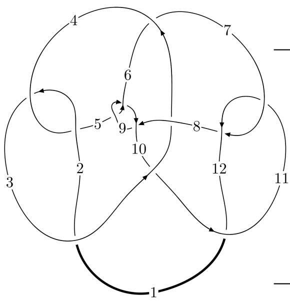
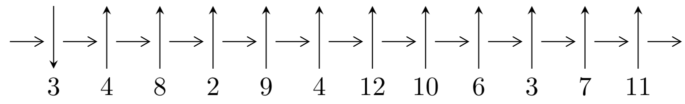
$12n_{0276}$ ($K12n_{0276}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle -u^3 - u^2 + b + u + 1,\ -u^2 + a - u,\ u^4 + 2u^3 + u^2 - 2u - 1 \rangle \\
I_2^u &= \langle u^3 - u^2 + b - u + 1,\ -2u^3 + u^2 + a + u,\ u^4 - u^2 + 1 \rangle \\
I_3^u &= \langle 2u^7 - 3u^6 + 3u^5 + 3u^3 + 2u^2 + 2b - 3u - 1,\ -3u^7 + 4u^6 - 3u^5 - 3u^4 - 3u^3 - 3u^2 + 2a + 4u + 3, \\
&\quad u^8 - 2u^7 + 2u^6 + u^4 - 2u^2 + 1 \rangle \\
I_4^u &= \langle 2u^7 - 3u^6 + 3u^5 + 3u^3 + 2u^2 + 2b - 3u - 1,\ -u^7 + u^6 - 2u^5 + u^4 - 4u^3 - u^2 + 2a - u, \\
&\quad u^8 - 2u^7 + 2u^6 + u^4 - 2u^2 + 1 \rangle \\
I_5^u &= \langle u^7 + u^6 + 2u^5 + u^4 + 2u^3 + 3u^2 + 4b + 5u + 6,\ -u^7 + 3u^6 + 2u^5 + 3u^4 - 10u^3 + 5u^2 + 8a + 11u + 10, \\
&\quad u^8 + 3u^7 + 4u^6 + u^5 + 7u^3 + 15u^2 + 12u + 4 \rangle \\
I_6^u &= \langle u^3 + b - u - 1,\ -u^2 + a + 1,\ u^4 - u^2 + 1 \rangle \\
I_7^u &= \langle u^3 + b - u - 1,\ -2u^3 - u^2 + a + u + 1,\ u^4 - u^2 + 1 \rangle \\
I_8^u &= \langle u^3 + u^2 + b - u,\ a - 1,\ u^4 - u^2 + 1 \rangle
\end{aligned}
$$

* 8 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 44 representations.

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

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

I. $I^u_1 = \langle -u^3 - u^2 + b + u + 1,\ -u^2 + a - u,\ u^4 + 2u^3 + u^2 - 2u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6u + 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^4 + 10u^3 + 27u^2 - 22u + 1$
c_2, c_4, c_8 c_{12}	$u^4 - 2u^3 + 7u^2 - 6u + 1$
c_3, c_5, c_7 c_9, c_{11}	$u^4 - 2u^3 + u^2 + 2u - 1$
c_6, c_{10}	$u^4 + 10u^2 - 16u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^4 - 46y^3 + 1171y^2 - 430y + 1$
c_2, c_4, c_8 c_{12}	$y^4 + 10y^3 + 27y^2 - 22y + 1$
c_3, c_5, c_7 c_9, c_{11}	$y^4 - 2y^3 + 7y^2 - 6y + 1$
c_6, c_{10}	$y^4 + 20y^3 + 108y^2 - 176y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.883204$ $a = 1.66325$ $b = -0.414214$	4.18641	21.2990
$u = -0.468990$ $a = -0.249038$ $b = -0.414214$	0.748389	13.1860
$u = -1.20711 + 0.97832I$ $a = -0.70711 - 1.38355I$ $b = 2.41421$	$-17.2718 - 12.3509I$	$8.75736 + 5.86991I$
$u = -1.20711 - 0.97832I$ $a = -0.70711 + 1.38355I$ $b = 2.41421$	$-17.2718 + 12.3509I$	$8.75736 - 5.86991I$

