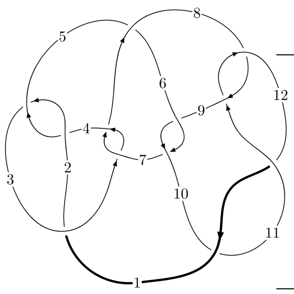
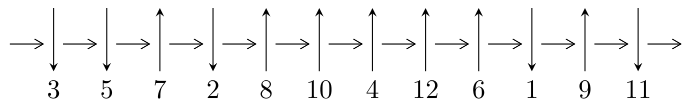
$12a_{0039}$ $(K12a_{0039})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -8.97511 \times 10^{37} u^{113} + 7.35370 \times 10^{38} u^{112} + \cdots + 2.85889 \times 10^{36} b + 1.14745 \times 10^{38}, \\
& -5.68472 \times 10^{37} u^{113} + 5.72364 \times 10^{38} u^{112} + \cdots + 2.85889 \times 10^{36} a + 1.75186 \times 10^{38}, \\
& u^{114} - 8u^{113} + \cdots - 10u + 1 \rangle \\
I_2^u = \langle & 3a^5u + 12a^5 - 19a^4u - 11a^4 - 32a^3u + 15a^3 - 27a^2u - 43a^2 - 64au + 13b - 35a - 15u - 8, \\
& a^6 - a^5u - a^5 - 4a^4u + a^4 - a^3u - 2a^3 - 7a^2u - 4a^2 - 3au - a - u,\ u^2 + u + 1 \rangle \\
I_3^u = \langle & b,\ -u^4 + u^3 - u^2 + a - 1,\ u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 135 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. $\boldsymbol{I_1^u = \langle -8.98 \times 10^{37} u^{113} + 7.35 \times 10^{38} u^{112} + \cdots + 2.86 \times 10^{36} b + 1.15 \times 10^{38},\ -5.68 \times 10^{37} u^{113} + 5.72 \times 10^{38} u^{112} + \cdots + 2.86 \times 10^{36} a + 1.75 \times 10^{38},\ u^{114} - 8u^{113} + \cdots - 10u + 1 \rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 19.8844u^{113} - 200.205u^{112} + \cdots + 518.572u - 61.2777 \\ 31.3937u^{113} - 257.222u^{112} + \cdots + 385.856u - 40.1363 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -51.3794u^{113} + 326.932u^{112} + \cdots + 7.96086u - 6.96895 \\ 69.5096u^{113} - 585.675u^{112} + \cdots + 960.466u - 102.166 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 64.4029u^{113} - 512.039u^{112} + \cdots + 716.519u - 81.1594 \\ -8.85702u^{113} + 89.4939u^{112} + \cdots - 201.213u + 22.9378 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} -22.3300u^{113} + 29.1895u^{112} + \cdots + 766.379u - 89.5923 \\ 90.2870u^{113} - 772.336u^{112} + \cdots + 1308.83u - 139.642 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -112.617u^{113} + 801.526u^{112} + \cdots - 542.454u + 50.0496 \\ 90.2870u^{113} - 772.336u^{112} + \cdots + 1308.83u - 139.642 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -24.7381u^{113} + 116.628u^{112} + \cdots + 306.583u - 42.8522 \\ 64.8502u^{113} - 546.552u^{112} + \cdots + 891.089u - 94.0285 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -15.7662u^{113} + 115.090u^{112} + \cdots - 86.6471u + 5.47371$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{114} + 52u^{113} + \cdots + 62u + 1$
c_2, c_4	$u^{114} - 12u^{113} + \cdots + 22u - 1$
c_3, c_7	$u^{114} - 3u^{113} + \cdots - 3072u + 512$
c_5	$u^{114} + 4u^{113} + \cdots + 1228166u - 118529$
