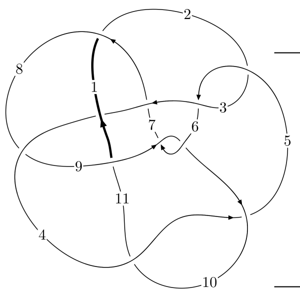
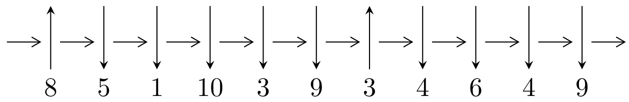
$11n_{164}$ ($K11n_{164}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-u^6 + u^5 - 2u^4 - 2u^2 + b - 2u - 1,\ -u^7 + 3u^6 - 3u^5 + 2u^4 + 2u^3 - u^2 + 3a + 6u + 3, \\
&u^8 - 3u^7 + 6u^6 - 5u^5 + 4u^4 + u^3 + 3u + 3\rangle \\
I_2^u = \langle &-2u^9 + 10u^8 - 24u^7 + 38u^6 - 49u^5 + 52u^4 - 32u^3 - u^2 + b + 14u - 5, \\
&5u^9 - 23u^8 + 55u^7 - 86u^6 + 112u^5 - 116u^4 + 73u^3 + 2u^2 + a - 29u + 11, \\
&u^{10} - 5u^9 + 13u^8 - 22u^7 + 30u^6 - 33u^5 + 25u^4 - 6u^3 - 6u^2 + 5u - 1\rangle \\
I_3^u = \langle &-u^5 - 2u^4 - 4u^3 - 3u^2 + b - 2u + 1,\ -u^9 - 4u^8 - 11u^7 - 19u^6 - 25u^5 - 22u^4 - 14u^3 - 5u^2 + a - u - 1, \\
&u^{10} + 4u^9 + 11u^8 + 19u^7 + 25u^6 + 21u^5 + 12u^4 + u^3 - 2u^2 - u + 1\rangle \\
I_4^u = \langle &-3u^3 - au - 5u^2 + b - 3u + 4,\ 4u^3a + 7u^2a + u^3 + a^2 + 5au + 2u^2 - 5a + u - 2,\ u^4 + u^3 - 2u + 1\rangle \\
I_5^u = \langle &-au + b + u + 1,\ a^2 + au - 2u - 1,\ u^2 + u + 1\rangle \\
I_6^u = \langle &b - 2,\ a + 1,\ u + 1\rangle \\
I_7^u = \langle &b + 1,\ a - 2,\ u + 1\rangle \\
I_8^u = \langle &b - 1,\ a + 1,\ u + 1\rangle
\end{aligned}$$