II. $\boldsymbol{I_2^u = \langle u^3 - u^2 + b - u + 1,\ -2u^3 + u^2 + a + u,\ u^4 - u^2 + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12u^2 + 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_8, c_{12}	$(y^2 + y + 1)^2$
c_3, c_5, c_7 c_9, c_{11}	$(y^2 - y + 1)^2$
c_6, c_{10}	$y^4 - 4y^2 + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -1.36603 + 0.63397I$ $b = 0.366025 + 0.366025I$	$6.08965I$	$10.0000 - 10.3923I$
$u = 0.866025 - 0.500000I$ $a = -1.36603 - 0.63397I$ $b = 0.366025 - 0.366025I$	$-6.08965I$	$10.0000 + 10.3923I$
$u = -0.866025 + 0.500000I$ $a = 0.36603 + 2.36603I$ $b = -1.36603 - 1.36603I$	$-6.08965I$	$10.0000 + 10.3923I$
$u = -0.866025 - 0.500000I$ $a = 0.36603 - 2.36603I$ $b = -1.36603 + 1.36603I$	$6.08965I$	$10.0000 - 10.3923I$

III. $\boldsymbol{I_3^u = \langle 2u^7 - 3u^6 + 3u^5 + 3u^3 + 2u^2 + 2b - 3u - 1,\ -3u^7 + 4u^6 + \cdots + 2a + 3,\ u^8 - 2u^7 + 2u^6 + u^4 - 2u^2 + 1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{3}{2}u^7 - 2u^6 + \cdots - 2u - \frac{3}{2} \\ -u^7 + \frac{3}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^7 - u^6 + 2u^4 + u^3 + u^2 - 2u - 2 \\ -\frac{1}{2}u^7 + u^6 + \cdots + u + \frac{1}{2} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2u^7 - \frac{5}{2}u^6 + \cdots - \frac{1}{2}u - \frac{3}{2} \\ -u^7 + \frac{1}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2u^7 + 3u^6 - 2u^5 - 2u^4 - 3u^3 + 2u + 1 \\ 2u^5 - u^4 + u^3 + u^2 - u - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{3}{2}u^7 - 2u^6 + \cdots - 2u - \frac{1}{2} \\ -\frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots + \frac{1}{2}u + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{2}u^7 - 2u^6 + \cdots - 2u - \frac{3}{2} \\ -\frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots + \frac{3}{2}u + 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{2}u^7 - \frac{1}{2}u^6 + \cdots + \frac{1}{2}u^2 - \frac{3}{2}u \\ \frac{1}{2}u^6 - \frac{1}{2}u^5 + \cdots + \frac{1}{2}u + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 4u^6 - 2u^5 - 4u^4 - 8u^3 - 4u^2 + 6u + 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8+19u^7+\cdots+1248u+256$
c_2, c_4	$u^8-u^7+10u^6-13u^5+42u^4-41u^3+57u^2-24u+16$
c_3	$u^8-3u^7+4u^6-u^5-7u^3+15u^2-12u+4$
c_5, c_7, c_9 c_{11}	$u^8+2u^7+2u^6+u^4-2u^2+1$
c_6, c_{10}	$u^8+7u^7+25u^6+52u^5+54u^4+16u^3-8u^2+4$
c_8, c_{12}	$u^8+6u^6-5u^4+6u^2-4u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 45y^7 + \cdots - 213504y + 65536$
c_2, c_4	$y^8 + 19y^7 + \cdots + 1248y + 256$
c_3	$y^8 - y^7 + 10y^6 - 13y^5 + 42y^4 - 41y^3 + 57y^2 - 24y + 16$
c_5, c_7, c_9 c_{11}	$y^8 + 6y^6 - 5y^4 + 6y^2 - 4y + 1$
c_6, c_{10}	$y^8 + y^7 + 5y^6 - 244y^5 + 860y^4 - 920y^3 + 496y^2 - 64y + 16$
c_8, c_{12}	$y^8 + 12y^7 + 26y^6 - 48y^5 + 99y^4 - 48y^3 + 26y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.273242+1.017440I$ $a=-0.038323+1.295230I$ $b=\ \ 0.307345+0.392902I$	$-3.00645-3.35673I$	$6.09240+3.01308I$
$u=-0.273242-1.017440I$ $a=-0.038323-1.295230I$ $b=\ \ 0.307345-0.392902I$	$-3.00645+3.35673I$	$6.09240-3.01308I$
$u=\ \ 0.796321+0.241667I$ $a=-1.41328+1.73710I$ $b=\ \ 0.545221-1.041750I$	$1.17763+4.62470I$	$15.0023-5.8935I$
$u=\ \ 0.796321-0.241667I$ $a=-1.41328-1.73710I$ $b=\ \ 0.545221+1.041750I$	$1.17763-4.62470I$	$15.0023+5.8935I$
$u=-0.666028+0.230992I$ $a=\ \ 0.439021-0.264857I$ $b=-0.768780-0.277812I$	$0.403528-0.080080I$	$11.24335+0.17507I$
$u=-0.666028-0.230992I$ $a=\ \ 0.439021+0.264857I$ $b=-0.768780+0.277812I$	$0.403528+0.080080I$	$11.24335-0.17507I$
$u=\ \ 1.14295+1.14532I$ $a=\ \ 0.512578-0.434756I$ $b=-2.08379-0.09016I$	$-18.3139+4.2344I$	$7.66195-1.86062I$
$u=\ \ 1.14295-1.14532I$ $a=\ \ 0.512578+0.434756I$ $b=-2.08379+0.09016I$	$-18.3139-4.2344I$	$7.66195+1.86062I$

