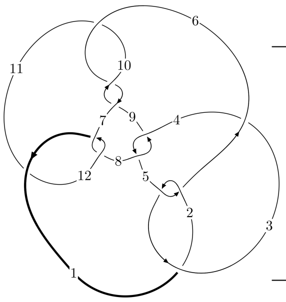
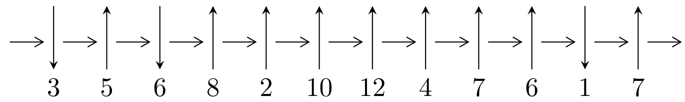
$12n_{0052}$ ($K12n_{0052}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -31828697846u^{32} + 114828956540u^{31} + \cdots + 560421961026b + 532030527306,\\
&\quad -197273519317u^{32} + 385887384126u^{31} + \cdots + 1120843922052a + 266870259643,\\
&\quad u^{33} - 2u^{32} + \cdots + 5u + 4\rangle\\
I_2^u &= \langle -u^{19}a + 2u^{19} + \cdots + 2a + 1,\ -2u^{19} + 3u^{18} + \cdots - 4a + 3,\ u^{20} - u^{19} + \cdots - 2u + 1\rangle\\
I_3^u &= \langle -u^4a - 2u^2a + u^3 + au + b - a + u - 1,\ 2u^4a + 4u^3a + 6u^2a - 3u^3 + a^2 + 4au - 5u^2 + 2a - 8u - 4,\\
&\quad u^5 + u^4 + 2u^3 + u^2 + u + 1\rangle\\
I_4^u &= \langle b + 1,\ 2a - 2u + 3,\ u^2 - u + 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 85 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.

$$\boldsymbol{I^u_1 = \langle -3.18\times 10^{10}u^{32}+1.15\times 10^{11}u^{31}+\cdots+5.60\times 10^{11}b+5.32\times 10^{11},\ -1.97\times 10^{11}u^{32}+3.86\times 10^{11}u^{31}+\cdots+1.12\times 10^{12}a+2.67\times 10^{11},\ u^{33}-2u^{32}+\cdots+5u+4\rangle}$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 \\ u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5+u^3+u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.176004u^{32}-0.344283u^{31}+\cdots-1.32385u-0.238098 \\ 0.0567942u^{32}-0.204897u^{31}+\cdots-0.869757u-0.949339 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.119210u^{32}-0.139386u^{31}+\cdots-0.454097u+0.711242 \\ 0.0567942u^{32}-0.204897u^{31}+\cdots-0.869757u-0.949339 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.207329u^{32}-0.154336u^{31}+\cdots-0.127694u+1.18034 \\ 0.00997898u^{32}-0.246238u^{31}+\cdots-1.25132u-0.881877 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.322990u^{32}-0.306718u^{31}+\cdots+0.284165u+1.39874 \\ 0.0620557u^{32}-0.436306u^{31}+\cdots-2.88278u-1.94300 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.442680u^{32}-0.385581u^{31}+\cdots+0.406459u+1.30251 \\ 0.00301080u^{32}-0.502789u^{31}+\cdots-2.70870u-1.78276 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.203780u^{32}-0.167332u^{31}+\cdots+0.738262u+0.687499 \\ 0.00526157u^{32}-0.231409u^{31}+\cdots-1.01302u-0.993665 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{299977318733}{280210980513}u^{32} - \frac{1019459365581}{373614640684}u^{31} + \cdots - \frac{12370860698239}{1120843922052}u + \frac{1142458947067}{280210980513}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{33} + 16u^{32} + \cdots + 145u - 16$
