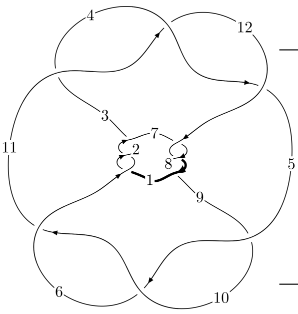
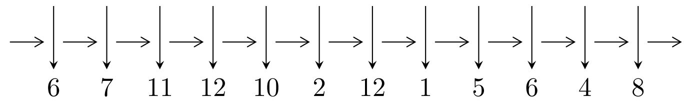
$12n_{0888}$ ($K12n_{0888}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^3 + 2b + 2u + 1,\ a - 1,\ u^4 - u^3 - 2u^2 + 3u + 1 \rangle$$
$$I_2^u = \langle u^3 a - u^3 - 2u^2 + 2b + a + 1,\ -u^2 a + 2u^3 + a^2 - au + 3u^2 + 2u - 2,\ u^4 + u^3 - u + 1 \rangle$$
$$\begin{aligned} I_3^u = \langle & -9u^7 + 18u^6 + 4u^5 - 32u^4 + 32u^3 - 7u^2 + 14b - 57u + 81, \\ & 9u^7 - 27u^6 - 4u^5 + 36u^4 - 28u^3 + 12u^2 + 77a + 32u - 111, \\ & u^8 - 3u^7 + 2u^6 + 4u^5 - 8u^4 + 5u^3 + 6u^2 - 16u + 11 \rangle \end{aligned}$$
$$I_4^u = \langle 2b - u - 1,\ 3a + u,\ u^2 - 3 \rangle$$
$$I_5^u = \langle 2b + a - 1,\ a^2 - 3,\ u - 1 \rangle$$
$$I_6^u = \langle b - 1,\ -u^3 + 2u^2 + 2a - u + 2,\ u^4 - 2u^3 + u^2 - 2 \rangle$$
$$I_7^u = \langle 2b - 3,\ a + 1,\ u^2 + 2u + 1 \rangle$$
$$I_8^u = \langle 2b + 1,\ a + 2u + 3,\ u^2 + 2u + 1 \rangle$$
$$I_9^u = \langle -u^3 + b + u + 2,\ -u^3 + a + 2,\ u^4 + u^3 - 2u - 1 \rangle$$
$$I_{10}^u = \langle 2u^3 + u^2 + b - 2,\ a - 1,\ u^4 + u^3 - 2u - 1 \rangle$$

[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`).

$$I^u_{11} = \langle b+1,\ a,\ u-1\rangle$$
$$I^u_{12} = \langle a+1,\ u+1\rangle$$

$$I^v_1 = \langle a,\ b+1,\ v+1\rangle$$

* 12 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 42 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

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

I. $\boldsymbol{I_1^u = \langle -u^3 + 2b + 2u + 1,\ a - 1,\ u^4 - u^3 - 2u^2 + 3u + 1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^3 - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_6 c_7, c_8, c_9 c_{10}, c_{11}, c_{12}	$y^4 - 5y^3 + 12y^2 - 13y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.45873$ $a = 1.00000$ $b = -0.593286$	-18.4021	-26.2080
$u = 1.37348 + 0.70139I$ $a = 1.00000$ $b = -1.59149 + 1.11079I$	$-2.06772 - 13.64080I$	$-18.8720 + 7.2487I$
$u = 1.37348 - 0.70139I$ $a = 1.00000$ $b = -1.59149 - 1.11079I$	$-2.06772 + 13.64080I$	$-18.8720 - 7.2487I$
$u = -0.288231$ $a = 1.00000$ $b = -0.223742$	-0.491481	-20.0480