c_6, c_9	$u^{114} - 2u^{113} + \cdots + 16384u - 4096$
c_8, c_{11}	$u^{114} + 8u^{113} + \cdots + 10u + 1$
c_{10}, c_{12}	$u^{114} + 36u^{113} + \cdots + 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{114} + 32y^{113} + \cdots + 6582y + 1$
c_2, c_4	$y^{114} - 52y^{113} + \cdots - 62y + 1$
c_3, c_7	$y^{114} - 63y^{113} + \cdots - 9437184y + 262144$
c_5	$y^{114} - 60y^{113} + \cdots - 2033070061434y + 14049123841$
c_6, c_9	$y^{114} - 70y^{113} + \cdots - 251658240y + 16777216$
c_8, c_{11}	$y^{114} + 36y^{113} + \cdots + 10y + 1$
c_{10}, c_{12}	$y^{114} + 92y^{113} + \cdots + 4042y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.000620 + 0.995927I$ $a = 1.299800 - 0.241663I$ $b = 0.909069 - 0.395900I$	$-3.21254 - 4.24812I$	0
$u = 0.000620 - 0.995927I$ $a = 1.299800 + 0.241663I$ $b = 0.909069 + 0.395900I$	$-3.21254 + 4.24812I$	0
$u = -0.588448 + 0.865197I$ $a = -0.781789 - 0.376818I$ $b = 0.336616 - 0.121889I$	$0.46811 - 2.32542I$	0
$u = -0.588448 - 0.865197I$ $a = -0.781789 + 0.376818I$ $b = 0.336616 + 0.121889I$	$0.46811 + 2.32542I$	0
$u = 0.778086 + 0.701982I$ $a = 0.231260 - 0.133436I$ $b = -0.668937 - 0.129520I$	$3.31863 - 0.81707I$	0
$u = 0.778086 - 0.701982I$ $a = 0.231260 + 0.133436I$ $b = -0.668937 + 0.129520I$	$3.31863 + 0.81707I$	0
$u = -0.505823 + 0.918744I$ $a = 0.73874 - 2.25181I$ $b = -0.312072 - 0.402365I$	$-1.78702 - 2.46027I$	0
$u = -0.505823 - 0.918744I$ $a = 0.73874 + 2.25181I$ $b = -0.312072 + 0.402365I$	$-1.78702 + 2.46027I$	0
$u = 0.678178 + 0.804338I$ $a = 0.138606 + 0.188536I$ $b = 0.969106 - 0.620652I$	$1.08443 - 3.92816I$	0
$u = 0.678178 - 0.804338I$ $a = 0.138606 - 0.188536I$ $b = 0.969106 + 0.620652I$	$1.08443 + 3.92816I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.096539 + 1.054780I$ $a = -1.077720 - 0.337003I$ $b = -0.832093 - 0.241574I$	$-2.66766 - 0.82890I$	0
$u = -0.096539 - 1.054780I$ $a = -1.077720 + 0.337003I$ $b = -0.832093 + 0.241574I$	$-2.66766 + 0.82890I$	0
$u = -0.243867 + 1.045790I$ $a = 1.14280 + 1.22814I$ $b = -0.831060 + 0.215460I$	$-2.72201 - 3.15265I$	0
$u = -0.243867 - 1.045790I$ $a = 1.14280 - 1.22814I$ $b = -0.831060 - 0.215460I$	$-2.72201 + 3.15265I$	0
$u = -0.332538 + 1.023910I$ $a = 0.50463 + 1.46650I$ $b = -0.137018 + 0.888476I$	$-1.00115 - 1.37350I$	0
$u = -0.332538 - 1.023910I$ $a = 0.50463 - 1.46650I$ $b = -0.137018 - 0.888476I$	$-1.00115 + 1.37350I$	0
$u = -0.689886 + 0.597095I$ $a = -0.976474 + 0.359837I$ $b = 1.057270 - 0.233439I$	$1.74936 - 3.74948I$	0
$u = -0.689886 - 0.597095I$ $a = -0.976474 - 0.359837I$ $b = 1.057270 + 0.233439I$	$1.74936 + 3.74948I$	0