c_2, c_5	$u^{33} + 2u^{32} + \cdots + 5u - 4$
c_3	$u^{33} - 2u^{32} + \cdots + 317u - 292$
c_4, c_8	$u^{33} - 3u^{32} + \cdots + 88u - 32$
c_6, c_7, c_9 c_{10}, c_{12}	$u^{33} - 2u^{32} + \cdots - u - 1$
c_{11}	$u^{33} + 8u^{32} + \cdots + 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{33} + 4y^{32} + \cdots + 42945y - 256$
c_2, c_5	$y^{33} + 16y^{32} + \cdots + 145y - 16$
c_3	$y^{33} - 8y^{32} + \cdots + 1520193y - 85264$
c_4, c_8	$y^{33} + 15y^{32} + \cdots - 10048y - 1024$
c_6, c_7, c_9 c_{10}, c_{12}	$y^{33} + 8y^{32} + \cdots + 3y - 1$
c_{11}	$y^{33} + 32y^{32} + \cdots + 43y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.245925 + 0.967546I$ $a = 0.251909 - 0.983582I$ $b = -0.187676 + 0.479329I$	$-1.41636 - 2.05180I$	$2.48876 + 5.93206I$
$u = -0.245925 - 0.967546I$ $a = 0.251909 + 0.983582I$ $b = -0.187676 - 0.479329I$	$-1.41636 + 2.05180I$	$2.48876 - 5.93206I$
$u = -0.575427 + 0.852009I$ $a = 0.942155 + 0.274666I$ $b = 0.340349 - 0.122054I$	$0.45731 - 2.27972I$	$1.08128 + 4.27119I$
$u = -0.575427 - 0.852009I$ $a = 0.942155 - 0.274666I$ $b = 0.340349 + 0.122054I$	$0.45731 + 2.27972I$	$1.08128 - 4.27119I$
$u = -0.812937 + 0.631708I$ $a = 1.47975 - 0.44818I$ $b = 0.743424 - 1.002600I$	$2.94313 - 7.42925I$	$5.70373 + 7.47980I$
$u = -0.812937 - 0.631708I$ $a = 1.47975 + 0.44818I$ $b = 0.743424 + 1.002600I$	$2.94313 + 7.42925I$	$5.70373 - 7.47980I$
$u = 0.409753 + 0.871693I$ $a = -1.12499 + 1.08600I$ $b = -1.204130 - 0.140549I$	$1.31683 + 1.72852I$	$-4.93752 + 4.67154I$
$u = 0.409753 - 0.871693I$ $a = -1.12499 - 1.08600I$ $b = -1.204130 + 0.140549I$	$1.31683 - 1.72852I$	$-4.93752 - 4.67154I$
$u = 0.867555 + 0.396268I$ $a = 1.30056 - 0.58396I$ $b = 0.737799 - 1.175390I$	$1.52939 - 11.12300I$	$4.95685 + 6.43500I$
$u = 0.867555 - 0.396268I$ $a = 1.30056 + 0.58396I$ $b = 0.737799 + 1.175390I$	$1.52939 + 11.12300I$	$4.95685 - 6.43500I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.686118 + 0.578359I$ $a = -1.88566 - 0.06922I$ $b = -0.982967 - 0.781621I$	$4.40316 + 1.88813I$	$8.98813 - 1.20865I$
$u = 0.686118 - 0.578359I$ $a = -1.88566 + 0.06922I$ $b = -0.982967 + 0.781621I$	$4.40316 - 1.88813I$	$8.98813 + 1.20865I$
$u = 0.864975 + 0.034660I$ $a = 0.331594 - 0.009701I$ $b = 0.305266 + 0.786195I$	$-4.64239 + 1.30030I$	$4.70025 - 5.48240I$
$u = 0.864975 - 0.034660I$ $a = 0.331594 + 0.009701I$ $b = 0.305266 - 0.786195I$	$-4.64239 - 1.30030I$	$4.70025 + 5.48240I$
$u = -0.783314 + 0.350967I$ $a = -1.325760 - 0.086765I$ $b = -0.755107 - 0.967847I$	$3.18749 + 4.30240I$	$7.11828 - 3.25713I$
