_2, c_4, c_5 c_8	$y^6 + 3y^5 + 4y^4 + 2y^3 + 1$
c_3	$(y^3 - y^2 + 2y - 1)^2$
c_7, c_{10}	y^6
c_9, 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
$u = -1.00000$ $a = -0.897438 + 0.201182I$ $b = 0.498832 - 1.001300I$	$1.37919 - 2.82812I$	$4.90478 + 3.87141I$
$u = -1.00000$ $a = -0.897438 - 0.201182I$ $b = 0.498832 + 1.001300I$	$1.37919 + 2.82812I$	$4.90478 - 3.87141I$
$u = -1.00000$ $a = 0.500000 + 0.273346I$ $b = -0.284920 - 1.115140I$	-2.75839	$0.235367 - 0.997558I$
$u = -1.00000$ $a = 0.500000 - 0.273346I$ $b = -0.284920 + 1.115140I$	-2.75839	$0.235367 + 0.997558I$
$u = -1.00000$ $a = 1.89744 + 0.20118I$ $b = -0.713912 + 0.305839I$	$1.37919 + 2.82812I$	$5.35985 - 0.59776I$
$u = -1.00000$ $a = 1.89744 - 0.20118I$ $b = -0.713912 - 0.305839I$	$1.37919 - 2.82812I$	$5.35985 + 0.59776I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^6(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{128}+64u^{127}+\cdots+8u+1)$
c_2	$(u^2+u+1)^6(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{128}+8u^{127}+\cdots+8u+1)$
c_3	$(u^2-u+1)^6(u^3-u^2+1)^2(u^4+3u^3+4u^2+3u+2)$ $\cdot(u^{128}-8u^{127}+\cdots-97068u+41508)$
c_4	$u^{12}(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{128}-2u^{127}+\cdots+8192u+4096)$
c_5	$(u^2-u+1)^6(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{128}+8u^{127}+\cdots+8u+1)$
c_6	$(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2$ $\cdot(u^{128}-4u^{127}+\cdots-59111052u+3579401)$
c_7	$u^{10}(u^6+u^5+\cdots+u+1)^2(u^{128}+3u^{127}+\cdots+6144u+1024)$
c_8	$u^{12}(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{128}-2u^{127}+\cdots+8192u+4096)$
c_9	$((u+1)^{10})(u^6-u^5+\cdots-u+1)^2(u^{128}+13u^{127}+\cdots+3u+1)$
c_{10}	$u^{10}(u^6-u^5+\cdots-u+1)^2(u^{128}+3u^{127}+\cdots+6144u+1024)$
c_{11}	$(u+1)^{10}(u^6+3u^5+5u^4+4u^3+2u^2+u+1)^2$ $\cdot(u^{128}-59u^{127}+\cdots+37u+1)$
c_{12}	$((u-1)^{10})(u^6+u^5+\cdots+u+1)^2(u^{128}+13u^{127}+\cdots+3u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^4+2y^3+\cdots+5y+1)(y^6-y^5+\cdots+8y^2+1)$ $\cdot(y^{128}+8y^{127}+\cdots+64y+1)$
c_2, c_5	$(y^2+y+1)^6(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{128}+64y^{127}+\cdots+8y+1)$
c_3	$(y^2+y+1)^6(y^3-y^2+2y-1)^2(y^4-y^3+2y^2+7y+4)$ $\cdot(y^{128}-48y^{127}+\cdots+110992594392y+1722914064)$
c_4, c_8	$y^{12}(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{128}+70y^{127}+\cdots+520093696y+16777216)$
c_6	$(y^4+2y^3+7y^2+5y+1)(y^6-y^5+4y^4-2y^3+8y^2+1)$ $\cdot(y^6+y^5+5y^4+6y^2+3y+1)^2$ $\cdot(y^{128}-56y^{127}+\cdots-158438371667520y+12812111518801)$
c_7, c_{10}	$y^{10}(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot(y^{128}-69y^{127}+\cdots-27787264y+1048576)$
c_9, c_{12}	$(y-1)^{10}(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot(y^{128}-59y^{127}+\cdots+37y+1)$
c_{11}	$(y-1)^{10}(y^6+y^5+5y^4+6y^2+3y+1)^2$ $\cdot(y^{128}+33y^{127}+\cdots-4663y+1)$