$u = -0.241829 + 1.089860I$ $a = -0.85277 - 1.16507I$ $b = -0.348992 - 1.012170I$	$-1.63970 - 5.47705I$	0
$u = -0.241829 - 1.089860I$ $a = -0.85277 + 1.16507I$ $b = -0.348992 + 1.012170I$	$-1.63970 + 5.47705I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.750758 + 0.827314I$ $a = 0.129507 - 0.152369I$ $b = -0.742772 + 0.683809I$	$3.89107 + 0.23526I$	0
$u = 0.750758 - 0.827314I$ $a = 0.129507 + 0.152369I$ $b = -0.742772 - 0.683809I$	$3.89107 - 0.23526I$	0
$u = -0.406450 + 0.778487I$ $a = -0.43254 + 2.00319I$ $b = -0.065543 + 0.578177I$	$-1.29179 - 1.43912I$	0
$u = -0.406450 - 0.778487I$ $a = -0.43254 - 2.00319I$ $b = -0.065543 - 0.578177I$	$-1.29179 + 1.43912I$	0
$u = -0.742953 + 0.844200I$ $a = -0.883932 + 0.716195I$ $b = 0.198997 - 1.006560I$	$1.45699 - 0.62875I$	0
$u = -0.742953 - 0.844200I$ $a = -0.883932 - 0.716195I$ $b = 0.198997 + 1.006560I$	$1.45699 + 0.62875I$	0
$u = 0.725849 + 0.862263I$ $a = -1.18363 + 1.21262I$ $b = 0.728078 + 0.797809I$	$0.27128 + 1.43083I$	0
$u = 0.725849 - 0.862263I$ $a = -1.18363 - 1.21262I$ $b = 0.728078 - 0.797809I$	$0.27128 - 1.43083I$	0
$u = 0.173450 + 0.850343I$ $a = -0.49445 + 2.33843I$ $b = 1.138020 + 0.614402I$	$-1.12370 + 7.14011I$	0
$u = 0.173450 - 0.850343I$ $a = -0.49445 - 2.33843I$ $b = 1.138020 - 0.614402I$	$-1.12370 - 7.14011I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.717891 + 0.875647I$ $a = -3.07883 - 0.87104I$ $b = 0.863296 - 0.060419I$	$-0.06015 - 2.74428I$	0
$u = -0.717891 - 0.875647I$ $a = -3.07883 + 0.87104I$ $b = 0.863296 + 0.060419I$	$-0.06015 + 2.74428I$	0
$u = -0.154972 + 0.850760I$ $a = -0.561945 + 1.017580I$ $b = -0.216470 + 0.554423I$	$-1.42767 - 1.72251I$	0
$u = -0.154972 - 0.850760I$ $a = -0.561945 - 1.017580I$ $b = -0.216470 - 0.554423I$	$-1.42767 + 1.72251I$	0
$u = -0.796337 + 0.809504I$ $a = -1.99032 - 0.52371I$ $b = 1.282890 + 0.568619I$	$4.87599 + 5.08003I$	0
$u = -0.796337 - 0.809504I$ $a = -1.99032 + 0.52371I$ $b = 1.282890 - 0.568619I$	$4.87599 - 5.08003I$	0
$u = 0.862093 + 0.740048I$ $a = 2.17350 + 0.06866I$ $b = -1.043560 + 0.201924I$	$4.61798 - 2.51018I$	0
$u = 0.862093 - 0.740048I$ $a = 2.17350 - 0.06866I$ $b = -1.043560 - 0.201924I$	$4.61798 + 2.51018I$	0
$u = 0.898219 + 0.698482I$ $a = 1.52519 + 0.09751I$ $b = -1.29527 + 0.68509I$	$8.8621 - 11.7414I$	0
$u = 0.898219 - 0.698482I$ $a = 1.52519 - 0.09751I$ $b = -1.29527 - 0.68509I$	$8.8621 + 11.7414I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.875646 + 0.726930I$ $a = 0.376919 + 0.331696I$ $b = -0.361892 - 1.145570I$	$5.87522 - 5.16417I$	0
$u = 0.875646 - 0.726930I$ $a = 0.376919 - 0.331696I$ $b = -0.361892 + 1.145570I$	$5.87522 + 5.16417I$	0
