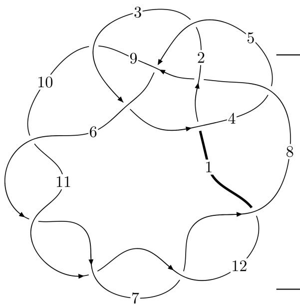
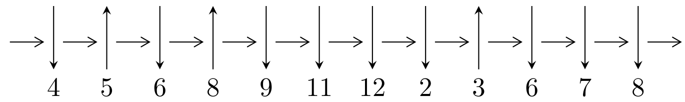
$12n_{0666}$ $(K12n_{0666})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{15} + 6u^{13} + \cdots + b - 4,\ -5u^{15} - 4u^{14} + \cdots + 3a - 13,\ u^{16} + 2u^{15} + \cdots - 13u + 3\rangle$$
$$I_2^u = \langle -u^{13}a + u^{13} + \cdots - a + 1,\ -u^{13}a - 2u^{13} + \cdots + a + 7,$$
$$u^{14} - u^{13} - 7u^{12} + 5u^{11} + 19u^{10} - 4u^9 - 26u^8 - 13u^7 + 17u^6 + 21u^5 + u^4 - 4u^3 - 6u^2 - 3u - 1\rangle$$
$$I_3^u = \langle u^6 - 4u^4 + 2u^3 + 4u^2 + b - 3u + 1,\ -u^5 - u^4 + 4u^3 + 2u^2 + a - 5u - 1,$$
$$u^7 + 2u^6 - 3u^5 - 6u^4 + 3u^3 + 5u^2 + 1\rangle$$
$$I_4^u = \langle b - 1,\ a^2 + a + u - 2,\ u^2 - u - 1\rangle$$
$$I_5^u = \langle b - 1,\ a,\ u + 1\rangle$$
$$I_6^u = \langle -u^2 + b + 2,\ -u^2 + 3a - 2u + 1,\ u^3 + 2u^2 - u - 3\rangle$$
$$I_7^u = \langle b,\ a - 1,\ u - 1\rangle$$
$$I_8^u = \langle b + 1,\ a - 1,\ u - 1\rangle$$