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

* 9 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. $\boldsymbol{I^u_1 = \langle -u^6 + u^5 - 2u^4 - 2u^2 + b - 2u - 1,\ -u^7 + 3u^6 + \cdots + 3a + 3,\ u^8 - 3u^7 + 6u^6 - 5u^5 + 4u^4 + u^3 + 3u + 3\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^7 + 6u^6 - 12u^5 + 12u^4 - 8u^3 + 2u^2 - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 - u^7 + 9u^6 - 4u^5 + 26u^4 - 2u^3 + 28u^2 + 10$
c_2, c_5, c_8 c_{11}	$u^8 - u^7 - 4u^6 + 5u^5 + 4u^4 - 3u^3 + 4u^2 - u + 1$
c_3, c_6, c_9	$u^8 - 3u^7 + 6u^6 - 5u^5 + 4u^4 + u^3 + 3u + 3$
c_4, c_{10}	$u^8 + 6u^7 + 20u^6 + 42u^5 + 68u^4 + 82u^3 + 74u^2 + 32u + 8$
c_7	$u^8 + 2u^7 + 9u^6 + 10u^5 + 31u^4 + 30u^3 + 27u^2 + 26u + 12$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 + 17y^7 + \cdots + 560y + 100$
c_2, c_5, c_8 c_{11}	$y^8 - 9y^7 + 34y^6 - 55y^5 + 14y^4 + 25y^3 + 18y^2 + 7y + 1$
c_3, c_6, c_9	$y^8 + 3y^7 + 14y^6 + 29y^5 + 50y^4 + 65y^3 + 18y^2 - 9y + 9$
c_4, c_{10}	$y^8 + 4y^7 + 32y^6 + 120y^5 + 328y^4 + 972y^3 + 1316y^2 + 160y + 64$
c_7	$y^8 + 14y^7 + 103y^6 + 392y^5 + 767y^4 + 470y^3 - 87y^2 - 28y + 144$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.010055 + 1.117600I$ $a = -0.471916 - 0.347611I$ $b = -0.383744 + 0.530909I$	$5.09476 + 1.30932I$	$-1.82878 - 5.39060I$
$u = 0.010055 - 1.117600I$ $a = -0.471916 + 0.347611I$ $b = -0.383744 - 0.530909I$	$5.09476 - 1.30932I$	$-1.82878 + 5.39060I$
$u = -0.576935 + 0.295827I$ $a = 0.469090 - 0.674407I$ $b = 0.071127 - 0.527859I$	$-0.769995 + 1.158600I$	$-7.36601 - 5.92276I$
$u = -0.576935 - 0.295827I$ $a = 0.469090 + 0.674407I$ $b = 0.071127 + 0.527859I$	$-0.769995 - 1.158600I$	$-7.36601 + 5.92276I$
$u = 0.97820 + 1.19005I$ $a = -0.587535 + 0.812766I$ $b = 1.54196 - 0.09585I$	$-10.45920 - 2.83405I$	$-9.78328 + 2.02620I$
$u = 0.97820 - 1.19005I$ $a = -0.587535 - 0.812766I$ $b = 1.54196 + 0.09585I$	$-10.45920 + 2.83405I$	$-9.78328 - 2.02620I$
$u = 1.08868 + 1.10558I$ $a = 1.090360 - 0.490500I$ $b = -1.72934 - 0.67148I$	$-11.1373 - 13.1502I$	$-9.02192 + 6.51668I$
$u = 1.08868 - 1.10558I$ $a = 1.090360 + 0.490500I$ $b = -1.72934 + 0.67148I$	$-11.1373 + 13.1502I$	$-9.02192 - 6.51668I$