$u = 0.723942 + 0.887704I$ $a = -0.269635 - 0.247517I$ $b = 0.772420 - 0.738069I$	$0.19214 + 4.10193I$	0
$u = 0.723942 - 0.887704I$ $a = -0.269635 + 0.247517I$ $b = 0.772420 + 0.738069I$	$0.19214 - 4.10193I$	0
$u = 0.898278 + 0.719800I$ $a = -1.70037 + 0.00065I$ $b = 1.34759 - 0.48295I$	$11.08030 - 5.74617I$	0
$u = 0.898278 - 0.719800I$ $a = -1.70037 - 0.00065I$ $b = 1.34759 + 0.48295I$	$11.08030 + 5.74617I$	0
$u = -0.786807 + 0.841252I$ $a = 2.21659 + 0.68914I$ $b = -1.313740 - 0.317656I$	$6.59591 - 0.71733I$	0
$u = -0.786807 - 0.841252I$ $a = 2.21659 - 0.68914I$ $b = -1.313740 + 0.317656I$	$6.59591 + 0.71733I$	0
$u = 0.863492 + 0.763620I$ $a = -0.211292 - 0.405885I$ $b = -0.020762 + 1.116940I$	$6.62880 - 0.20671I$	0
$u = 0.863492 - 0.763620I$ $a = -0.211292 + 0.405885I$ $b = -0.020762 - 1.116940I$	$6.62880 + 0.20671I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.679597 + 0.934225I$ $a = -0.524106 + 1.175500I$ $b = 0.908792 + 0.587168I$	$0.66698 + 9.18244I$	0
$u = 0.679597 - 0.934225I$ $a = -0.524106 - 1.175500I$ $b = 0.908792 - 0.587168I$	$0.66698 - 9.18244I$	0
$u = -0.252668 + 1.131290I$ $a = -0.14021 - 1.47612I$ $b = 1.263250 - 0.412499I$	$3.25741 - 5.78411I$	0
$u = -0.252668 - 1.131290I$ $a = -0.14021 + 1.47612I$ $b = 1.263250 + 0.412499I$	$3.25741 + 5.78411I$	0
$u = -0.362638 + 1.105360I$ $a = 0.119821 - 0.407667I$ $b = 1.269690 + 0.265039I$	$3.93592 - 1.77117I$	0
$u = -0.362638 - 1.105360I$ $a = 0.119821 + 0.407667I$ $b = 1.269690 - 0.265039I$	$3.93592 + 1.77117I$	0
$u = -0.735590 + 0.904142I$ $a = 0.725726 - 0.947975I$ $b = 0.269136 + 1.029520I$	$1.27291 - 4.99313I$	0
$u = -0.735590 - 0.904142I$ $a = 0.725726 + 0.947975I$ $b = 0.269136 - 1.029520I$	$1.27291 + 4.99313I$	0
$u = -0.222906 + 1.145300I$ $a = 0.07725 + 1.78101I$ $b = -1.247070 + 0.633850I$	$1.20391 - 11.48680I$	0
$u = -0.222906 - 1.145300I$ $a = 0.07725 - 1.78101I$ $b = -1.247070 - 0.633850I$	$1.20391 + 11.48680I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.010347 + 0.831981I$ $a = -1.15995 + 2.40469I$ $b = 0.708598 + 0.443190I$	$-3.84041 - 0.66669I$	0
$u = -0.010347 - 0.831981I$ $a = -1.15995 - 2.40469I$ $b = 0.708598 - 0.443190I$	$-3.84041 + 0.66669I$	0
$u = -0.816914 + 0.122705I$ $a = 1.55439 + 0.32983I$ $b = -1.28913 + 0.58849I$	$5.51494 - 8.11158I$	0
$u = -0.816914 - 0.122705I$ $a = 1.55439 - 0.32983I$ $b = -1.28913 - 0.58849I$	$5.51494 + 8.11158I$	0
$u = -0.566636 + 1.030070I$ $a = 0.24814 + 1.63336I$ $b = -1.020720 + 0.318129I$	$0.16822 - 5.53256I$	0
$u = -0.566636 - 1.030070I$ $a = 0.24814 - 1.63336I$ $b = -1.020720 - 0.318129I$	$0.16822 + 5.53256I$	0
$u = -0.630734 + 0.992877I$ $a = 0.020094 - 1.386640I$ $b = 0.947651 + 0.177047I$	$0.58805 - 1.33411I$	0