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^3 + 6u^2 + 2u - 18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_7, c_8, c_{12}	$(u^4 + u^3 - u + 1)^2$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$u^8 - 3u^7 + 2u^6 + 4u^5 - 8u^4 + 5u^3 + 6u^2 - 16u + 11$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_7, c_8, c_{12}	$(y^4 - y^3 + 4y^2 - y + 1)^2$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$y^8 - 5y^7 + 12y^6 - 6y^5 - 26y^4 + 51y^3 + 20y^2 - 124y + 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.566121 + 0.458821I$ $a = 1.69837 - 0.55270I$ $b = -1.27294 + 0.62687I$	$-3.95056 - 1.45022I$	$-16.5601 + 4.7237I$
$u = 0.566121 + 0.458821I$ $a = -1.02228 + 1.53102I$ $b = 0.206818 + 0.237188I$	$-3.95056 - 1.45022I$	$-16.5601 + 4.7237I$
$u = 0.566121 - 0.458821I$ $a = 1.69837 + 0.55270I$ $b = -1.27294 - 0.62687I$	$-3.95056 + 1.45022I$	$-16.5601 - 4.7237I$
$u = 0.566121 - 0.458821I$ $a = -1.02228 - 1.53102I$ $b = 0.206818 - 0.237188I$	$-3.95056 + 1.45022I$	$-16.5601 - 4.7237I$
$u = -1.066121 + 0.864054I$ $a = 0.424245 - 0.799184I$ $b = -0.903065 - 0.310360I$	$1.48316 + 6.78371I$	$-15.4399 - 4.7237I$
$u = -1.066121 + 0.864054I$ $a = -1.100342 - 0.179134I$ $b = 1.46919 + 0.76918I$	$1.48316 + 6.78371I$	$-15.4399 - 4.7237I$
$u = -1.066121 - 0.864054I$ $a = 0.424245 + 0.799184I$ $b = -0.903065 + 0.310360I$	$1.48316 - 6.78371I$	$-15.4399 + 4.7237I$
$u = -1.066121 - 0.864054I$ $a = -1.100342 + 0.179134I$ $b = 1.46919 - 0.76918I$	$1.48316 - 6.78371I$	$-15.4399 + 4.7237I$