$u = -0.783314 - 0.350967I$ $a = -1.325760 + 0.086765I$ $b = -0.755107 + 0.967847I$	$3.18749 - 4.30240I$	$7.11828 + 3.25713I$
$u = -0.240711 + 1.138690I$ $a = 0.218446 + 1.066860I$ $b = -0.589322 - 0.850975I$	$-1.47063 + 1.54484I$	$2.00175 - 2.84762I$
$u = -0.240711 - 1.138690I$ $a = 0.218446 - 1.066860I$ $b = -0.589322 + 0.850975I$	$-1.47063 - 1.54484I$	$2.00175 + 2.84762I$
$u = 0.591437 + 1.006810I$ $a = -0.445351 + 1.131670I$ $b = -1.117370 + 0.693565I$	$3.12726 + 3.05094I$	$6.17471 - 5.64978I$
$u = 0.591437 - 1.006810I$ $a = -0.445351 - 1.131670I$ $b = -1.117370 - 0.693565I$	$3.12726 - 3.05094I$	$6.17471 + 5.64978I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.698987 + 0.997819I$ $a = 0.090751 + 0.887560I$ $b = 0.721939 + 0.913335I$	$1.84788 + 1.79409I$	$4.29068 - 3.01350I$
$u = -0.698987 - 0.997819I$ $a = 0.090751 - 0.887560I$ $b = 0.721939 - 0.913335I$	$1.84788 - 1.79409I$	$4.29068 + 3.01350I$
$u = 0.130978 + 1.224260I$ $a = 0.086555 + 0.842104I$ $b = 0.639885 - 1.138090I$	$-4.05878 - 8.31071I$	$-0.77091 + 5.89193I$
$u = 0.130978 - 1.224260I$ $a = 0.086555 - 0.842104I$ $b = 0.639885 + 1.138090I$	$-4.05878 + 8.31071I$	$-0.77091 - 5.89193I$
$u = -0.582339 + 1.132530I$ $a = -1.72579 - 1.27163I$ $b = -0.702978 + 1.047320I$	$0.87531 - 9.44053I$	$3.45057 + 7.37353I$
$u = -0.582339 - 1.132530I$ $a = -1.72579 + 1.27163I$ $b = -0.702978 - 1.047320I$	$0.87531 + 9.44053I$	$3.45057 - 7.37353I$
$u = 0.625502 + 1.141600I$ $a = 2.00848 - 0.87462I$ $b = 0.73439 + 1.22624I$	$-0.7160 + 16.6422I$	$2.25690 - 10.10185I$
$u = 0.625502 - 1.141600I$ $a = 2.00848 + 0.87462I$ $b = 0.73439 - 1.22624I$	$-0.7160 - 16.6422I$	$2.25690 + 10.10185I$
$u = 0.428870 + 1.244810I$ $a = 0.598711 - 0.990983I$ $b = 0.322959 + 0.874255I$	$-8.56638 + 5.85952I$	$0.43324 - 9.30798I$
$u = 0.428870 - 1.244810I$ $a = 0.598711 + 0.990983I$ $b = 0.322959 - 0.874255I$	$-8.56638 - 5.85952I$	$0.43324 + 9.30798I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.472894 + 1.232170I$ $a = -0.522556 + 0.573461I$ $b = 0.226689 - 0.797235I$	$-8.26141 + 3.47041I$	$2.59273 + 2.52733I$
$u = 0.472894 - 1.232170I$ $a = -0.522556 - 0.573461I$ $b = 0.226689 + 0.797235I$	$-8.26141 - 3.47041I$	$2.59273 - 2.52733I$
$u = -0.276882$ $a = 0.692398$ $b = -0.466299$	0.794015	12.6910

II. $I_2^u =$