$u = -0.630734 - 0.992877I$ $a = 0.020094 + 1.386640I$ $b = 0.947651 - 0.177047I$	$0.58805 + 1.33411I$	0
$u = -0.408533 + 1.107270I$ $a = -0.390396 + 0.069212I$ $b = -1.247370 - 0.535713I$	$2.34702 + 3.84107I$	0
$u = -0.408533 - 1.107270I$ $a = -0.390396 - 0.069212I$ $b = -1.247370 + 0.535713I$	$2.34702 - 3.84107I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.739393 + 0.920177I$ $a = 0.949008 - 0.796004I$ $b = -0.652408 - 0.740624I$	$3.60690 + 5.42425I$	0
$u = 0.739393 - 0.920177I$ $a = 0.949008 + 0.796004I$ $b = -0.652408 + 0.740624I$	$3.60690 - 5.42425I$	0
$u = -0.811812 + 0.071800I$ $a = -1.69478 - 0.22137I$ $b = 1.322800 - 0.345373I$	$7.31771 - 2.26748I$	0
$u = -0.811812 - 0.071800I$ $a = -1.69478 + 0.22137I$ $b = 1.322800 + 0.345373I$	$7.31771 + 2.26748I$	0
$u = 0.891543 + 0.789415I$ $a = -1.96034 + 0.40220I$ $b = 1.43062 + 0.20234I$	$12.42200 - 0.63977I$	0
$u = 0.891543 - 0.789415I$ $a = -1.96034 - 0.40220I$ $b = 1.43062 - 0.20234I$	$12.42200 + 0.63977I$	0
$u = 0.061394 + 0.805031I$ $a = 1.34929 - 0.92636I$ $b = 0.463501 - 0.874281I$	$-3.25567 + 1.60314I$	0
$u = 0.061394 - 0.805031I$ $a = 1.34929 + 0.92636I$ $b = 0.463501 + 0.874281I$	$-3.25567 - 1.60314I$	0
$u = -0.765613 + 0.920057I$ $a = 2.48939 + 1.24624I$ $b = -1.305530 + 0.370264I$	$6.35197 - 5.12982I$	0
$u = -0.765613 - 0.920057I$ $a = 2.48939 - 1.24624I$ $b = -1.305530 - 0.370264I$	$6.35197 + 5.12982I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.883195 + 0.817480I$ $a = 1.94249 - 0.50826I$ $b = -1.38893 - 0.46916I$	$11.17360 + 5.50666I$	0
$u = 0.883195 - 0.817480I$ $a = 1.94249 + 0.50826I$ $b = -1.38893 + 0.46916I$	$11.17360 - 5.50666I$	0
$u = -0.655716 + 0.438810I$ $a = 0.730026 - 0.292071I$ $b = -1.042660 - 0.187766I$	$1.86059 + 0.80843I$	$7.56074 + 0.I$
$u = -0.655716 - 0.438810I$ $a = 0.730026 + 0.292071I$ $b = -1.042660 + 0.187766I$	$1.86059 - 0.80843I$	$7.56074 + 0.I$
$u = -0.759299 + 0.945159I$ $a = -2.46488 - 1.39050I$ $b = 1.276060 - 0.606390I$	$4.45750 - 10.93450I$	0
$u = -0.759299 - 0.945159I$ $a = -2.46488 + 1.39050I$ $b = 1.276060 + 0.606390I$	$4.45750 + 10.93450I$	0
$u = 0.153707 + 0.770319I$ $a = 0.61655 - 2.15327I$ $b = -1.083030 - 0.414307I$	$1.02118 + 1.99074I$	0
$u = 0.153707 - 0.770319I$ $a = 0.61655 + 2.15327I$ $b = -1.083030 + 0.414307I$	$1.02118 - 1.99074I$	0
$u = 0.713346 + 0.999659I$ $a = -0.237296 - 0.651586I$ $b = -0.661749 + 0.185958I$	$2.41781 + 6.46931I$	0
$u = 0.713346 - 0.999659I$ $a = -0.237296 + 0.651586I$ $b = -0.661749 - 0.185958I$	$2.41781 - 6.46931I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.744318 + 0.054975I$ $a = 0.097784 + 0.153327I$ $b = -0.228347 - 1.036310I$	$2.15207 - 2.22766I$	$7.39841 + 3.29919I$