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

* 9 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 62 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. $I_1^u = \langle -u^{15}+6u^{13}+\cdots+b-4,\ -5u^{15}-4u^{14}+\cdots+3a-13,\ u^{16}+2u^{15}+\cdots-13u+3\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{5}{3}u^{15} + \frac{4}{3}u^{14} + \cdots - 18u + \frac{13}{3} \\ u^{15} - 6u^{13} + \cdots - 18u + 4 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{5}{3}u^{15} + \frac{4}{3}u^{14} + \cdots - 18u + \frac{13}{3} \\ 5u^{15} + 3u^{14} + \cdots - 49u + 10 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{2}{3}u^{15} - \frac{2}{3}u^{14} + \cdots - 13u + \frac{10}{3} \\ 3u^{15} + u^{14} + \cdots - 35u + 7 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{3}u^{15} - \frac{4}{3}u^{14} + \cdots - 20u + \frac{11}{3} \\ u^{15} - u^{14} + \cdots - 24u + 5 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{2}{3}u^{15} - \frac{2}{3}u^{14} + \cdots + 6u - \frac{5}{3} \\ 2u^{15} + u^{14} + \cdots - 8u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^4 + 3u^2 - 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 5u^{15} + 4u^{14} - 36u^{13} - 14u^{12} + 103u^{11} - 32u^{10} - 158u^9 + 170u^8 + 88u^7 - 217u^6 + 91u^5 + 87u^4 - 95u^3 + 35u^2 + 10u - 18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{16} + u^{15} + \cdots + 13u + 1$
c_2	$u^{16} + 10u^{15} + \cdots - 5u - 3$
c_4, c_9	$u^{16} - 5u^{15} + \cdots - 17u + 5$
c_5, c_8	$u^{16} + 2u^{15} + \cdots - 2u - 1$
c_6, c_7, c_{10} c_{11}, c_{12}	$u^{16} - 2u^{15} + \cdots + 13u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{16} + 13y^{15} + \cdots - 49y + 1$
c_2	$y^{16} - 4y^{14} + \cdots + 113y + 9$
c_4, c_9	$y^{16} - 11y^{15} + \cdots - 199y + 25$
c_5, c_8	$y^{16} - 10y^{15} + \cdots - 18y + 1$
c_6, c_7, c_{10} c_{11}, c_{12}	$y^{16} - 16y^{15} + \cdots - 43y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.548500 + 0.853725I$ $a = 0.30836 - 1.43712I$ $b = -0.66590 - 1.54507I$	$5.38391 - 10.31740I$	$-5.41022 + 7.34778I$
$u = 0.548500 - 0.853725I$ $a = 0.30836 + 1.43712I$ $b = -0.66590 + 1.54507I$	$5.38391 + 10.31740I$	$-5.41022 - 7.34778I$
$u = 0.578322 + 0.876148I$ $a = -0.869193 + 0.857447I$ $b = -0.18633 + 1.46072I$	$5.31272 + 4.64447I$	$-4.44340 - 2.64217I$
$u = 0.578322 - 0.876148I$ $a = -0.869193 - 0.857447I$ $b = -0.18633 - 1.46072I$	$5.31272 - 4.64447I$	$-4.44340 + 2.64217I$
$u = 0.217481 + 0.592732I$ $a = 0.47227 + 1.50811I$ $b = 0.203575 + 0.996171I$	$0.50766 - 2.36838I$	$-7.45824 + 4.04010I$
$u = 0.217481 - 0.592732I$ $a = 0.47227 - 1.50811I$ $b = 0.203575 - 0.996171I$	$0.50766 + 2.36838I$	$-7.45824 - 4.04010I$
$u = 1.39667$ $a = -1.16562$ $b = 1.59448$	-6.42671	-13.8540
$u = -1.384810 + 0.218261I$ $a = -0.413538 - 0.720270I$ $b = 0.78536 - 1.50062I$	$-4.59888 + 5.31561I$	$-16.0697 - 5.0195I$
$u = -1.384810 - 0.218261I$ $a = -0.413538 + 0.720270I$ $b = 0.78536 + 1.50062I$	$-4.59888 - 5.31561I$	$-16.0697 + 5.0195I$
$u = -1.48477 + 0.03326I$ $a = 0.374186 + 0.661888I$ $b = 0.159333 + 0.652088I$	$-7.28530 - 0.33372I$	$-13.77762 + 1.31768I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.48477 - 0.03326I$ $a = 0.374186 - 0.661888I$ $b = 0.159333 - 0.652088I$	$-7.28530 + 0.33372I$	$-13.77762 - 1.31768I$
$u = 0.471433 + 0.149281I$ $a = 1.189440 + 0.539880I$ $b = 0.190619 - 0.017488I$	$-0.951255 - 0.232345I$	$-11.11372 + 2.61454I$
$u = 0.471433 - 0.149281I$ $a = 1.189440 - 0.539880I$ $b = 0.190619 + 0.017488I$	$-0.951255 + 0.232345I$	$-11.11372 - 2.61454I$
$u = -1.54560 + 0.31071I$ $a = 0.806991 + 0.667934I$ $b = -1.09400 + 1.47232I$	$-1.4014 + 14.5984I$	$-9.03391 - 7.72929I$
$u = -1.54560 - 0.31071I$ $a = 0.806991 - 0.667934I$ $b = -1.09400 - 1.47232I$	$-1.4014 - 14.5984I$	$-9.03391 + 7.72929I$
$u = 1.80224$ $a = -0.238089$ $b = 0.620201$	-15.4721	-27.5320

II.