II.
$$\boldsymbol{I^u_2 = \langle -2u^9+10u^8+\cdots+b-5,\ 5u^9-23u^8+\cdots+a+11,\ u^{10}-5u^9+\cdots+5u-1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -5u^9 + 23u^8 + \cdots + 29u - 11 \\ 2u^9 - 10u^8 + 24u^7 - 38u^6 + 49u^5 - 52u^4 + 32u^3 + u^2 - 14u + 5 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -3u^9 + 13u^8 - 31u^7 + 48u^6 - 63u^5 + 64u^4 - 41u^3 - u^2 + 15u - 6 \\ 2u^9 - 10u^8 + 24u^7 - 38u^6 + 49u^5 - 52u^4 + 32u^3 + u^2 - 14u + 5 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -3u^9 + 15u^8 - 38u^7 + 61u^6 - 80u^5 + 85u^4 - 58u^3 + u^2 + 22u - 9 \\ -u^9 + 3u^8 - 3u^7 + u^6 - 4u^4 + 13u^3 - 8u^2 - 4u + 3 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -4u^9 + 17u^8 - 39u^7 + 58u^6 - 75u^5 + 74u^4 - 42u^3 - 9u^2 + 17u - 5 \\ 2u^9 - 9u^8 + 22u^7 - 34u^6 + 44u^5 - 45u^4 + 29u^3 + 3u^2 - 13u + 4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2u^9 - 9u^8 + 21u^7 - 32u^6 + 42u^5 - 43u^4 + 26u^3 + 2u^2 - 8u + 5 \\ -u^9 + 5u^8 - 12u^7 + 18u^6 - 23u^5 + 24u^4 - 14u^3 - 4u^2 + 6u - 2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^9 - 4u^8 + 9u^7 - 14u^6 + 19u^5 - 19u^4 + 12u^3 - 2u^2 - 2u + 3 \\ -u^9 + 5u^8 - 12u^7 + 18u^6 - 23u^5 + 24u^4 - 14u^3 - 4u^2 + 6u - 2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -4u^9 + 17u^8 - 38u^7 + 56u^6 - 72u^5 + 71u^4 - 38u^3 - 9u^2 + 15u - 4 \\ u^9 - 7u^8 + 19u^7 - 31u^6 + 40u^5 - 45u^4 + 31u^3 + 2u^2 - 13u + 4 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^7 - 3u^6 + 5u^5 - 6u^4 + 8u^3 - 5u^2 - u + 2 \\ -u^9 + 4u^8 - 8u^7 + 11u^6 - 14u^5 + 13u^4 - 4u^3 - 3u^2 + 3u - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^7 - 3u^6 + 5u^5 - 6u^4 + 8u^3 - 5u^2 - u + 2 \\ -u^9 + 4u^8 - 8u^7 + 11u^6 - 14u^5 + 13u^4 - 4u^3 - 3u^2 + 3u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -7u^9 + 30u^8 - 69u^7 + 104u^6 - 134u^5 + 134u^4 - 76u^3 - 14u^2 + 35u - 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^5+2u^3-2u^2-u+1)^2$
c_2, c_5, c_8 c_{11}	$u^{10}-u^9-6u^8+6u^7+15u^6-19u^5-10u^4+17u^3-u+1$
c_3, c_6, c_9	$u^{10}-5u^9+13u^8-22u^7+30u^6-33u^5+25u^4-6u^3-6u^2+5u-1$
c_4, c_{10}	$(u^5+4u^4+9u^3+11u^2+10u+4)^2$
c_7	$(u^5-u^4+5u^3-2u^2-2u+3)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^5+4y^4+2y^3-8y^2+5y-1)^2$
c_2, c_5, c_8 c_{11}	$y^{10}-13y^9+\cdots-y+1$
c_3, c_6, c_9	$y^{10}+y^9+9y^8+16y^7+26y^6+39y^5+63y^4-66y^3+46y^2-13y+1$
c_4, c_{10}	$(y^5+2y^4+13y^3+27y^2+12y-16)^2$
c_7	$(y^5+9y^4+17y^3-18y^2+16y-9)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.625622 + 0.371117I$ $a = 1.85638 - 0.01798I$ $b = -1.168060 - 0.677685I$	$2.23236 - 3.66584I$	$-2.77098 - 1.99903I$
$u = 0.625622 - 0.371117I$ $a = 1.85638 + 0.01798I$ $b = -1.168060 + 0.677685I$	$2.23236 + 3.66584I$	$-2.77098 + 1.99903I$
$u = -0.347234 + 1.335500I$ $a = 0.191634 - 0.192957I$ $b = -0.191152 - 0.322929I$	$2.23236 + 3.66584I$	$-2.77098 + 1.99903I$
$u = -0.347234 - 1.335500I$ $a = 0.191634 + 0.192957I$ $b = -0.191152 + 0.322929I$	$2.23236 - 3.66584I$	$-2.77098 - 1.99903I$
$u = -0.531946$ $a = 0.830218$ $b = 0.441631$	-1.48837	-7.29890
$u = 1.14606 + 0.92119I$ $a = -1.184760 + 0.383544I$ $b = 1.71113 + 0.65182I$	$-11.35780 - 4.96850I$	$-10.07956 + 2.53316I$
$u = 1.14606 - 0.92119I$ $a = -1.184760 - 0.383544I$ $b = 1.71113 - 0.65182I$	$-11.35780 + 4.96850I$	$-10.07956 - 2.53316I$
$u = 1.16790 + 1.05893I$ $a = 0.714063 - 0.714867I$ $b = -1.59095 + 0.07875I$	$-11.35780 + 4.96850I$	$-10.07956 - 2.53316I$
$u = 1.16790 - 1.05893I$ $a = 0.714063 + 0.714867I$ $b = -1.59095 - 0.07875I$	$-11.35780 - 4.96850I$	$-10.07956 + 2.53316I$
$u = 0.347235$ $a = -2.98485$ $b = 1.03645$	-1.48837	-7.29890