IV. $\boldsymbol{I_4^u = \langle 2u^7 - 3u^6 + 3u^5 + 3u^3 + 2u^2 + 2b - 3u - 1,\ -u^7 + u^6 - 2u^5 + u^4 - 4u^3 - u^2 + 2a - u,\ u^8 - 2u^7 + 2u^6 + u^4 - 2u^2 + 1\rangle}$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} \frac{1}{2}u^7 - \frac{1}{2}u^6 + \cdots + \frac{1}{2}u^2 + \frac{1}{2}u \\ -u^7 + \frac{3}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{2}u^7 - \frac{1}{2}u^6 + \cdots + \frac{1}{2}u^2 + \frac{3}{2}u \\ -u^7 + \frac{3}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^7 + u^6 + \cdots + u + \frac{1}{2} \\ -\frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - \frac{1}{2}u^2 + \frac{1}{2}u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^5 + 2u^3 + u \\ -u^7 - u^5 - 2u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2u^7 + \frac{5}{2}u^6 + \cdots + \frac{5}{2}u + \frac{9}{2} \\ -\frac{1}{2}u^6 + \frac{3}{2}u^5 + \cdots - \frac{3}{2}u - \frac{1}{2} \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} -\frac{3}{2}u^7 + 2u^6 + \cdots - \frac{3}{2}u^2 + \frac{1}{2} \\ u^7 - u^6 + u^5 + u^4 + u^3 + u^2 - u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{5}{2}u^7 + 3u^6 + \cdots + 3u + \frac{9}{2} \\ -\frac{1}{2}u^6 + \frac{1}{2}u^5 + \cdots - \frac{3}{2}u - \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 4u^6 - 2u^5 - 4u^4 - 8u^3 - 4u^2 + 6u + 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 + 12u^7 + 26u^6 - 48u^5 + 99u^4 - 48u^3 + 26u^2 - 4u + 1$
c_2, c_4, c_{12}	$u^8 + 6u^6 - 5u^4 + 6u^2 - 4u + 1$
c_3, c_7, c_{11}	$u^8 + 2u^7 + 2u^6 + u^4 - 2u^2 + 1$
c_5, c_9	$u^8 - 3u^7 + 4u^6 - u^5 - 7u^3 + 15u^2 - 12u + 4$
c_6	$u^8 + 12u^6 - 16u^5 + 49u^4 - 56u^3 + 78u^2 - 54u + 27$
c_8	$u^8 - u^7 + 10u^6 - 13u^5 + 42u^4 - 41u^3 + 57u^2 - 24u + 16$
c_{10}	$u^8 - 4u^7 + 18u^6 - 58u^5 + 111u^4 - 126u^3 + 92u^2 - 40u + 11$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 92y^7 + \cdots + 36y + 1$
c_2, c_4, c_{12}	$y^8 + 12y^7 + 26y^6 - 48y^5 + 99y^4 - 48y^3 + 26y^2 - 4y + 1$
c_3, c_7, c_{11}	$y^8 + 6y^6 - 5y^4 + 6y^2 - 4y + 1$
c_5, c_9	$y^8 - y^7 + 10y^6 - 13y^5 + 42y^4 - 41y^3 + 57y^2 - 24y + 16$
c_6	$y^8 + 24y^7 + \cdots + 1296y + 729$
c_8	$y^8 + 19y^7 + \cdots + 1248y + 256$
c_{10}	$y^8 + 20y^7 + 82y^6 - 192y^5 + 719y^4 + 304y^3 + 826y^2 + 424y + 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.273242 + 1.017440I$ $a = 0.170826 - 0.749091I$ $b = 0.307345 + 0.392902I$	$-3.00645 - 3.35673I$	$6.09240 + 3.01308I$
$u = -0.273242 - 1.017440I$ $a = 0.170826 + 0.749091I$ $b = 0.307345 - 0.392902I$	$-3.00645 + 3.35673I$	$6.09240 - 3.01308I$
$u = 0.796321 + 0.241667I$ $a = 1.33140 + 1.33913I$ $b = 0.545221 - 1.041750I$	$1.17763 + 4.62470I$	$15.0023 - 5.8935I$
$u = 0.796321 - 0.241667I$ $a = 1.33140 - 1.33913I$ $b = 0.545221 + 1.041750I$	$1.17763 - 4.62470I$	$15.0023 + 5.8935I$
$u = -0.666028 + 0.230992I$ $a = -0.471568 + 0.932013I$ $b = -0.768780 - 0.277812I$	$0.403528 - 0.080080I$	$11.24335 + 0.17507I$
$u = -0.666028 - 0.230992I$ $a = -0.471568 - 0.932013I$ $b = -0.768780 + 0.277812I$	$0.403528 + 0.080080I$	$11.24335 - 0.17507I$
$u = 1.14295 + 1.14532I$ $a = 0.469343 - 1.233450I$ $b = -2.08379 - 0.09016I$	$-18.3139 + 4.2344I$	$7.66195 - 1.86062I$
$u = 1.14295 - 1.14532I$ $a = 0.469343 + 1.233450I$ $b = -2.08379 + 0.09016I$	$-18.3139 - 4.2344I$	$7.66195 + 1.86062I$