$\boldsymbol{I_2^u = \langle -u^{13}a+u^{13}+\cdots-a+1,\ -u^{13}a-2u^{13}+\cdots+a+7,\ u^{14}-u^{13}+\cdots-3u-1\rangle}$

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ u^{13}a - u^{13} + \cdots + a - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ u^{13}a - u^{13} + \cdots + a - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2u^{13}a - u^{12}a + \cdots + a - 2 \\ 2u^{13} - 14u^{11} + \cdots - u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{13}a + u^{13} + \cdots + u + 2 \\ -u^{13}a + u^{13} + \cdots + 8u + 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{13}a - u^{12} + \cdots + 2a - 2 \\ u^{13}a - u^{12} + \cdots + a - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^4 + 3u^2 - 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 11u^{13} - 10u^{12} - 72u^{11} + 49u^{10} + 176u^9 - 43u^8 - 211u^7 - 87u^6 + 135u^5 + 125u^4 - 27u^3 - 12u^2 - 25u - 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{28} - 4u^{27} + \cdots + 82u - 11$
c_2	$(u^{14} - 6u^{13} + \cdots - 10u + 4)^2$
c_4, c_9	$u^{28} - 2u^{27} + \cdots - 264u + 24$
c_5, c_8	$u^{28} - u^{27} + \cdots - 11u - 1$
c_6, c_7, c_{10} c_{11}, c_{12}	$(u^{14} + u^{13} + \cdots + 3u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{28} + 24y^{27} + \cdots + 3132y + 121$
c_2	$(y^{14} - 4y^{13} + \cdots - 188y + 16)^2$
c_4, c_9	$y^{28} - 18y^{27} + \cdots - 12000y + 576$
c_5, c_8	$y^{28} + y^{27} + \cdots - 47y + 1$
c_6, c_7, c_{10} c_{11}, c_{12}	$(y^{14} - 15y^{13} + \cdots + 3y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.543841 + 0.788845I$ $a = -0.786499 - 1.127240I$ $b = -0.15757 - 1.50904I$	$6.74935 + 2.61367I$	$-3.08817 - 3.10085I$
$u = -0.543841 + 0.788845I$ $a = 0.59080 + 1.44573I$ $b = -0.57036 + 1.40275I$	$6.74935 + 2.61367I$	$-3.08817 - 3.10085I$
$u = -0.543841 - 0.788845I$ $a = -0.786499 + 1.127240I$ $b = -0.15757 + 1.50904I$	$6.74935 - 2.61367I$	$-3.08817 + 3.10085I$
$u = -0.543841 - 0.788845I$ $a = 0.59080 - 1.44573I$ $b = -0.57036 - 1.40275I$	$6.74935 - 2.61367I$	$-3.08817 + 3.10085I$
$u = 1.10803$ $a = 0.948288$ $b = -0.313019$	-1.64992	-5.91590
$u = 1.10803$ $a = 0.875781$ $b = -0.967676$	-1.64992	-5.91590
$u = -1.315420 + 0.077239I$ $a = -1.053540 - 0.890197I$ $b = 0.734783 - 1.046780I$	$-2.09644 + 4.46056I$	$-6.21772 - 5.02110I$
$u = -1.315420 + 0.077239I$ $a = 0.461982 - 0.077443I$ $b = -1.17028 - 1.69999I$	$-2.09644 + 4.46056I$	$-6.21772 - 5.02110I$