III. $I^u_3 =$
$\langle -u^5-2u^4-4u^3-3u^2+b-2u+1,\ -u^9-4u^8+\cdots+a-1,\ u^{10}+4u^9+\cdots-u+1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^9+4u^8+11u^7+19u^6+25u^5+22u^4+14u^3+5u^2+u+1 \\ u^5+2u^4+4u^3+3u^2+2u-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^9+4u^8+11u^7+19u^6+26u^5+24u^4+18u^3+8u^2+3u \\ u^5+2u^4+4u^3+3u^2+2u-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^9+4u^8+10u^7+16u^6+19u^5+15u^4+9u^3+4u^2+2u+1 \\ u^9+3u^8+7u^7+9u^6+10u^5+6u^4+5u^3+2u^2+2u-1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^8-4u^7-11u^6-18u^5-22u^4-15u^3-6u^2+3u+2 \\ -u^7-3u^6-6u^5-6u^4-4u^3+u^2+2u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^7+3u^6+7u^5+9u^4+9u^3+3u^2-3 \\ u^8+3u^7+7u^6+9u^5+9u^4+3u^3-2u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^8+4u^7+10u^6+16u^5+18u^4+12u^3+3u^2-2u-3 \\ u^8+3u^7+7u^6+9u^5+9u^4+3u^3-2u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^8-4u^7-11u^6-18u^5-22u^4-15u^3-5u^2+4u+3 \\ -u^7-3u^6-6u^5-7u^4-5u^3+2u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^9+5u^8+14u^7+26u^6+34u^5+30u^4+15u^3-6u-3 \\ u^9+4u^8+10u^7+16u^6+18u^5+12u^4+3u^3-3u^2-2u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^9+5u^8+14u^7+26u^6+34u^5+30u^4+15u^3-6u-3 \\ u^9+4u^8+10u^7+16u^6+18u^5+12u^4+3u^3-3u^2-2u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^9+u^8+4u^7+16u^6+20u^5+28u^4+12u^3+12u^2-3u-5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10}+5u^8+8u^6+3u^4+2u^2+4$
c_2	$u^{10}-2u^8-2u^7+u^6+u^5+5u^4+2u^3-2u^2-u+1$
c_3, c_9	$u^{10}+4u^9+11u^8+19u^7+25u^6+21u^5+12u^4+u^3-2u^2-u+1$
c_4, c_{10}	$u^{10}+4u^8+u^6-7u^4-2u^2+4$
c_5, c_8, c_{11}	$u^{10}-2u^8+2u^7+u^6-u^5+5u^4-2u^3-2u^2+u+1$
c_6	$u^{10}-4u^9+11u^8-19u^7+25u^6-21u^5+12u^4-u^3-2u^2+u+1$
c_7	$(u^5-u^4+3u^3+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^5+5y^4+8y^3+3y^2+2y+4)^2$
c_2, c_5, c_8 c_{11}	$y^{10}-4y^9+6y^8+2y^7-19y^6+27y^5+9y^4-20y^3+18y^2-5y+1$
c_3, c_6, c_9	$y^{10}+6y^9+\cdots-5y+1$
c_4, c_{10}	$(y^5+4y^4+y^3-7y^2-2y+4)^2$
c_7	$(y^5+5y^4+9y^3+2y^2-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.731699 + 0.572220I$ $a = 1.48078 + 0.14546I$ $b = -1.166730 + 0.740897I$	$2.01963 + 4.25086I$	$-7.08888 - 9.27894I$
$u = -0.731699 - 0.572220I$ $a = 1.48078 - 0.14546I$ $b = -1.166730 - 0.740897I$	$2.01963 - 4.25086I$	$-7.08888 + 9.27894I$
$u = -0.344685 + 1.213160I$ $a = -0.136245 + 0.613767I$ $b = -0.697636 - 0.376843I$	4.38002	$-7.67593 + 0.I$
$u = -0.344685 - 1.213160I$ $a = -0.136245 - 0.613767I$ $b = -0.697636 + 0.376843I$	4.38002	$-7.67593 + 0.I$
$u = -0.23712 + 1.40919I$ $a = -0.238288 - 0.297862I$ $b = 0.476249 - 0.265165I$	$2.01963 + 4.25086I$	$-7.08888 - 9.27894I$
$u = -0.23712 - 1.40919I$ $a = -0.238288 + 0.297862I$ $b = 0.476249 + 0.265165I$	$2.01963 - 4.25086I$	$-7.08888 + 9.27894I$
$u = -1.04039 + 1.04611I$ $a = -0.849900 - 0.531699I$ $b = 1.44044 - 0.33592I$	$-4.20964 + 3.82188I$	$-5.57316 - 2.67833I$
$u = -1.04039 - 1.04611I$ $a = -0.849900 + 0.531699I$ $b = 1.44044 + 0.33592I$	$-4.20964 - 3.82188I$	$-5.57316 + 2.67833I$
$u = 0.353890 + 0.196697I$ $a = 1.24365 + 2.50355I$ $b = -0.052327 + 1.130600I$	$-4.20964 - 3.82188I$	$-5.57316 + 2.67833I$
$u = 0.353890 - 0.196697I$ $a = 1.24365 - 2.50355I$ $b = -0.052327 - 1.130600I$	$-4.20964 + 3.82188I$	$-5.57316 - 2.67833I$

