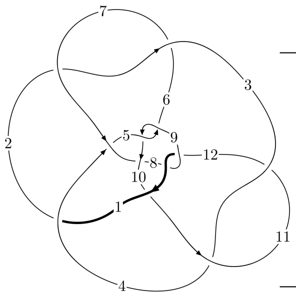
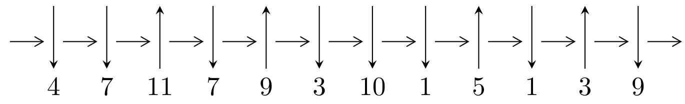
$12n_{0809}$ ($K12n_{0809}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 &= \langle 571u^8 - 2565u^7 + 12003u^6 - 25350u^5 + 52034u^4 - 56137u^3 + 50704u^2 + 9862b - 34468u + 8850,\\
&\quad - 257u^8 - 1039u^7 + \cdots + 19724a + 18176,\\
&\quad u^9 - 5u^8 + 23u^7 - 53u^6 + 102u^5 - 114u^4 + 74u^3 - 44u^2 + 16u - 4\rangle\\
I^u_2 &= \langle a^3 - 4a^2 + 5b + 2a - 3,\ a^4 - 3a^3 + 8a^2 - 6a + 7,\ u + 1\rangle\\
I^u_3 &= \langle u^3a - 2u^2a - u^3 - 2au - 3u^2 + 5b - 2a - 3u - 3,\ u^3a - 2u^2a - u^3 + 2a^2 - 2au - 5u^2 + 4a - 4u + 2,\\
&\quad u^4 + 2u^3 + 2\rangle\\
I^u_4 &= \langle -21u^5 + 7u^4 - 143u^3 + 282u^2 + 4b - 318u + 128,\\
&\quad - 43u^5 + 14u^4 - 292u^3 + 577u^2 + 4a - 644u + 258,\ u^6 - u^5 + 7u^4 - 18u^3 + 24u^2 - 16u + 4\rangle\\
I^u_5 &= \langle 2au + 11b - 16a - u - 3,\ 32a^2 + 4au + 8a + 7u + 34,\ u^2 + 2u + 8\rangle\\
I^u_6 &= \langle b,\ a + u - 1,\ u^2 - u - 1\rangle\\
I^u_7 &= \langle b^2 + 1,\ a - 1,\ u - 1\rangle\\
I^u_8 &= \langle b - u + 1,\ 2a^2 - au + 2a - 1,\ u^2 - 2u + 2\rangle
\end{aligned}$$

* 8 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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. $I_1^u = \langle 571u^8 - 2565u^7 + \cdots + 9862b + 8850,\ -257u^8 - 1039u^7 + \cdots + 19724a + 18176,\ u^9 - 5u^8 + \cdots + 16u - 4\rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0130298u^8 + 0.0526769u^7 + \cdots + 2.85094u - 0.921517 \\ -0.0578990u^8 + 0.260089u^7 + \cdots + 3.49503u - 0.897384 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0833502u^8 + 0.342020u^7 + \cdots - 2.24883u + 1.32286 \\ -0.0747313u^8 + 0.411884u^7 + \cdots + 2.65646u - 0.333401 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0833502u^8 - 0.342020u^7 + \cdots + 2.24883u - 1.32286 \\ -0.100994u^8 + 0.410769u^7 + \cdots + 1.96857u - 0.616102 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0833502u^8 + 0.342020u^7 + \cdots - 2.24883u + 1.32286 \\ -0.112959u^8 + 0.560840u^7 + \cdots + 1.79416u - 0.0344758 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0407118u^8 - 0.175877u^7 + \cdots + 2.44088u + 0.241330 \\ 0.117826u^8 - 0.562563u^7 + \cdots - 1.12999u + 0.0521192 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0407118u^8 - 0.175877u^7 + \cdots + 2.44088u - 0.758670 \\ -0.0313324u^8 + 0.104847u^7 + \cdots + 1.66193u - 0.426080 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0771142u^8 + 0.386686u^7 + \cdots + 3.57088u + 0.189211 \\ 