$u = -1.315420 - 0.077239I$ $a = -1.053540 + 0.890197I$ $b = 0.734783 + 1.046780I$	$-2.09644 - 4.46056I$	$-6.21772 + 5.02110I$
$u = -1.315420 - 0.077239I$ $a = 0.461982 + 0.077443I$ $b = -1.17028 + 1.69999I$	$-2.09644 - 4.46056I$	$-6.21772 + 5.02110I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.45797 + 0.12777I$ $a = -0.697357 + 0.508441I$ $b = 1.08158 + 1.81362I$	$-5.60858 - 6.11443I$	$-13.6408 + 6.9717I$
$u = 1.45797 + 0.12777I$ $a = -0.139548 - 1.280800I$ $b = -0.085041 - 0.349273I$	$-5.60858 - 6.11443I$	$-13.6408 + 6.9717I$
$u = 1.45797 - 0.12777I$ $a = -0.697357 - 0.508441I$ $b = 1.08158 - 1.81362I$	$-5.60858 + 6.11443I$	$-13.6408 - 6.9717I$
$u = 1.45797 - 0.12777I$ $a = -0.139548 + 1.280800I$ $b = -0.085041 + 0.349273I$	$-5.60858 + 6.11443I$	$-13.6408 - 6.9717I$
$u = -0.019410 + 0.530789I$ $a = -0.270655 + 0.346124I$ $b = -1.106740 + 0.564246I$	$1.71604 - 2.54798I$	$-1.07278 + 1.43352I$
$u = -0.019410 + 0.530789I$ $a = 1.01173 + 2.29513I$ $b = 0.289802 + 1.068640I$	$1.71604 - 2.54798I$	$-1.07278 + 1.43352I$
$u = -0.019410 - 0.530789I$ $a = -0.270655 - 0.346124I$ $b = -1.106740 - 0.564246I$	$1.71604 + 2.54798I$	$-1.07278 - 1.43352I$
$u = -0.019410 - 0.530789I$ $a = 1.01173 - 2.29513I$ $b = 0.289802 - 1.068640I$	$1.71604 + 2.54798I$	$-1.07278 - 1.43352I$
$u = -0.357381 + 0.324231I$ $a = -0.75149 - 2.13461I$ $b = 0.39490 - 1.51758I$	$0.35035 + 4.37070I$	$-10.2424 - 10.7977I$
$u = -0.357381 + 0.324231I$ $a = -1.29088 + 2.35828I$ $b = -0.049630 - 0.292724I$	$0.35035 + 4.37070I$	$-10.2424 - 10.7977I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.357381 - 0.324231I$ $a = -0.75149 + 2.13461I$ $b = 0.39490 + 1.51758I$	$0.35035 - 4.37070I$	$-10.2424 + 10.7977I$
$u = -0.357381 - 0.324231I$ $a = -1.29088 - 2.35828I$ $b = -0.049630 + 0.292724I$	$0.35035 - 4.37070I$	$-10.2424 + 10.7977I$
$u = 1.54231 + 0.28303I$ $a = 0.901435 - 0.599841I$ $b = -0.93554 - 1.19334I$	$-0.04950 - 6.56214I$	$-6.38364 + 4.80522I$
$u = 1.54231 + 0.28303I$ $a = -0.669860 + 0.302514I$ $b = 0.29812 + 1.50281I$	$-0.04950 - 6.56214I$	$-6.38364 + 4.80522I$
$u = 1.54231 - 0.28303I$ $a = 0.901435 + 0.599841I$ $b = -0.93554 + 1.19334I$	$-0.04950 + 6.56214I$	$-6.38364 - 4.80522I$
$u = 1.54231 - 0.28303I$ $a = -0.669860 - 0.302514I$ $b = 0.29812 - 1.50281I$	$-0.04950 + 6.56214I$	$-6.38364 - 4.80522I$
$u = -1.63650$ $a = 1.21145$ $b = -0.967540$	-10.3421	10.2070
$u = -1.63650$ $a = 0.352250$ $b = 0.800198$	-10.3421	10.2070