$\langle -u^{19}a+2u^{19}+\cdots+2a+1,\ -2u^{19}+3u^{18}+\cdots-4a+3,\ u^{20}-u^{19}+\cdots-2u+1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 \\ u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5+u^3+u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ u^{19}a-2u^{19}+\cdots-2a-1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^{19}a+2u^{19}+\cdots+3a+1 \\ u^{19}a-2u^{19}+\cdots-2a-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -5u^{19}a-u^{19}+\cdots-3a+5 \\ 3u^{19}a+u^{19}+\cdots+2a-1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^{13}-2u^{11}-3u^9-2u^7-2u^5-2u^3-u \\ -u^{15}-3u^{13}-6u^{11}-7u^9-6u^7-4u^5-2u^3-u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^{18}-3u^{16}-6u^{14}-7u^{12}-7u^{10}-7u^8-6u^6-4u^4-u^2-1 \\ -u^{19}+u^{18}+\cdots-2u+1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 4u^{19}a-3u^{19}+\cdots-2a-2 \\ -3u^{19}a+u^{19}+\cdots+a+1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{18}+4u^{17}-16u^{16}+16u^{15}-36u^{14}+40u^{13}-52u^{12}+60u^{11}-56u^{10}+64u^9-56u^8+52u^7-48u^6+40u^5-32u^4+32u^3-12u^2+12u-2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{20}+9u^{19}+\cdots+2u+1)^2$
c_2, c_5	$(u^{20}+u^{19}+\cdots+2u+1)^2$
c_3	$(u^{20}-u^{19}+\cdots-4u+1)^2$
c_4, c_8	$(u^{20}+u^{19}+\cdots+u^2+1)^2$
c_6, c_7, c_9 c_{10}, c_{12}	$u^{40}+5u^{39}+\cdots+390u+73$
c_{11}	$u^{40}+19u^{39}+\cdots+61352u+5329$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{20} + 5y^{19} + \cdots + 10y + 1)^2$
c_2, c_5	$(y^{20} + 9y^{19} + \cdots + 2y + 1)^2$
c_3	$(y^{20} + y^{19} + \cdots + 18y + 1)^2$
c_4, c_8	$(y^{20} + 5y^{19} + \cdots + 2y + 1)^2$
c_6, c_7, c_9 c_{10}, c_{12}	$y^{40} + 19y^{39} + \cdots + 61352y + 5329$
c_{11}	$y^{40} + 3y^{39} + \cdots - 70175632y + 28398241$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.781348 + 0.506112I$ $a = -1.170880 + 0.568217I$ $b = -0.805258 + 0.766657I$	$3.79920 - 1.55876I$	$8.11661 + 2.37917I$
$u = -0.781348 + 0.506112I$ $a = 1.325460 + 0.373843I$ $b = 0.821640 + 0.721695I$	$3.79920 - 1.55876I$	$8.11661 + 2.37917I$
$u = -0.781348 - 0.506112I$ $a = -1.170880 - 0.568217I$ $b = -0.805258 - 0.766657I$	$3.79920 + 1.55876I$	$8.11661 - 2.37917I$
$u = -0.781348 - 0.506112I$ $a = 1.325460 - 0.373843I$ $b = 0.821640 - 0.721695I$	$3.79920 + 1.55876I$	$8.11661 - 2.37917I$
$u = -0.487491 + 0.960535I$ $a = 1.02921 + 2.67375I$ $b = -0.088535 - 1.136560I$	$-3.54419 - 2.59904I$	$5.59387 + 3.16627I$
$u = -0.487491 + 0.960535I$ $a = -3.93581 + 0.32426I$ $b = -0.199008 + 0.878501I$	$-3.54419 - 2.59904I$	$5.59387 + 3.16627I$
$u = -0.487491 - 0.960535I$ $a = 1.02921 - 2.67375I$ $b = -0.088535 + 1.136560I$	$-3.54419 + 2.59904I$	$5.59387 - 3.16627I$
$u = -0.487491 - 0.960535I$ $a = -3.93581 - 0.32426I$ $b = -0.199008 - 0.878501I$	$-3.54419 + 2.59904I$	$5.59387 - 3.16627I$