III. $\boldsymbol{I_3^u = \langle -9u^7 + 18u^6 + \cdots + 14b + 81,\ 9u^7 - 27u^6 + \cdots + 77a - 111,\ u^8 - 3u^7 + \cdots - 16u + 11\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.116883u^7 + 0.350649u^6 + \cdots - 0.415584u + 1.44156 \\ \frac{9}{14}u^7 - \frac{9}{7}u^6 + \cdots + \frac{57}{14}u - \frac{81}{14} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.116883u^7 + 0.350649u^6 + \cdots - 0.415584u + 1.44156 \\ \frac{13}{14}u^7 - \frac{9}{7}u^6 + \cdots + \frac{75}{14}u - \frac{81}{14} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.0129870u^7 - 0.0389610u^6 + \cdots - 0.0649351u + 0.506494 \\ -\frac{3}{14}u^7 + \frac{1}{7}u^6 + \cdots - \frac{13}{14}u + \frac{9}{14} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0129870u^7 - 0.0389610u^6 + \cdots - 0.0649351u - 0.493506 \\ -\frac{1}{14}u^7 + \frac{1}{7}u^6 + \cdots + \frac{3}{14}u + \frac{9}{14} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.480519u^7 + 0.870130u^6 + \cdots - 2.74026u + 2.68831 \\ \frac{4}{7}u^7 - \frac{8}{7}u^6 + \cdots + \frac{23}{7}u - \frac{29}{7} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.0909091u^7 - 0.272727u^6 + \cdots + 0.545455u - 1.45455 \\ \frac{4}{7}u^7 - \frac{8}{7}u^6 + \cdots + \frac{23}{7}u - \frac{29}{7} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.376623u^7 - 0.558442u^6 + \cdots + 2.25974u - 1.74026 \\ \frac{4}{7}u^7 - \frac{9}{7}u^6 + \cdots + 5u - \frac{51}{7} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{8}{7}u^7 - \frac{16}{7}u^6 - \frac{2}{7}u^5 + \frac{30}{7}u^4 - \frac{16}{7}u^3 + \frac{46}{7}u - \frac{170}{7}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_7, c_8, c_{12}	$u^8 - 3u^7 + 2u^6 + 4u^5 - 8u^4 + 5u^3 + 6u^2 - 16u + 11$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$(u^4 + u^3 - u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_7, c_8, c_{12}	$y^8 - 5y^7 + 12y^6 - 6y^5 - 26y^4 + 51y^3 + 20y^2 - 124y + 121$
c_3, c_4, c_5 c_9, c_{10}, c_{11}	$(y^4 - y^3 + 4y^2 - y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.238242 + 1.218598I$ $a = 0.518207 + 0.976187I$ $b = -0.903065 - 0.310360I$	$1.48316 + 6.78371I$	$-15.4399 - 4.7237I$
$u = 0.238242 - 1.218598I$ $a = 0.518207 - 0.976187I$ $b = -0.903065 + 0.310360I$	$1.48316 - 6.78371I$	$-15.4399 + 4.7237I$
$u = 1.215075 + 0.466358I$ $a = 0.532414 + 0.173262I$ $b = -1.27294 + 0.62687I$	$-3.95056 - 1.45022I$	$-16.5601 + 4.7237I$
$u = 1.215075 - 0.466358I$ $a = 0.532414 - 0.173262I$ $b = -1.27294 - 0.62687I$	$-3.95056 + 1.45022I$	$-16.5601 - 4.7237I$
$u = -1.281196 + 0.397697I$ $a = -0.301641 - 0.451752I$ $b = 0.206818 + 0.237188I$	$-3.95056 - 1.45022I$	$-16.5601 + 4.7237I$
$u = -1.281196 - 0.397697I$ $a = -0.301641 + 0.451752I$ $b = 0.206818 - 0.237188I$	$-3.95056 + 1.45022I$	$-16.5601 - 4.7237I$
$u = 1.32788 + 0.75978I$ $a = -0.885344 - 0.144133I$ $b = 1.46919 - 0.76918I$	$1.48316 - 6.78371I$	$-15.4399 + 4.7237I$
$u = 1.32788 - 0.75978I$ $a = -0.885344 + 0.144133I$ $b = 1.46919 + 0.76918I$	$1.48316 + 6.78371I$	$-15.4399 - 4.7237I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 1.73205$ $a = -0.577350$ $b = \ \ 1.36603$	-16.4493	-24.0000
$u = -1.73205$ $a = \ \ 0.577350$ $b = -0.366025$	-16.4493	-24.0000

V. $I_5^u = \langle 2b + a - 1,\ a^2 - 3,\ u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 1.73205$ $b = -0.366025$	-16.4493	-24.0000
$u = 1.00000$ $a = -1.73205$ $b = 1.36603$	-16.4493	-24.0000

VI. $I^u_6 = \langle b-1,\ -u^3+2u^2+2a-u+2,\ u^4-2u^3+u^2-2\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 1.078987I$ $a = -0.646447 - 0.762959I$ $b = 1.00000$	4.11234	−12.0000
$u = 0.500000 - 1.078987I$ $a = -0.646447 + 0.762959I$ $b = 1.00000$	4.11234	−12.0000
$u = -0.790044$ $a = -2.26575$ $b = 1.00000$	−15.6269	−12.0000
$u = 1.79004$ $a = -0.441355$ $b = 1.00000$	−15.6269	−12.0000

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

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -2u-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -2u-2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2u+2 \\ 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ 1.5 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 2u+\frac{5}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ \frac{5}{2}u+4 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ -\frac{1}{2}u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -2u-2 \\ u+2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ u+2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ -2u-3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5 c_7, c_8, c_{11}	$(u+1)^2$
c_3, c_4, c_6 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_4, c_5, c_6 c_7, c_8, c_9 c_{10}, c_{11}, c_{12}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-1.00000$ $b=\ \ 1.50000$	-6.57974	-24.0000
$u=-1.00000$ $a=-1.00000$ $b=\ \ 1.50000$	-6.57974	-24.0000