0.147232u^8 - 0.677145u^7 + \cdots - 1.15899u + 0.283715 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.224346u^8 + 1.06383u^7 + \cdots + 4.72987u - 0.0945042 \\ 0.147232u^8 - 0.677145u^7 + \cdots - 1.15899u + 0.283715 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -\frac{8556}{4931}u^8 + \frac{38780}{4931}u^7 - \frac{177291}{4931}u^6 + \frac{363598}{4931}u^5 - \frac{671631}{4931}u^4 + \frac{589646}{4931}u^3 - \frac{228370}{4931}u^2 + \frac{136712}{4931}u - \frac{48274}{4931}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^9 - 2u^8 - 4u^7 + 11u^6 + 6u^5 - 16u^4 - 5u^3 + 8u^2 + 2u + 1$
c_2, c_6, c_8 c_{12}	$u^9 + 5u^8 + 23u^7 + 53u^6 + 102u^5 + 114u^4 + 74u^3 + 44u^2 + 16u + 4$
c_3, c_5, c_9 c_{11}	$u^9 - 3u^8 + 2u^7 + 5u^6 + 2u^5 - 9u^4 + 25u^3 - 18u^2 + 8u - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^9 - 12y^8 + \cdots - 12y - 1$
c_2, c_6, c_8 c_{12}	$y^9 + 21y^8 + \cdots - 96y - 16$
c_3, c_5, c_9 c_{11}	$y^9 - 5y^8 + 38y^7 - 21y^6 + 102y^5 + 219y^4 + 353y^3 + 40y^2 - 8y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.12609$ $a = -0.807283$ $b = -1.21689$	-7.72540	-11.7840
$u = -0.041387 + 0.594605I$ $a = 2.03957 + 0.32064I$ $b = 0.362527 + 1.166500I$	$-3.87094 + 3.77664I$	$-6.27308 - 5.05750I$
$u = -0.041387 - 0.594605I$ $a = 2.03957 - 0.32064I$ $b = 0.362527 - 1.166500I$	$-3.87094 - 3.77664I$	$-6.27308 + 5.05750I$
$u = 0.320133 + 0.346415I$ $a = -0.384796 - 0.492791I$ $b = 0.064812 + 0.443428I$	$-0.209220 - 0.942065I$	$-4.31920 + 7.08722I$
$u = 0.320133 - 0.346415I$ $a = -0.384796 + 0.492791I$ $b = 0.064812 - 0.443428I$	$-0.209220 + 0.942065I$	$-4.31920 - 7.08722I$
$u = 0.54446 + 2.21567I$ $a = 0.180263 - 1.209750I$ $b = -0.03727 - 1.87202I$	$9.45113 - 2.91184I$	$-5.37168 + 2.28602I$
$u = 0.54446 - 2.21567I$ $a = 0.180263 + 1.209750I$ $b = -0.03727 + 1.87202I$	$9.45113 + 2.91184I$	$-5.37168 - 2.28602I$
$u = 1.11375 + 2.71889I$ $a = 0.068603 + 1.166970I$ $b = 0.21838 + 1.96553I$	$5.89393 - 11.43930I$	$-5.14383 + 4.44122I$
$u = 1.11375 - 2.71889I$ $a = 0.068603 - 1.166970I$ $b = 0.21838 - 1.96553I$	$5.89393 + 11.43930I$	$-5.14383 - 4.44122I$

II. $\boldsymbol{I_2^u = \langle a^3 - 4a^2 + 5b + 2a - 3,\ a^4 - 3a^3 + 8a^2 - 6a + 7,\ u + 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_9 = \begin{pmatrix} a \\ -\frac{1}{5}a^3 + \frac{4}{5}a^2 - \frac{2}{5}a + \frac{3}{5} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{5}a^3 - \frac{1}{5}a^2 + \frac{3}{5}a - \frac{12}{5} \\ -\frac{2}{5}a^3 + \frac{3}{5}a^2 - \frac{4}{5}a - \frac{4}{5} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{2}{5}a^3 + \frac{3}{5}a^2 - \frac{4}{5}a - \frac{4}{5} \\ -\frac{3}{5}a^3 + \frac{7}{5}a^2 - \frac{11}{5}a + \frac{4}{5} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{1}{5}a^3 - \frac{1}{5}a^2 + \frac{3}{5}a - \frac{12}{5} \\ -\frac{1}{5}a^3 + \frac{4}{5}a^2 - \frac{7}{5}a + \frac{8}{5} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{5}a^3 - \frac{4}{5}a^2 + \frac{7}{5}a - \frac{13}{5} \\ -a \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{5}a^3 + \frac{4}{5}a^2 - \frac{2}{5}a + \frac{13}{5} \\ -\frac{1}{5}a^3 + \frac{4}{5}a^2 + \frac{3}{5}a + \frac{3}{5} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{5}a^3 - \frac{4}{5}a^2 + \frac{12}{5}a - \frac{13}{5} \\ -\frac{1}{5}a^3 + \frac{4}{5}a^2 - \frac{7}{5}a + \frac{3}{5} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{2}{5}a^3 - \frac{8}{5}a^2 + \frac{19}{5}a - \frac{16}{5} \\ -\frac{1}{5}a^3 + \frac{4}{5}a^2 - \frac{7}{5}a + \frac{3}{5} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{8}{5}a^3 + \frac{32}{5}a^2 - \frac{56}{5}a - \frac{26}{5}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^4 - 9y^3 + 38y^2 - 72y + 49$
c_2, c_6, c_8 c_{12}	$(y-1)^4$
c_3, c_5, c_9 c_{11}	$(y^2 + y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.257518 + 1.105670I$ $b = -0.242482 + 0.239643I$	$-8.22467 + 4.05977I$	$-14.0000 - 6.9282I$
$u = -1.00000$ $a = \quad 0.257518 - 1.105670I$ $b = -0.242482 - 0.239643I$	$-8.22467 - 4.05977I$	$-14.0000 + 6.9282I$
$u = -1.00000$ $a = \quad 1.24248 + 1.97169I$ $b = \quad 0.74248 + 2.83772I$	$-8.22467 - 4.05977I$	$-14.0000 + 6.9282I$
$u = -1.00000$ $a = \quad 1.24248 - 1.97169I$ $b = \quad 0.74248 - 2.83772I$	$-8.22467 + 4.05977I$	$-14.0000 - 6.9282I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^8 - 6u^7 + 10u^6 + 10u^5 - 49u^4 + 38u^3 + 36u^2 - 68u + 29$
c_2, c_8	$(u^4 + 2u^3 + 2)^2$
c_3, c_9	$(u^4 + u^2 - 2u + 1)^2$
c_5, c_{11}	$(u^4 + u^2 + 2u + 1)^2$
c_6, c_{12}	$(u^4 - 2u^3 + 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^8 - 16y^7 + \cdots - 2536y + 841$
c_2, c_6, c_8 c_{12}	$(y^4 - 4y^3 + 4y^2 + 4)^2$
c_3, c_5, c_9 c_{11}	$(y^4 + 2y^3 + 3y^2 - 2y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.529086 + 0.742934I$ $a = -1.62610 - 0.66493I$ $b = -0.067502 - 0.395968I$	$-7.40220 + 3.66386I$	$-4.00000 - 2.00000I$
$u = 0.529086 + 0.742934I$ $a = 0.24716 + 2.08709I$ $b = -0.41837 + 2.45414I$	$-7.40220 + 3.66386I$	$-4.00000 - 2.00000I$