V. $I_5^u = \langle u^7 + u^6 + 2u^5 + u^4 + 2u^3 + 3u^2 + 4b + 5u + 6,\ -u^7 + 3u^6 + \cdots + 8a + 10,\ u^8 + 3u^7 + 4u^6 + u^5 + 7u^3 + 15u^2 + 12u + 4\rangle$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} \frac{1}{8}u^7 - \frac{3}{8}u^6 + \cdots - \frac{11}{8}u - \frac{5}{4} \\ -\frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots - \frac{5}{4}u - \frac{3}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{11}{8}u^7 + \frac{15}{8}u^6 + \cdots + \frac{47}{8}u + \frac{1}{4} \\ -\frac{5}{4}u^7 - \frac{13}{4}u^6 + \cdots - \frac{57}{4}u - \frac{15}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{9}{8}u^7 - \frac{17}{8}u^6 + \cdots - \frac{57}{8}u - \frac{9}{4} \\ \frac{5}{4}u^7 + \frac{17}{4}u^6 + \cdots + \frac{65}{4}u + \frac{13}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^7 + u^6 + u^5 - u^4 + 2u^3 + 5u^2 + 4u \\ -3u^7 - 6u^6 - 3u^5 + 2u^4 - 4u^3 - 18u^2 - 19u - 8 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{17}{8}u^7 - \frac{25}{8}u^6 + \cdots - \frac{81}{8}u - \frac{1}{4} \\ \frac{11}{4}u^7 + \frac{23}{4}u^6 + \cdots + \frac{99}{4}u + \frac{23}{2} \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} -2.37500u^7 - 5.37500u^6 + \cdots - 21.3750u - 8.75000 \\ -\frac{1}{4}u^7 + \frac{3}{4}u^6 + \cdots + \frac{19}{4}u + \frac{7}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{11}{8}u^7 - \frac{23}{8}u^6 + \cdots - \frac{87}{8}u - \frac{13}{4} \\ \frac{1}{4}u^7 + \frac{9}{4}u^6 + \cdots + \frac{29}{4}u + \frac{7}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^6 - 4u^5 - 2u^4 + 6u^3 - 10u^2 - 20u - 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 + 12u^7 + 26u^6 - 48u^5 + 99u^4 - 48u^3 + 26u^2 - 4u + 1$
c_2, c_4, c_8	$u^8 + 6u^6 - 5u^4 + 6u^2 - 4u + 1$
c_3, c_5, c_9	$u^8 + 2u^7 + 2u^6 + u^4 - 2u^2 + 1$
c_6	$u^8 - 4u^7 + 18u^6 - 58u^5 + 111u^4 - 126u^3 + 92u^2 - 40u + 11$
c_7, c_{11}	$u^8 - 3u^7 + 4u^6 - u^5 - 7u^3 + 15u^2 - 12u + 4$
c_{10}	$u^8 + 12u^6 - 16u^5 + 49u^4 - 56u^3 + 78u^2 - 54u + 27$
c_{12}	$u^8 - u^7 + 10u^6 - 13u^5 + 42u^4 - 41u^3 + 57u^2 - 24u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 92y^7 + \cdots + 36y + 1$
c_2, c_4, c_8	$y^8 + 12y^7 + 26y^6 - 48y^5 + 99y^4 - 48y^3 + 26y^2 - 4y + 1$
c_3, c_5, c_9	$y^8 + 6y^6 - 5y^4 + 6y^2 - 4y + 1$
c_6	$y^8 + 20y^7 + 82y^6 - 192y^5 + 719y^4 + 304y^3 + 826y^2 + 424y + 121$
c_7, c_{11}	$y^8 - y^7 + 10y^6 - 13y^5 + 42y^4 - 41y^3 + 57y^2 - 24y + 16$
c_{10}	$y^8 + 24y^7 + \cdots + 1296y + 729$
c_{12}	$y^8 + 19y^7 + \cdots + 1248y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.937027 + 0.585611I$ $a = 0.68623 + 1.54063I$ $b = -1.261650 - 0.312913I$	$1.17763 - 4.62470I$	$15.0023 + 5.8935I$
$u = -0.937027 - 0.585611I$ $a = 0.68623 - 1.54063I$ $b = -1.261650 + 0.312913I$	$1.17763 + 4.62470I$	$15.0023 - 5.8935I$
$u = -0.678952 + 0.516253I$ $a = 0.018648 + 0.423357I$ $b = -0.966437 - 0.300245I$	$0.403528 + 0.080080I$	$11.24335 - 0.17507I$
$u = -0.678952 - 0.516253I$ $a = 0.018648 - 0.423357I$ $b = -0.966437 + 0.300245I$	$0.403528 - 0.080080I$	$11.24335 + 0.17507I$
$u = 1.064320 + 0.829887I$ $a = -0.584890 + 0.825215I$ $b = 1.44426 - 0.35067I$	$-3.00645 + 3.35673I$	$6.09240 - 3.01308I$
$u = 1.064320 - 0.829887I$ $a = -0.584890 - 0.825215I$ $b = 1.44426 + 0.35067I$	$-3.00645 - 3.35673I$	$6.09240 + 3.01308I$
$u = -0.94834 + 1.25418I$ $a = -0.369985 - 0.584379I$ $b = 2.28383 - 0.12843I$	$-18.3139 + 4.2344I$	$7.66195 - 1.86062I$
$u = -0.94834 - 1.25418I$ $a = -0.369985 + 0.584379I$ $b = 2.28383 + 0.12843I$	$-18.3139 - 4.2344I$	$7.66195 + 1.86062I$