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

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^5 + u^4 - 4u^3 - 2u^2 + 5u + 1 \\ -u^6 + 4u^4 - 2u^3 - 4u^2 + 3u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^5 + u^4 - 4u^3 - 2u^2 + 5u + 1 \\ -2u^6 - u^5 + 8u^4 - 8u^2 + 3u - 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^6 + u^5 - 4u^4 - 3u^3 + 5u^2 + 3u - 1 \\ -u^5 + 3u^3 - u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^2 - 2 \\ -u^6 - u^5 + 4u^4 + 2u^3 - 4u^2 - u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^5 + u^4 - 4u^3 - 2u^2 + 5u + 2 \\ -u^3 + 2u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^4 - 3u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^6 + u^5 + 15u^4 - 12u^3 - 20u^2 + 17u - 7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^7 + u^6 + 4u^5 + 5u^4 + 7u^3 + 6u^2 + 4u + 1$
c_2	$u^7 + 8u^6 + 31u^5 + 75u^4 + 122u^3 + 133u^2 + 90u + 29$
c_4, c_9	$u^7 - u^6 + u^4 + u^3 - 2u^2 + 1$
c_5, c_8	$u^7 - 2u^5 - u^4 + u^3 - u - 1$
c_6, c_7	$u^7 - 2u^6 - 3u^5 + 6u^4 + 3u^3 - 5u^2 - 1$
c_{10}, c_{11}, c_{12}	$u^7 + 2u^6 - 3u^5 - 6u^4 + 3u^3 + 5u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^7 + 7y^6 + 20y^5 + 27y^4 + 19y^3 + 10y^2 + 4y - 1$
c_2	$y^7 - 2y^6 + 5y^5 - 9y^4 + 50y^3 - 79y^2 + 386y - 841$
c_4, c_9	$y^7 - y^6 + 4y^5 - 5y^4 + 7y^3 - 6y^2 + 4y - 1$
c_5, c_8	$y^7 - 4y^6 + 6y^5 - 7y^4 + 5y^3 - 4y^2 + y - 1$
c_6, c_7, c_{10} c_{11}, c_{12}	$y^7 - 10y^6 + 39y^5 - 74y^4 + 65y^3 - 13y^2 - 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.278170 + 0.302690I$ $a = 0.690513 + 0.118128I$ $b = -0.587538 - 0.609722I$	$-3.01119 + 1.09708I$	$-11.40523 - 3.58425I$
$u = 1.278170 - 0.302690I$ $a = 0.690513 - 0.118128I$ $b = -0.587538 + 0.609722I$	$-3.01119 - 1.09708I$	$-11.40523 + 3.58425I$
$u = -1.399450 + 0.156175I$ $a = -0.465734 - 0.770245I$ $b = 0.41431 - 1.55213I$	$-3.71133 + 5.67264I$	$-7.64975 - 7.54460I$
$u = -1.399450 - 0.156175I$ $a = -0.465734 + 0.770245I$ $b = 0.41431 + 1.55213I$	$-3.71133 - 5.67264I$	$-7.64975 + 7.54460I$
$u = 0.037900 + 0.397504I$ $a = 1.60254 + 2.17123I$ $b = -0.126346 + 1.154250I$	$1.16830 - 3.69824I$	$-2.64032 + 6.74904I$
$u = 0.037900 - 0.397504I$ $a = 1.60254 - 2.17123I$ $b = -0.126346 - 1.154250I$	$1.16830 + 3.69824I$	$-2.64032 - 6.74904I$
$u = -1.83325$ $a = 0.345358$ $b = -0.400851$	-15.2105	3.39060

IV. $I^u_4 = \langle b-1,\ a^2+a+u-2,\ u^2-u-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u-22$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y-1)^4$
c_2	y^4
c_4, c_5, c_8 c_9	$y^4 - 7y^3 + 13y^2 - 7y + 1$
c_6, c_7, c_{10} c_{11}, c_{12}	$(y^2 - 3y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 1.19353$ $b = 1.00000$	-2.63189	-17.6740
$u = -0.618034$ $a = -2.19353$ $b = 1.00000$	-2.63189	-17.6740
$u = 1.61803$ $a = -1.29496$ $b = 1.00000$	-10.5276	-33.3260
$u = 1.61803$ $a = 0.294963$ $b = 1.00000$	-10.5276	-33.3260

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0$ $b = 1.00000$	-4.93480	-18.0000

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

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{3}u^2 + \frac{2}{3}u - \frac{1}{3} \\ u^2 - 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{3}u^2 + \frac{2}{3}u - \frac{1}{3} \\ u^2 + u - 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{2}{3}u^2 - \frac{1}{3}u + \frac{5}{3} \\ 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{4}{3}u^2 - \frac{2}{3}u + \frac{7}{3} \\ -u^2 + 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 2u^2 + u - 3 \\ 2u^2 - 3 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{2}{3}u^2 - \frac{1}{3}u + \frac{8}{3} \\ -2u^2 - u + 4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -2u^2 - u + 5 \\ -3u^2 - u + 6 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.14790$ $a = 0.871157$ $b = -0.682328$	-1.64493	-6.00000
$u = -1.57395 + 0.36899I$ $a = -0.602245 - 0.141188I$ $b = 0.341164 - 1.161540I$	-1.64493	-6.00000
$u = -1.57395 - 0.36899I$ $a = -0.602245 + 0.141188I$ $b = 0.341164 + 1.161540I$	-1.64493	-6.00000