$u = 0.795114 + 0.464423I$ $a = -1.22649 + 0.85458I$ $b = -0.828035 + 1.035210I$	$3.56254 - 4.70967I$	$7.63739 + 2.80351I$
$u = 0.795114 + 0.464423I$ $a = 1.57933 + 0.22784I$ $b = 1.029860 + 0.526311I$	$3.56254 - 4.70967I$	$7.63739 + 2.80351I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.795114 - 0.464423I$ $a = -1.22649 - 0.85458I$ $b = -0.828035 - 1.035210I$	$3.56254 + 4.70967I$	$7.63739 - 2.80351I$
$u = 0.795114 - 0.464423I$ $a = 1.57933 - 0.22784I$ $b = 1.029860 - 0.526311I$	$3.56254 + 4.70967I$	$7.63739 - 2.80351I$
$u = 0.331938 + 1.037100I$ $a = 0.385330 - 0.198340I$ $b = 0.566703 - 1.063780I$	$-6.92523 + 0.74806I$	$-3.88926 - 0.17223I$
$u = 0.331938 + 1.037100I$ $a = 1.54638 - 1.04589I$ $b = 0.261397 + 1.361890I$	$-6.92523 + 0.74806I$	$-3.88926 - 0.17223I$
$u = 0.331938 - 1.037100I$ $a = 0.385330 + 0.198340I$ $b = 0.566703 + 1.063780I$	$-6.92523 - 0.74806I$	$-3.88926 + 0.17223I$
$u = 0.331938 - 1.037100I$ $a = 1.54638 + 1.04589I$ $b = 0.261397 - 1.361890I$	$-6.92523 - 0.74806I$	$-3.88926 + 0.17223I$
$u = 0.044359 + 1.100970I$ $a = 0.144451 - 0.727954I$ $b = 0.783482 + 0.369003I$	$-1.86599 - 2.89577I$	$1.68771 + 2.74717I$
$u = 0.044359 + 1.100970I$ $a = 0.120658 - 0.668355I$ $b = -0.575520 + 0.995344I$	$-1.86599 - 2.89577I$	$1.68771 + 2.74717I$
$u = 0.044359 - 1.100970I$ $a = 0.144451 + 0.727954I$ $b = 0.783482 - 0.369003I$	$-1.86599 + 2.89577I$	$1.68771 - 2.74717I$
$u = 0.044359 - 1.100970I$ $a = 0.120658 + 0.668355I$ $b = -0.575520 - 0.995344I$	$-1.86599 + 2.89577I$	$1.68771 - 2.74717I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.502129 + 1.070060I$ $a = -1.196860 + 0.433804I$ $b = 0.02454 - 1.45386I$	$-5.78161 + 6.06247I$	$-0.39660 - 7.82928I$
$u = 0.502129 + 1.070060I$ $a = 1.81174 - 0.26469I$ $b = 0.753263 + 0.761883I$	$-5.78161 + 6.06247I$	$-0.39660 - 7.82928I$
$u = 0.502129 - 1.070060I$ $a = -1.196860 - 0.433804I$ $b = 0.02454 + 1.45386I$	$-5.78161 - 6.06247I$	$-0.39660 + 7.82928I$
$u = 0.502129 - 1.070060I$ $a = 1.81174 + 0.26469I$ $b = 0.753263 - 0.761883I$	$-5.78161 - 6.06247I$	$-0.39660 + 7.82928I$
$u = -0.455846 + 0.648892I$ $a = 1.182610 - 0.667439I$ $b = 0.000037 + 1.148130I$	$-2.61010 - 1.37271I$	$7.12015 + 4.43993I$
$u = -0.455846 + 0.648892I$ $a = -0.69832 - 3.01113I$ $b = 0.000279 - 0.680563I$	$-2.61010 - 1.37271I$	$7.12015 + 4.43993I$
$u = -0.455846 - 0.648892I$ $a = 1.182610 + 0.667439I$ $b = 0.000037 - 1.148130I$	$-2.61010 + 1.37271I$	$7.12015 - 4.43993I$
$u = -0.455846 - 0.648892I$ $a = -0.69832 + 3.01113I$ $b = 0.000279 + 0.680563I$	$-2.61010 + 1.37271I$	$7.12015 - 4.43993I$