$u = 0.529086 - 0.742934I$ $a = -1.62610 + 0.66493I$ $b = -0.067502 + 0.395968I$	$-7.40220 - 3.66386I$	$-4.00000 + 2.00000I$
$u = 0.529086 - 0.742934I$ $a = 0.24716 - 2.08709I$ $b = -0.41837 - 2.45414I$	$-7.40220 - 3.66386I$	$-4.00000 + 2.00000I$
$u = -1.52909 + 0.25707I$ $a = -0.297780 + 0.138203I$ $b = 0.067502 + 0.395968I$	$-7.40220 + 3.66386I$	$-4.00000 - 2.00000I$
$u = -1.52909 + 0.25707I$ $a = 0.67672 - 1.56036I$ $b = 0.41837 - 2.45414I$	$-7.40220 + 3.66386I$	$-4.00000 - 2.00000I$
$u = -1.52909 - 0.25707I$ $a = -0.297780 - 0.138203I$ $b = 0.067502 - 0.395968I$	$-7.40220 - 3.66386I$	$-4.00000 + 2.00000I$
$u = -1.52909 - 0.25707I$ $a = 0.67672 + 1.56036I$ $b = 0.41837 + 2.45414I$	$-7.40220 - 3.66386I$	$-4.00000 + 2.00000I$

IV. $\boldsymbol{I_4^u = \langle -21u^5 + 7u^4 + \cdots + 4b + 128,\ -43u^5 + 14u^4 + \cdots + 4a + 258,\ u^6 - u^5 + 7u^4 - 18u^3 + 24u^2 - 16u + 4\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{43}{4}u^5 - \frac{7}{2}u^4 + \cdots + 161u - \frac{129}{2} \\ \frac{21}{4}u^5 - \frac{7}{4}u^4 + \cdots + \frac{159}{2}u - 32 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -3u^5 + \frac{5}{4}u^4 + \cdots - 47u + \frac{41}{2} \\ -\frac{7}{4}u^5 + \frac{3}{4}u^4 + \cdots - \frac{55}{2}u + 12 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 4u^5 - \frac{5}{4}u^4 + \cdots + 60u - \frac{49}{2} \\ \frac{3}{4}u^5 - \frac{1}{4}u^4 + \cdots + \frac{23}{2}u - 5 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -3u^5 + \frac{5}{4}u^4 + \cdots - 47u + \frac{41}{2} \\ -\frac{3}{4}u^5 + \frac{1}{4}u^4 + \cdots - \frac{23}{2}u + 5 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 7u^5 - \frac{11}{4}u^4 + \cdots + \frac{217}{2}u - \frac{89}{2} \\ \frac{7}{4}u^5 - \frac{3}{4}u^4 + \cdots + \frac{53}{2}u - 11 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{4}u^4 + \frac{1}{4}u^3 + \cdots - \frac{3}{2}u + \frac{1}{2} \\ -\frac{1}{4}u^5 + \frac{1}{4}u^4 + \cdots - \frac{5}{2}u + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{47}{4}u^5 - 4u^4 + \cdots + 177u - \frac{141}{2} \\ \frac{15}{4}u^5 - \frac{5}{4}u^4 + \cdots + \frac{111}{2}u - 22 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 8u^5 - \frac{11}{4}u^4 + \cdots + \frac{243}{2}u - \frac{97}{2} \\ \frac{15}{4}u^5 - \frac{5}{4}u^4 + \cdots + \frac{111}{2}u - 22 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12u^5 + 4u^4 - 81u^3 + 162u^2 - 178u + 68$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^6 - u^5 - 3u^3 + 4u^2 - u + 1$
c_2, c_8	$u^6 - u^5 + 7u^4 - 18u^3 + 24u^2 - 16u + 4$
c_3, c_9	$(u^3 + 2u^2 + 1)^2$