$u = -0.744318 - 0.054975I$ $a = 0.097784 - 0.153327I$ $b = -0.228347 + 1.036310I$	$2.15207 + 2.22766I$	$7.39841 - 3.29919I$
$u = 0.777297 + 0.998087I$ $a = 1.063530 + 0.119091I$ $b = 0.029238 - 1.107390I$	$5.89977 + 6.30984I$	0
$u = 0.777297 - 0.998087I$ $a = 1.063530 - 0.119091I$ $b = 0.029238 + 1.107390I$	$5.89977 - 6.30984I$	0
$u = 0.766287 + 1.010500I$ $a = 2.09202 - 1.41117I$ $b = -1.044580 - 0.250298I$	$3.78052 + 8.57212I$	0
$u = 0.766287 - 1.010500I$ $a = 2.09202 + 1.41117I$ $b = -1.044580 + 0.250298I$	$3.78052 - 8.57212I$	0
$u = 0.818725 + 0.975456I$ $a = 1.20803 - 1.01064I$ $b = -1.39287 + 0.42869I$	$10.67890 + 0.78962I$	0
$u = 0.818725 - 0.975456I$ $a = 1.20803 + 1.01064I$ $b = -1.39287 - 0.42869I$	$10.67890 - 0.78962I$	0
$u = 0.767274 + 1.022710I$ $a = -1.036480 - 0.402874I$ $b = -0.397968 + 1.143140I$	$4.95866 + 11.26670I$	0
$u = 0.767274 - 1.022710I$ $a = -1.036480 + 0.402874I$ $b = -0.397968 - 1.143140I$	$4.95866 - 11.26670I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.807743 + 0.997389I$ $a = -1.45172 + 1.18836I$ $b = 1.43166 - 0.15923I$	$11.77180 + 6.92546I$	0
$u = 0.807743 - 0.997389I$ $a = -1.45172 - 1.18836I$ $b = 1.43166 + 0.15923I$	$11.77180 - 6.92546I$	0
$u = 0.774290 + 1.036290I$ $a = -1.80586 + 1.66123I$ $b = 1.33094 + 0.51022I$	$10.0951 + 11.9359I$	0
$u = 0.774290 - 1.036290I$ $a = -1.80586 - 1.66123I$ $b = 1.33094 - 0.51022I$	$10.0951 - 11.9359I$	0
$u = -0.705176$ $a = 2.33825$ $b = -0.891329$	0.696942	9.32960
$u = 0.764052 + 1.045550I$ $a = 1.82245 - 1.77530I$ $b = -1.28060 - 0.70154I$	$7.7842 + 17.8937I$	0
$u = 0.764052 - 1.045550I$ $a = 1.82245 + 1.77530I$ $b = -1.28060 + 0.70154I$	$7.7842 - 17.8937I$	0
$u = 0.259431 + 0.408406I$ $a = 0.92680 - 1.69358I$ $b = -1.052680 + 0.165594I$	$2.00261 - 0.21719I$	$5.54971 + 1.39301I$
$u = 0.259431 - 0.408406I$ $a = 0.92680 + 1.69358I$ $b = -1.052680 - 0.165594I$	$2.00261 + 0.21719I$	$5.54971 - 1.39301I$
$u = 0.398941 + 0.245288I$ $a = -1.35604 + 1.31786I$ $b = 1.107120 - 0.472400I$	$0.59513 - 5.04741I$	$3.03766 + 6.30161I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.398941 - 0.245288I$ $a = -1.35604 - 1.31786I$ $b = 1.107120 + 0.472400I$	$0.59513 + 5.04741I$	$3.03766 - 6.30161I$
$u = -0.385081$ $a = -0.378875$ $b = -0.442316$	0.909019	11.6240
$u = 0.108368 + 0.102060I$ $a = -4.77225 + 0.35493I$ $b = 0.330233 + 0.607236I$	$-1.72924 - 0.76603I$	$-3.11872 + 1.37388I$
$u = 0.108368 - 0.102060I$ $a = -4.77225 - 0.35493I$ $b = 0.330233 - 0.607236I$	$-1.72924 + 0.76603I$	$-3.11872 - 1.37388I$

II.