$u = -0.628268 + 1.065390I$ $a = 0.062803 - 0.923190I$ $b = -0.801152 - 0.631202I$	$2.12977 - 3.75485I$	$5.74318 + 2.44199I$
$u = -0.628268 + 1.065390I$ $a = 1.69799 + 0.89596I$ $b = 0.734017 - 0.821832I$	$2.12977 - 3.75485I$	$5.74318 + 2.44199I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.628268 - 1.065390I$ $a = 0.062803 + 0.923190I$ $b = -0.801152 + 0.631202I$	$2.12977 + 3.75485I$	$5.74318 - 2.44199I$
$u = -0.628268 - 1.065390I$ $a = 1.69799 - 0.89596I$ $b = 0.734017 + 0.821832I$	$2.12977 + 3.75485I$	$5.74318 - 2.44199I$
$u = 0.621367 + 1.089770I$ $a = 0.450132 - 1.108290I$ $b = 1.111620 - 0.461350I$	$1.69596 + 10.03250I$	$4.83081 - 7.28178I$
$u = 0.621367 + 1.089770I$ $a = -1.94152 + 0.70857I$ $b = -0.838812 - 1.128460I$	$1.69596 + 10.03250I$	$4.83081 - 7.28178I$
$u = 0.621367 - 1.089770I$ $a = 0.450132 + 1.108290I$ $b = 1.111620 + 0.461350I$	$1.69596 - 10.03250I$	$4.83081 + 7.28178I$
$u = 0.621367 - 1.089770I$ $a = -1.94152 - 0.70857I$ $b = -0.838812 + 1.128460I$	$1.69596 - 10.03250I$	$4.83081 + 7.28178I$
$u = 0.558047 + 0.271580I$ $a = 0.714003 + 0.735342I$ $b = 0.041067 + 1.303980I$	$-3.61982 - 1.83292I$	$3.55614 + 4.26331I$
$u = 0.558047 + 0.271580I$ $a = 1.61977 - 1.74347I$ $b = 0.508409 - 0.727923I$	$-3.61982 - 1.83292I$	$3.55614 + 4.26331I$
$u = 0.558047 - 0.271580I$ $a = 0.714003 - 0.735342I$ $b = 0.041067 - 1.303980I$	$-3.61982 + 1.83292I$	$3.55614 - 4.26331I$
$u = 0.558047 - 0.271580I$ $a = 1.61977 + 1.74347I$ $b = 0.508409 + 0.727923I$	$-3.61982 + 1.83292I$	$3.55614 - 4.26331I$

III. $\boldsymbol{I_3^u = \langle -u^4a - 2u^2a + u^3 + au + b - a + u - 1,\ 2u^4a + 4u^3a + \cdots + 2a - 4,\ u^5 + u^4 + 2u^3 + u^2 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1)^2$
c_2, c_5	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^2$
c_3	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^2$
c_4, c_8	$(y^5 + 5y^4 + 8y^3 + 3y^2 - y + 1)^2$
c_6, c_7, c_9 c_{10}, c_{12}	$(y + 1)^{10}$
c_{11}	$(y - 1)^{10}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.339110 + 0.822375I$ $a = 2.33905 - 0.71839I$ $b = -1.000000I$	$-3.61897 + 1.53058I$	$-0.51511 - 4.43065I$
$u = 0.339110 + 0.822375I$ $a = 0.26050 - 3.57549I$ $b = 1.000000I$	$-3.61897 + 1.53058I$	$-0.51511 - 4.43065I$
$u = 0.339110 - 0.822375I$ $a = 2.33905 + 0.71839I$ $b = 1.000000I$	$-3.61897 - 1.53058I$	$-0.51511 + 4.43065I$
$u = 0.339110 - 0.822375I$ $a = 0.26050 + 3.57549I$ $b = -1.000000I$	$-3.61897 - 1.53058I$	$-0.51511 + 4.43065I$