c_5, c_{11}	$(u^3 - 2u^2 - 1)^2$
c_6, c_{12}	$u^6 + u^5 + 7u^4 + 18u^3 + 24u^2 + 16u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^6 - y^5 + 2y^4 - 9y^3 + 10y^2 + 7y + 1$
c_2, c_6, c_8 c_{12}	$y^6 + 13y^5 + 61y^4 - 12y^3 + 56y^2 - 64y + 16$
c_3, c_5, c_9 c_{11}	$(y^3 - 4y^2 - 4y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.670142 + 0.830077I$ $a = -0.756371 + 0.536766I$ $b = -0.331547 + 1.003560I$	$-2.68183 - 2.56897I$	$-2.87609 + 2.13317I$
$u = 0.670142 - 0.830077I$ $a = -0.756371 - 0.536766I$ $b = -0.331547 - 1.003560I$	$-2.68183 + 2.56897I$	$-2.87609 - 2.13317I$
$u = 0.659342 + 0.027822I$ $a = 0.52967 + 2.00448I$ $b = 0.331547 + 1.003560I$	$-2.68183 + 2.56897I$	$-2.87609 - 2.13317I$
$u = 0.659342 - 0.027822I$ $a = 0.52967 - 2.00448I$ $b = 0.331547 - 1.003560I$	$-2.68183 - 2.56897I$	$-2.87609 + 2.13317I$
$u = -0.82948 + 2.71700I$ $a = 0.226699 - 1.047850I$ $b = - 1.79041I$	11.9434	$-6 - 1.247828 + 0.10I$
$u = -0.82948 - 2.71700I$ $a = 0.226699 + 1.047850I$ $b = 1.79041I$	11.9434	$-6 - 1.247828 + 0.10I$

V. $I^u_5 = \langle 2au + 11b - 16a - u - 3,\ 32a^2 + 4au + 8a + 7u + 34,\ u^2 + 2u + 8\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 2u + 8 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ -0.181818au + 1.45455a + 0.0909091u + 0.272727 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0909091au - 0.272727a + 0.170455u - 0.113636 \\ 0.0909091au - 0.727273a - 0.545455u - 1.63636 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.0909091au - 0.272727a - 0.0795455u - 0.613636 \\ -1.36364au + 2.90909a + 1.18182u + 2.54545 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.0909091au - 0.272727a + 0.170455u - 0.113636 \\ -0.818182au - 1.45455a - 0.0909091u - 5.27273 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{8}u + \frac{1}{4} \\ -0.636364au - 2.90909a - 0.181818u + 0.454545 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a - \frac{1}{4}u + \frac{1}{2} \\ 2.72727au + 2.18182a - 0.363636u - 2.09091 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} au + 2a + \frac{1}{8}u + \frac{1}{4} \\ 0.818182au + 1.45455a + 0.0909091u + 0.272727 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.181818au + 0.545455a + 0.0340909u - 0.0227273 \\ 0.818182au + 1.45455a + 0.0909091u + 0.272727 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^4 + 6y^3 + 23y^2 - 42y + 49$
c_2, c_6, c_8 c_{12}	$(y^2 + 12y + 64)^2$
c_3, c_5, c_9 c_{11}	$(y^2 - 11y + 25)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000 + 2.64575I$ $a = -0.348911 + 0.808919I$ $b = 1.73205I$	9.86960	−6.00000