VI. $I_6^u = \langle u^3 + b - u - 1,\ -u^2 + a + 1,\ u^4 - u^2 + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 + 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -0.500000 + 0.866025I$ $b = 1.86603 - 0.50000I$	$2.02988I$	$10.00000 - 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -0.500000 - 0.866025I$ $b = 1.86603 + 0.50000I$	$-2.02988I$	$10.00000 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = -0.500000 - 0.866025I$ $b = 0.133975 - 0.500000I$	$-2.02988I$	$10.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = -0.500000 + 0.866025I$ $b = 0.133975 + 0.500000I$	$2.02988I$	$10.00000 - 3.46410I$

VII. $I_7^u = \langle u^3 + b - u - 1,\ -2u^3 - u^2 + a + u + 1,\ u^4 - u^2 + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 + 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -1.36603 + 2.36603I$ $b = 1.86603 - 0.50000I$	$2.02988I$	$10.00000 - 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -1.36603 - 2.36603I$ $b = 1.86603 + 0.50000I$	$-2.02988I$	$10.00000 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 0.366025 + 0.633975I$ $b = 0.133975 - 0.500000I$	$-2.02988I$	$10.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = 0.366025 - 0.633975I$ $b = 0.133975 + 0.500000I$	$2.02988I$	$10.00000 - 3.46410I$