$\boldsymbol{I_2^u = \langle 3a^5u - 19a^4u + \cdots - 35a - 8,\ -a^5u - 4a^4u + \cdots - 4a^2 - a,\ u^2 + u + 1\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ -0.230769a^5u + 1.46154a^4u + \cdots + 2.69231a + 0.615385 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.538462a^5u - 0.0769231a^4u + \cdots + 0.384615a + 1.23077 \\ 0.153846a^5u + 0.692308a^4u + \cdots + 1.53846a + 1.92308 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.0769231a^5u - 0.846154a^4u + \cdots - 2.76923a - 0.461538 \\ 0.461538a^5u + 0.0769231a^4u + \cdots + 3.61538a + 0.769231 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.538462a^5u - 0.0769231a^4u + \cdots + 0.384615a + 1.23077 \\ 0.153846a^5u + 0.692308a^4u + \cdots + 1.53846a + 1.92308 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.384615a^5u - 0.769231a^4u + \cdots - 1.15385a - 0.692308 \\ 0.153846a^5u + 0.692308a^4u + \cdots + 1.53846a + 1.92308 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0769231a^5u - 0.153846a^4u + \cdots - 2.23077a - 0.538462 \\ -0.0769231a^5u + 0.153846a^4u + \cdots + 1.23077a + 1.53846 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -\frac{8}{13}a^5u - \frac{32}{13}a^5 + \frac{55}{13}a^4u + \frac{64}{13}a^4 + \frac{68}{13}a^3u - \frac{40}{13}a^3 - \frac{32}{13}a^2u + \frac{132}{13}a^2 + \frac{136}{13}au + \frac{76}{13}a + \frac{40}{13}u + \frac{56}{13}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = -0.104427 - 1.024660I$ $b = -0.428243 - 0.664531I$	$-1.89061 - 2.95419I$	$-0.76561 + 6.31197I$
$u = -0.500000 + 0.866025I$ $a = -0.67283 - 1.28640I$ $b = 1.002190 - 0.295542I$	$1.89061 - 2.95419I$	$7.73749 + 4.22314I$
$u = -0.500000 + 0.866025I$ $a = -0.160939 - 0.449445I$ $b = 1.002190 + 0.295542I$	$1.89061 - 1.10558I$	$4.53097 + 2.95636I$
$u = -0.500000 + 0.866025I$ $a = -0.288082 + 0.269440I$ $b = -1.073950 - 0.558752I$	$3.66314I$	$-0.57335 - 1.75283I$
$u = -0.500000 + 0.866025I$ $a = 0.67970 + 1.59070I$ $b = -1.073950 + 0.558752I$	$-7.72290I$	$3.68173 + 7.68692I$
$u = -0.500000 + 0.866025I$ $a = 1.04658 + 1.76640I$ $b = -0.428243 + 0.664531I$	$-1.89061 - 1.10558I$	$-4.61123 + 3.09109I$
$u = -0.500000 - 0.866025I$ $a = -0.104427 + 1.024660I$ $b = -0.428243 + 0.664531I$	$-1.89061 + 2.95419I$	$-0.76561 - 6.31197I$
$u = -0.500000 - 0.866025I$ $a = -0.67283 + 1.28640I$ $b = 1.002190 + 0.295542I$	$1.89061 + 2.95419I$	$7.73749 - 4.22314I$
$u = -0.500000 - 0.866025I$ $a = -0.160939 + 0.449445I$ $b = 1.002190 - 0.295542I$	$1.89061 + 1.10558I$	$4.53097 - 2.95636I$
$u = -0.500000 - 0.866025I$ $a = -0.288082 - 0.269440I$ $b = -1.073950 + 0.558752I$	$-3.66314I$	$-0.57335 + 1.75283I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.500000 - 0.866025I$ $a = 0.67970 - 1.59070I$ $b = -1.073950 - 0.558752I$	$7.72290I$	$3.68173 - 7.68692I$
$u = -0.500000 - 0.866025I$ $a = 1.04658 - 1.76640I$ $b = -0.428243 - 0.664531I$	$-1.89061 + 1.10558I$	$-4.61123 - 3.09109I$

III.