$u = -0.766826$ $a = -0.674363 + 0.304077I$ $b = 1.000000I$	-5.69095	-1.48110
$u = -0.766826$ $a = -0.674363 - 0.304077I$ $b = -1.000000I$	-5.69095	-1.48110
$u = -0.455697 + 1.200150I$ $a = 0.265647 + 0.869899I$ $b = -1.000000I$	$-9.16243 - 4.40083I$	$-4.74431 + 3.49859I$
$u = -0.455697 + 1.200150I$ $a = -1.190830 - 0.577079I$ $b = 1.000000I$	$-9.16243 - 4.40083I$	$-4.74431 + 3.49859I$
$u = -0.455697 - 1.200150I$ $a = 0.265647 - 0.869899I$ $b = 1.000000I$	$-9.16243 + 4.40083I$	$-4.74431 - 3.49859I$
$u = -0.455697 - 1.200150I$ $a = -1.190830 + 0.577079I$ $b = -1.000000I$	$-9.16243 + 4.40083I$	$-4.74431 - 3.49859I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{31}{4}u + 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.500000 + 0.866025I$ $a = -1.000000 + 0.866025I$ $b = -1.00000$	$1.64493 + 2.02988I$	$10.12500 - 6.71170I$
$u = \quad 0.500000 - 0.866025I$ $a = -1.000000 - 0.866025I$ $b = -1.00000$	$1.64493 - 2.02988I$	$10.12500 + 6.71170I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)(u^5-3u^4+\cdots-u+1)^2(u^{20}+9u^{19}+\cdots+2u+1)^2$ $\cdot(u^{33}+16u^{32}+\cdots+145u-16)$
c_2	$(u^2+u+1)(u^5-u^4+\cdots+u-1)^2(u^{20}+u^{19}+\cdots+2u+1)^2$ $\cdot(u^{33}+2u^{32}+\cdots+5u-4)$
c_3	$(u^2-u+1)(u^5+u^4+\cdots+u-1)^2(u^{20}-u^{19}+\cdots-4u+1)^2$ $\cdot(u^{33}-2u^{32}+\cdots+317u-292)$
c_4, c_8	$u^2(u^{10}+5u^8+\cdots-u^2+1)(u^{20}+u^{19}+\cdots+u^2+1)^2$ $\cdot(u^{33}-3u^{32}+\cdots+88u-32)$
c_5	$(u^2-u+1)(u^5+u^4+\cdots+u+1)^2(u^{20}+u^{19}+\cdots+2u+1)^2$ $\cdot(u^{33}+2u^{32}+\cdots+5u-4)$
c_6, c_7	$((u+1)^2)(u^2+1)^5(u^{33}-2u^{32}+\cdots-u-1)$ $\cdot(u^{40}+5u^{39}+\cdots+390u+73)$
c_9, c_{10}, c_{12}	$((u-1)^2)(u^2+1)^5(u^{33}-2u^{32}+\cdots-u-1)$ $\cdot(u^{40}+5u^{39}+\cdots+390u+73)$
c_{11}	$((u-1)^{10})(u+1)^2(u^{33}+8u^{32}+\cdots+3u-1)$ $\cdot(u^{40}+19u^{39}+\cdots+61352u+5329)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^5-y^4+8y^3-3y^2+3y-1)^2$ $\cdot\,((y^{20}+5y^{19}+\cdots+10y+1)^2)(y^{33}+4y^{32}+\cdots+42945y-256)$
c_2, c_5	$(y^2+y+1)(y^5+3y^4+\cdots-y-1)^2(y^{20}+9y^{19}+\cdots+2y+1)^2$ $\cdot\,(y^{33}+16y^{32}+\cdots+145y-16)$
c_3	$(y^2+y+1)(y^5-5y^4+8y^3-3y^2-y-1)^2$ $\cdot\,((y^{20}+y^{19}+\cdots+18y+1)^2)(y^{33}-8y^{32}+\cdots+1520193y-85264)$
c_4, c_8	$y^2(y^5+5y^4+\cdots-y+1)^2(y^{20}+5y^{19}+\cdots+2y+1)^2$ $\cdot\,(y^{33}+15y^{32}+\cdots-10048y-1024)$
c_6, c_7, c_9 c_{10}, c_{12}	$((y-1)^2)(y+1)^{10}(y^{33}+8y^{32}+\cdots+3y-1)$ $\cdot\,(y^{40}+19y^{39}+\cdots+61352y+5329)$
c_{11}	$((y-1)^{12})(y^{33}+32y^{32}+\cdots+43y-1)$ $\cdot\,(y^{40}+3y^{39}+\cdots-70175632y+28398241)$