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

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-2u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-u\\-2u-2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}2u+2\\1\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-2u-3\\-0.5\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-2u-3\\-1.5\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u\\\frac{3}{2}u+1\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-3u-4\\\frac{1}{2}u-1\end{pmatrix}$$
$$a_9 = \begin{pmatrix}2u+2\\u+2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}3u+4\\u+2\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-4u-4\\-2u-3\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5 c_7, c_8, c_{11}	$(u+1)^2$
c_3, c_4, c_6 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_4, c_5, c_6 c_7, c_8, c_9 c_{10}, c_{11}, c_{12}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = -0.500000$	-6.57974	-24.0000
$u = -1.00000$ $a = -1.00000$ $b = -0.500000$	-6.57974	-24.0000

IX. $I_9^u = \langle -u^3 + b + u + 2,\ -u^3 + a + 2,\ u^4 + u^3 - 2u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.15372$ $a = -0.464313$ $b = -1.61803$	-5.59278	-14.0000
$u = -0.809017 + 0.981593I$ $a = -0.190983 + 0.981593I$ $b = 0.618034$	2.30291	-14.0000
$u = -0.809017 - 0.981593I$ $a = -0.190983 - 0.981593I$ $b = 0.618034$	2.30291	-14.0000
$u = -0.535687$ $a = -2.15372$ $b = -1.61803$	-5.59278	-14.0000

X. $I^u_{10} = \langle 2u^3 + u^2 + b - 2,\ a - 1,\ u^4 + u^3 - 2u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{10}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.15372$ $a = 1.00000$ $b = -2.40245$	-5.59278	-14.0000
$u = -0.809017 + 0.981593I$ $a = 1.00000$ $b = -1.309017 - 0.374935I$	2.30291	-14.0000
$u = -0.809017 - 0.981593I$ $a = 1.00000$ $b = -1.309017 + 0.374935I$	2.30291	-14.0000
$u = -0.535687$ $a = 1.00000$ $b = 2.02048$	-5.59278	-14.0000

XI. $\boldsymbol{I_{11}^u = \langle b+1,\ a,\ u-1 \rangle}$

(i) Arc colorings

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

$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

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

$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

$a_{12} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{11}^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = -1.00000$	-3.28987	-12.0000

XII. $I^u_{12} = \langle a + 1,\ u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_{12}^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$	-6.57974	-24.0000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

XIV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5 c_7, c_8, c_{11}	$u(u-1)^3(u+1)^4(u^2-3)(u^4-2u^3+u^2-2)(u^4-u^3+\cdots+3u+1)$ $\cdot(u^4+u^3-2u-1)^2(u^4+u^3-u+1)^2$ $\cdot(u^8-3u^7+2u^6+4u^5-8u^4+5u^3+6u^2-16u+11)$
c_3, c_4, c_6 c_9, c_{10}, c_{12}	$u(u-1)^4(u+1)^3(u^2-3)(u^4-2u^3+u^2-2)(u^4-u^3+\cdots+3u+1)$ $\cdot(u^4+u^3-2u-1)^2(u^4+u^3-u+1)^2$ $\cdot(u^8-3u^7+2u^6+4u^5-8u^4+5u^3+6u^2-16u+11)$

XV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_6 c_7, c_8, c_9 c_{10}, c_{11}, c_{12}	$y(y-3)^2(y-1)^7(y^4-5y^3+\cdots-13y+1)(y^4-2y^3+\cdots-4y+4)$ $\cdot\,(y^4-y^3+2y^2-4y+1)^2(y^4-y^3+4y^2-y+1)^2$ $\cdot\,(y^8-5y^7+12y^6-6y^5-26y^4+51y^3+20y^2-124y+121)$