$u = -1.00000 + 2.64575I$ $a = 0.223911 - 1.139640I$ $b = -1.73205I$	9.86960	−6.00000
$u = -1.00000 - 2.64575I$ $a = -0.348911 - 0.808919I$ $b = -1.73205I$	9.86960	−6.00000
$u = -1.00000 - 2.64575I$ $a = 0.223911 + 1.139640I$ $b = 1.73205I$	9.86960	−6.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 1.61803$ $b = 0$	-3.28987	-3.00000
$u = 1.61803$ $a = -0.618034$ $b = 0$	-3.28987	-3.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	1.00000	1.64493	0
$b =$	$1.000000I$		
$u =$	1.00000		
$a =$	1.00000	1.64493	0
$b =$	$-1.000000I$		

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000 + 1.00000I$ $a = -0.962527 + 0.337716I$ $b = 1.000000I$	0	-6.00000
$u = 1.00000 + 1.00000I$ $a = 0.462527 + 0.162284I$ $b = 1.000000I$	0	-6.00000
$u = 1.00000 - 1.00000I$ $a = -0.962527 - 0.337716I$ $b = -1.000000I$	0	-6.00000
$u = 1.00000 - 1.00000I$ $a = 0.462527 - 0.162284I$ $b = -1.000000I$	0	-6.00000

IX. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$(u^2+1)(u^2+u-1)(u^4+u^2+2u+1)(u^4-4u^3+\cdots-14u+7)$ $\cdot(u^4+u^3-4u^2-4u+7)(u^6-u^5-3u^3+4u^2-u+1)$ $\cdot(u^8-6u^7+10u^6+10u^5-49u^4+38u^3+36u^2-68u+29)$ $\cdot(u^9-2u^8-4u^7+11u^6+6u^5-16u^4-5u^3+8u^2+2u+1)$
c_2, c_8	$(u-1)^6(u^2-2u+8)^2(u^2+u-1)(u^2+2u+2)^2(u^4+2u^3+2)^2$ $\cdot(u^6-u^5+7u^4-18u^3+24u^2-16u+4)$ $\cdot(u^9+5u^8+23u^7+53u^6+102u^5+114u^4+74u^3+44u^2+16u+4)$
c_3, c_9	$(u+1)^2(u^2-2u+2)(u^2-u-5)^2(u^2+u+1)^2(u^3+2u^2+1)^2$ $\cdot(u^4+u^2-2u+1)^2(u^4-2u^3+3u^2-6u+5)$ $\cdot(u^9-3u^8+2u^7+5u^6+2u^5-9u^4+25u^3-18u^2+8u-2)$
c_5, c_{11}	$(u+1)^2(u^2-u-5)^2(u^2+u+1)^2(u^2+2u+2)(u^3-2u^2-1)^2$ $\cdot(u^4+u^2+2u+1)^2(u^4-2u^3+3u^2-6u+5)$ $\cdot(u^9-3u^8+2u^7+5u^6+2u^5-9u^4+25u^3-18u^2+8u-2)$
c_6, c_{12}	$(u-1)^4(u+1)^2(u^2-2u+8)^2(u^2+u-1)(u^2+2u+2)^2$ $\cdot(u^4-2u^3+2)^2(u^6+u^5+7u^4+18u^3+24u^2+16u+4)$ $\cdot(u^9+5u^8+23u^7+53u^6+102u^5+114u^4+74u^3+44u^2+16u+4)$

X. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$(y+1)^2(y^2-3y+1)(y^4-9y^3+38y^2-72y+49)$ $\cdot(y^4+2y^3+3y^2-2y+1)(y^4+6y^3+23y^2-42y+49)$ $\cdot(y^6-y^5+\cdots+7y+1)(y^8-16y^7+\cdots-2536y+841)$ $\cdot(y^9-12y^8+\cdots-12y-1)$
c_2, c_6, c_8 c_{12}	$((y-1)^6)(y^2+4)^2(y^2-3y+1)(y^2+12y+64)^2(y^4-4y^3+4y^2+4)^2$ $\cdot(y^6+13y^5+61y^4-12y^3+56y^2-64y+16)$ $\cdot(y^9+21y^8+\cdots-96y-16)$
c_3, c_5, c_9 c_{11}	$((y-1)^2)(y^2+4)(y^2-11y+25)^2(y^2+y+1)^2(y^3-4y^2-4y-1)^2$ $\cdot(y^4+2y^3-5y^2-6y+25)(y^4+2y^3+3y^2-2y+1)^2$ $\cdot(y^9-5y^8+38y^7-21y^6+102y^5+219y^4+353y^3+40y^2-8y-4)$