IV.

$$\boldsymbol{I_4^u = \langle -3u^3 - au - 5u^2 + b - 3u + 4,\ 4u^3a + u^3 + \cdots - 5a - 2,\ u^4 + u^3 - 2u + 1\rangle}$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ 3u^3 + au + 5u^2 + 3u - 4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 3u^3 + au + 5u^2 + a + 3u - 4 \\ 3u^3 + au + 5u^2 + 3u - 4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^3a - u^2a - u^3 - 2u^2 + a - u + 2 \\ u^3a + 2u^2a + 4u^3 + 7u^2 + 5u - 7 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -3u^3a - 5u^2a - u^3 - 3au - u^2 + 4a + 1 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -3u^3a - 5u^2a - u^3 - 3au - u^2 + 4a + 2 \\ 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -3u^3a - 5u^2a - u^3 - 3au - u^2 + 4a + 3 \\ 1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8u^3 + 16u^2 + 8u - 30$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^4+u^3+6u^2+4u+7)^2$
c_2, c_5, c_8 c_{11}	$u^8+u^7+u^6+u^5-14u^4-11u^3+25u^2+4u+1$
c_3, c_6, c_9	$(u^4+u^3-2u+1)^2$
c_4, c_{10}	$(u-1)^8$
c_7	$(u^4+9u^2+6u+12)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 + 11y^3 + 42y^2 + 68y + 49)^2$
c_2, c_5, c_8 c_{11}	$y^8 + y^7 - 29y^6 + 43y^5 + 262y^4 - 827y^3 + 685y^2 + 34y + 1$
c_3, c_6, c_9	$(y^4 - y^3 + 6y^2 - 4y + 1)^2$
c_4, c_{10}	$(y - 1)^8$
c_7	$(y^4 + 18y^3 + 105y^2 + 180y + 144)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_4	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.621964 + 0.187730I$ $a = -0.196231 - 0.222403I$ $b = 0.06811 + 2.18939I$	$-4.93480 - 4.05977I$	$-18.0000 + 6.9282I$
$u = 0.621964 + 0.187730I$ $a = -1.07414 - 3.19591I$ $b = 0.080297 + 0.175165I$	$-4.93480 - 4.05977I$	$-18.0000 + 6.9282I$
$u = 0.621964 - 0.187730I$ $a = -0.196231 + 0.222403I$ $b = 0.06811 - 2.18939I$	$-4.93480 + 4.05977I$	$-18.0000 - 6.9282I$
$u = 0.621964 - 0.187730I$ $a = -1.07414 + 3.19591I$ $b = 0.080297 - 0.175165I$	$-4.93480 + 4.05977I$	$-18.0000 - 6.9282I$
$u = -1.12196 + 1.05376I$ $a = -0.740048 - 0.475381I$ $b = 1.68284 - 0.47999I$	$-4.93480 + 4.05977I$	$-18.0000 - 6.9282I$
$u = -1.12196 + 1.05376I$ $a = 1.010420 + 0.521174I$ $b = -1.331240 + 0.246470I$	$-4.93480 + 4.05977I$	$-18.0000 - 6.9282I$
$u = -1.12196 - 1.05376I$ $a = -0.740048 + 0.475381I$ $b = 1.68284 + 0.47999I$	$-4.93480 - 4.05977I$	$-18.0000 + 6.9282I$
$u = -1.12196 - 1.05376I$ $a = 1.010420 - 0.521174I$ $b = -1.331240 - 0.246470I$	$-4.93480 - 4.05977I$	$-18.0000 + 6.9282I$