VIII. $I_8^u = \langle u^3 + u^2 + b - u,\ a - 1,\ u^4 - u^2 + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = 1.00000$ $b = 0.36603 - 1.36603I$	$-2.02988I$	$10.00000 + 3.46410I$
$u = 0.866025 - 0.500000I$ $a = 1.00000$ $b = 0.36603 + 1.36603I$	$2.02988I$	$10.00000 - 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 1.00000$ $b = -1.36603 + 0.36603I$	$2.02988I$	$10.00000 - 3.46410I$
$u = -0.866025 - 0.500000I$ $a = 1.00000$ $b = -1.36603 - 0.36603I$	$-2.02988I$	$10.00000 + 3.46410I$

IX. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^8(u^4+10u^3+27u^2-22u+1)$ $\cdot(u^8+12u^7+26u^6-48u^5+99u^4-48u^3+26u^2-4u+1)^2$ $\cdot(u^8+19u^7+\cdots+1248u+256)$
c_2, c_8	$(u^2+u+1)^8(u^4-2u^3+7u^2-6u+1)$ $\cdot(u^8+6u^6-5u^4+6u^2-4u+1)^2$ $\cdot(u^8-u^7+10u^6-13u^5+42u^4-41u^3+57u^2-24u+16)$
c_3, c_5, c_7 c_9, c_{11}	$(u^4-u^2+1)^4(u^4-2u^3+u^2+2u-1)$ $\cdot(u^8-3u^7+4u^6-u^5-7u^3+15u^2-12u+4)$ $\cdot(u^8+2u^7+2u^6+u^4-2u^2+1)^2$
c_4, c_{12}	$(u^2-u+1)^8(u^4-2u^3+7u^2-6u+1)$ $\cdot(u^8+6u^6-5u^4+6u^2-4u+1)^2$ $\cdot(u^8-u^7+10u^6-13u^5+42u^4-41u^3+57u^2-24u+16)$
c_6	$(u^2-2u+2)^2(u^4+10u^2-16u+4)(u^4-4u^3+5u^2-2u+1)$ $\cdot(u^4+2u^3+2u^2+4u+4)(u^4+2u^3+5u^2+4u+1)$ $\cdot(u^8+12u^6-16u^5+49u^4-56u^3+78u^2-54u+27)$ $\cdot(u^8-4u^7+18u^6-58u^5+111u^4-126u^3+92u^2-40u+11)$ $\cdot(u^8+7u^7+25u^6+52u^5+54u^4+16u^3-8u^2+4)$
c_{10}	$(u^2+2u+2)^2(u^4+10u^2-16u+4)(u^4-2u^3+2u^2-4u+4)$ $\cdot(u^4-2u^3+5u^2-4u+1)(u^4+4u^3+5u^2+2u+1)$ $\cdot(u^8+12u^6-16u^5+49u^4-56u^3+78u^2-54u+27)$ $\cdot(u^8-4u^7+18u^6-58u^5+111u^4-126u^3+92u^2-40u+11)$ $\cdot(u^8+7u^7+25u^6+52u^5+54u^4+16u^3-8u^2+4)$

X. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)^8(y^4-46y^3+1171y^2-430y+1)$ $\cdot((y^8-92y^7+\cdots+36y+1)^2)(y^8-45y^7+\cdots-213504y+65536)$
c_2, c_4, c_8 c_{12}	$(y^2+y+1)^8(y^4+10y^3+27y^2-22y+1)$ $\cdot(y^8+12y^7+26y^6-48y^5+99y^4-48y^3+26y^2-4y+1)^2$ $\cdot(y^8+19y^7+\cdots+1248y+256)$
c_3, c_5, c_7 c_9, c_{11}	$(y^2-y+1)^8(y^4-2y^3+7y^2-6y+1)$ $\cdot(y^8+6y^6-5y^4+6y^2-4y+1)^2$ $\cdot(y^8-y^7+10y^6-13y^5+42y^4-41y^3+57y^2-24y+16)$
c_6, c_{10}	$(y^2+4)^2(y^4-4y^2+16)(y^4-6y^3+11y^2+6y+1)$ $\cdot(y^4+6y^3+11y^2-6y+1)(y^4+20y^3+108y^2-176y+16)$ $\cdot(y^8+y^7+5y^6-244y^5+860y^4-920y^3+496y^2-64y+16)$ $\cdot(y^8+20y^7+82y^6-192y^5+719y^4+304y^3+826y^2+424y+121)$ $\cdot(y^8+24y^7+\cdots+1296y+729)$