VII. $\boldsymbol{I^u_7 = \langle b,\ a-1,\ u-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(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	−1.64493	−6.00000
$b =$	0		

VIII. $I^u_8 = \langle b+1,\ a-1,\ u-1 \rangle$

(i) Arc colorings

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

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

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

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

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

$$a_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 1.00000$ $b = -1.00000$	-1.64493	-6.00000

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

(i) Arc colorings

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

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

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

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

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

$a_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-1.64493	-6.00000

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$u(u-1)^5(u+1)^2(u^3+u-1)(u^7+u^6+\cdots+4u+1)$ $\cdot(u^{16}+u^{15}+\cdots+13u+1)(u^{28}-4u^{27}+\cdots+82u-11)$
c_2	$u^5(u-1)^2(u+1)(u^3+2u^2-u-3)$ $\cdot(u^7+8u^6+31u^5+75u^4+122u^3+133u^2+90u+29)$ $\cdot((u^{14}-6u^{13}+\cdots-10u+4)^2)(u^{16}+10u^{15}+\cdots-5u-3)$
c_4, c_9	$u(u+1)^6(u^4+u^3-3u^2-u+1)(u^7-u^6+u^4+u^3-2u^2+1)$ $\cdot(u^{16}-5u^{15}+\cdots-17u+5)(u^{28}-2u^{27}+\cdots-264u+24)$
c_5, c_8	$u(u-1)(u+1)^2(u^3-2u^2+u+1)(u^4+u^3-3u^2-u+1)$ $\cdot(u^7-2u^5-u^4+u^3-u-1)(u^{16}+2u^{15}+\cdots-2u-1)$ $\cdot(u^{28}-u^{27}+\cdots-11u-1)$
c_6, c_7	$u(u-1)(u+1)^2(u^2+u-1)^2(u^3-2u^2-u+3)$ $\cdot(u^7-2u^6+\cdots-5u^2-1)(u^{14}+u^{13}+\cdots+3u-1)^2$ $\cdot(u^{16}-2u^{15}+\cdots+13u+3)$
c_{10}, c_{11}, c_{12}	$u(u-1)(u+1)^2(u^2-u-1)^2(u^3-2u^2-u+3)$ $\cdot(u^7+2u^6+\cdots+5u^2+1)(u^{14}+u^{13}+\cdots+3u-1)^2$ $\cdot(u^{16}-2u^{15}+\cdots+13u+3)$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y(y-1)^7(y^3+2y^2+y-1)$ $\cdot(y^7+7y^6+20y^5+27y^4+19y^3+10y^2+4y-1)$ $\cdot(y^{16}+13y^{15}+\cdots-49y+1)(y^{28}+24y^{27}+\cdots+3132y+121)$
c_2	$y^5(y-1)^3(y^3-6y^2+13y-9)$ $\cdot(y^7-2y^6+5y^5-9y^4+50y^3-79y^2+386y-841)$ $\cdot((y^{14}-4y^{13}+\cdots-188y+16)^2)(y^{16}-4y^{14}+\cdots+113y+9)$
c_4, c_9	$y(y-1)^6(y^4-7y^3+13y^2-7y+1)$ $\cdot(y^7-y^6+4y^5-5y^4+7y^3-6y^2+4y-1)$ $\cdot(y^{16}-11y^{15}+\cdots-199y+25)(y^{28}-18y^{27}+\cdots-12000y+576)$
c_5, c_8	$y(y-1)^3(y^3-2y^2+5y-1)(y^4-7y^3+13y^2-7y+1)$ $\cdot(y^7-4y^6+\cdots+y-1)(y^{16}-10y^{15}+\cdots-18y+1)$ $\cdot(y^{28}+y^{27}+\cdots-47y+1)$
c_6, c_7, c_{10} c_{11}, c_{12}	$y(y-1)^3(y^2-3y+1)^2(y^3-6y^2+13y-9)$ $\cdot(y^7-10y^6+39y^5-74y^4+65y^3-13y^2-10y-1)$ $\cdot((y^{14}-15y^{13}+\cdots+3y+1)^2)(y^{16}-16y^{15}+\cdots-43y+9)$