V. $\boldsymbol{I_5^u = \langle -au + b + u + 1,\ a^2 + au - 2u - 1,\ u^2 + u + 1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^4 - y^3 + 18y^2 + 8y + 1$
c_2, c_5, c_8 c_{11}	$y^4 - 5y^3 + 10y^2 - 12y + 9$
c_3, c_6, c_9	$(y^2 + y + 1)^2$
c_4, c_7, c_{10}	$(y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = 1.085370 + 0.474096I$ $b = -1.45326 - 0.16311I$	$-1.64493 + 4.05977I$	$-6.00000 - 6.92820I$
$u = -0.500000 + 0.866025I$ $a = -0.58537 - 1.34012I$ $b = 0.953264 - 0.702911I$	$-1.64493 + 4.05977I$	$-6.00000 - 6.92820I$
$u = -0.500000 - 0.866025I$ $a = 1.085370 - 0.474096I$ $b = -1.45326 + 0.16311I$	$-1.64493 - 4.05977I$	$-6.00000 + 6.92820I$
$u = -0.500000 - 0.866025I$ $a = -0.58537 + 1.34012I$ $b = 0.953264 + 0.702911I$	$-1.64493 - 4.05977I$	$-6.00000 + 6.92820I$

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

(i) Arc colorings

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

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

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

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

$$a_8 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1 \\ 3 \end{pmatrix}$$

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

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

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

$$a_2 = \begin{pmatrix} -1 \\ -3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1 \\ -3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_6, c_9, c_{10} c_{11}	$y-1$
c_2, c_5, c_8	$y-4$
c_7	$y-9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = \ \ 2.00000$	-4.93480	-18.0000

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(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_8, c_9, c_{10}	$y - 1$
c_7	y
c_{11}	$y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 2.00000$ $b = -1.00000$	-4.93480	-18.0000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = \ \ 1.00000$	-3.28987	-12.0000

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_7, c_8 c_{10}, c_{11}	$y - 1$
c_3, c_6, c_9	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	-1.64493	-6.00000
$b=$	1.00000		