$$I_3^u = \langle b,\ -u^4+u^3-u^2+a-1,\ u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1\rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^4-u^3+u^2+1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^4-u^3+u^2+1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} -u^5-u \\ -u^5-u^3-u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^3 \\ -u^5-u^3-u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^4-2u^3+u^2+1 \\ u^5+u^3+u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^8-u^7-4u^3+2u^2+2u+2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_7	u^9
c_4	$(u+1)^9$
c_5	$u^9 + 5u^8 + 12u^7 + 15u^6 + 9u^5 - u^4 - 4u^3 - 2u^2 + u + 1$
c_6	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$
c_8	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_9	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_{10}	$u^9 - 3u^8 + 8u^7 - 13u^6 + 17u^5 - 17u^4 + 12u^3 - 6u^2 + u + 1$
c_{11}	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_{12}	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_7	y^9
c_5	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$
c_6, c_9	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_8, c_{11}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_{10}, c_{12}	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.140343 + 0.966856I$ $a = 0.457852 + 1.072010I$ $b = 0$	$-3.42837 - 2.09337I$	$-3.06656 + 3.71284I$
$u = -0.140343 - 0.966856I$ $a = 0.457852 - 1.072010I$ $b = 0$	$-3.42837 + 2.09337I$	$-3.06656 - 3.71284I$
$u = -0.628449 + 0.875112I$ $a = -1.63880 - 0.65075I$ $b = 0$	$-1.02799 - 2.45442I$	$-4.16828 + 1.00072I$
$u = -0.628449 - 0.875112I$ $a = -1.63880 + 0.65075I$ $b = 0$	$-1.02799 + 2.45442I$	$-4.16828 - 1.00072I$
$u = 0.796005 + 0.733148I$ $a = 0.522253 + 0.392004I$ $b = 0$	$2.72642 - 1.33617I$	$2.51011 + 2.54413I$
$u = 0.796005 - 0.733148I$ $a = 0.522253 - 0.392004I$ $b = 0$	$2.72642 + 1.33617I$	$2.51011 - 2.54413I$
$u = 0.728966 + 0.986295I$ $a = 0.425734 - 0.444312I$ $b = 0$	$1.95319 + 7.08493I$	$1.70570 - 8.17350I$
$u = 0.728966 - 0.986295I$ $a = 0.425734 + 0.444312I$ $b = 0$	$1.95319 - 7.08493I$	$1.70570 + 8.17350I$
$u = -0.512358$ $a = 1.46592$ $b = 0$	-0.446489	2.03810

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^9(u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2$ $\cdot(u^{114}+52u^{113}+\cdots+62u+1)$
c_2	$((u-1)^9)(u^6+u^5+\cdots+u+1)^2(u^{114}-12u^{113}+\cdots+22u-1)$
c_3	$u^9(u^6-u^5+\cdots-u+1)^2(u^{114}-3u^{113}+\cdots-3072u+512)$
c_4	$((u+1)^9)(u^6-u^5+\cdots-u+1)^2(u^{114}-12u^{113}+\cdots+22u-1)$
c_5	$(u^6+3u^5+5u^4+4u^3+2u^2+u+1)^2$ $\cdot(u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1)$ $\cdot(u^{114}+4u^{113}+\cdots+1228166u-118529)$
c_6	$u^{12}(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)$ $\cdot(u^{114}-2u^{113}+\cdots+16384u-4096)$
c_7	$u^9(u^6+u^5+\cdots+u+1)^2(u^{114}-3u^{113}+\cdots-3072u+512)$
c_8	$(u^2+u+1)^6(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(u^{114}+8u^{113}+\cdots+10u+1)$
c_9	$u^{12}(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{114}-2u^{113}+\cdots+16384u-4096)$
c_{10}	$(u^2-u+1)^6$ $\cdot(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{114}+36u^{113}+\cdots+10u+1)$
c_{11}	$(u^2-u+1)^6(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)$ $\cdot(u^{114}+8u^{113}+\cdots+10u+1)$
c_{12}	$(u^2+u+1)^6$ $\cdot(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{114}+36u^{113}+\cdots+10u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^9(y^6+y^5+5y^4+6y^2+3y+1)^2$ $\cdot\,(y^{114}+32y^{113}+\cdots+6582y+1)$
c_2, c_4	$(y-1)^9(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot\,(y^{114}-52y^{113}+\cdots-62y+1)$
c_3, c_7	$y^9(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot\,(y^{114}-63y^{113}+\cdots-9437184y+262144)$
c_5	$(y^6+y^5+5y^4+6y^2+3y+1)^2$ $\cdot\,(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot\,(y^{114}-60y^{113}+\cdots-2033070061434y+14049123841)$
c_6, c_9	$y^{12}(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot\,(y^{114}-70y^{113}+\cdots-251658240y+16777216)$
c_8, c_{11}	$(y^2+y+1)^6$ $\cdot\,(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot\,(y^{114}+36y^{113}+\cdots+10y+1)$
c_{10}, c_{12}	$((y^2+y+1)^6)(y^9+7y^8+\cdots+13y-1)$ $\cdot\,(y^{114}+92y^{113}+\cdots+4042y+1)$