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u+1)^3(u^4-3u^3+4u^2+1)(u^4+u^3+6u^2+4u+7)^2$ $\cdot(u^5+2u^3-2u^2-u+1)^2$ $\cdot(u^8-u^7+9u^6-4u^5+26u^4-2u^3+28u^2+10)$ $\cdot(u^{10}+5u^8+8u^6+3u^4+2u^2+4)$
c_2	$(u-1)^2(u+1)(u+2)(u^4-u^3-2u^2+3)$ $\cdot(u^8-u^7-4u^6+5u^5+4u^4-3u^3+4u^2-u+1)$ $\cdot(u^8+u^7+u^6+u^5-14u^4-11u^3+25u^2+4u+1)$ $\cdot(u^{10}-2u^8-2u^7+u^6+u^5+5u^4+2u^3-2u^2-u+1)$ $\cdot(u^{10}-u^9-6u^8+6u^7+15u^6-19u^5-10u^4+17u^3-u+1)$
c_3, c_9	$u(u+1)^3(u^2+u+1)^2(u^4+u^3-2u+1)^2$ $\cdot(u^8-3u^7+6u^6-5u^5+4u^4+u^3+3u+3)$ $\cdot(u^{10}-5u^9+13u^8-22u^7+30u^6-33u^5+25u^4-6u^3-6u^2+5u-1)$ $\cdot(u^{10}+4u^9+11u^8+19u^7+25u^6+21u^5+12u^4+u^3-2u^2-u+1)$
c_4, c_{10}	$u(u-1)^{14}(u+1)(u^5+4u^4+9u^3+11u^2+10u+4)^2$ $\cdot(u^8+6u^7+20u^6+42u^5+68u^4+82u^3+74u^2+32u+8)$ $\cdot(u^{10}+4u^8+u^6-7u^4-2u^2+4)$
c_5, c_8, c_{11}	$(u-1)(u+1)^2(u+2)(u^4-u^3-2u^2+3)$ $\cdot(u^8-u^7-4u^6+5u^5+4u^4-3u^3+4u^2-u+1)$ $\cdot(u^8+u^7+u^6+u^5-14u^4-11u^3+25u^2+4u+1)$ $\cdot(u^{10}-2u^8+2u^7+u^6-u^5+5u^4-2u^3-2u^2+u+1)$ $\cdot(u^{10}-u^9-6u^8+6u^7+15u^6-19u^5-10u^4+17u^3-u+1)$
c_6	$u(u-1)(u+1)^2(u^2+u+1)^2(u^4+u^3-2u+1)^2$ $\cdot(u^8-3u^7+6u^6-5u^5+4u^4+u^3+3u+3)$ $\cdot(u^{10}-5u^9+13u^8-22u^7+30u^6-33u^5+25u^4-6u^3-6u^2+5u-1)$ $\cdot(u^{10}-4u^9+11u^8-19u^7+25u^6-21u^5+12u^4-u^3-2u^2+u+1)$
c_7	$u(u-1)^4(u+1)^2(u+3)(u^4+9u^2+6u+12)^2(u^5-u^4+3u^3+1)^2$ $\cdot(u^5-u^4+5u^3-2u^2-2u+3)^2$ $\cdot(u^8+2u^7+9u^6+10u^5+31u^4+30u^3+27u^2+26u+12)$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y-1)^3(y^4-y^3+18y^2+8y+1)(y^4+11y^3+42y^2+68y+49)^2$ $\cdot(y^5+4y^4+2y^3-8y^2+5y-1)^2(y^5+5y^4+8y^3+3y^2+2y+4)^2$ $\cdot(y^8+17y^7+\cdots+560y+100)$
c_2, c_5, c_8 c_{11}	$(y-4)(y-1)^3(y^4-5y^3+10y^2-12y+9)$ $\cdot(y^8-9y^7+34y^6-55y^5+14y^4+25y^3+18y^2+7y+1)$ $\cdot(y^8+y^7-29y^6+43y^5+262y^4-827y^3+685y^2+34y+1)$ $\cdot(y^{10}-13y^9+\cdots-y+1)$ $\cdot(y^{10}-4y^9+6y^8+2y^7-19y^6+27y^5+9y^4-20y^3+18y^2-5y+1)$
c_3, c_6, c_9	$y(y-1)^3(y^2+y+1)^2(y^4-y^3+6y^2-4y+1)^2$ $\cdot(y^8+3y^7+14y^6+29y^5+50y^4+65y^3+18y^2-9y+9)$ $\cdot(y^{10}+y^9+9y^8+16y^7+26y^6+39y^5+63y^4-66y^3+46y^2-13y+1)$ $\cdot(y^{10}+6y^9+\cdots-5y+1)$
c_4, c_{10}	$y(y-1)^{15}(y^5+2y^4+13y^3+27y^2+12y-16)^2$ $\cdot(y^5+4y^4+y^3-7y^2-2y+4)^2$ $\cdot(y^8+4y^7+32y^6+120y^5+328y^4+972y^3+1316y^2+160y+64)$
c_7	$y(y-9)(y-1)^6(y^4+18y^3+105y^2+180y+144)^2$ $\cdot(y^5+5y^4+9y^3+2y^2-1)^2(y^5+9y^4+17y^3-18y^2+16y-9)^2$ $\cdot(y^8+14y^7+103y^6+392y^5+767y^4+470y^3-87y^2-28y+144)$