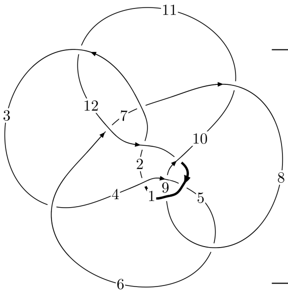
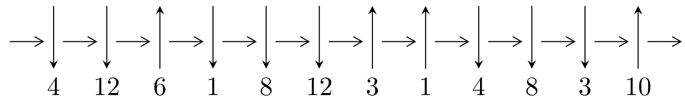
$12n_{0838}$ ($K12n_{0838}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b-u,\ -2u^3+u^2+3a-10u-1,\ u^4+4u^2+3u+1\rangle$$
$$I_2^u = \langle b+u,\ -u^5-3u^3+u^2+2a+3u-2,\ u^6+4u^4-u^3+2u^2+u+1\rangle$$
$$I_3^u = \langle -25u^7+373u^6-939u^5+3197u^4-5553u^3+8389u^2+2846b-5460u+4816,$$
$$306u^7+1468u^6-1769u^5+14032u^4-19745u^3+37228u^2+36998a-6881u+6624,$$
$$u^8-2u^7+11u^6-16u^5+43u^4-34u^3+70u^2-12u+52\rangle$$
$$I_4^u = \langle b+u,\ u^2+a+1,\ u^4+2u^2+u+1\rangle$$
$$I_5^u = \langle b-u,\ 11u^9+7u^8+80u^7+17u^6+144u^5-42u^4+13u^3-51u^2+4a+22u-13,$$
$$u^{10}+7u^8-3u^7+13u^6-12u^5+5u^4-6u^3+5u^2-3u+1\rangle$$
$$I_6^u = \langle b+u+1,\ a+1,\ u^2+u+1\rangle$$
$$I_7^u = \langle b+u+1,\ a+u,\ u^2+u+1\rangle$$
$$I_8^u = \langle b-u+1,\ 3a-2u+2,\ u^2-u+3\rangle$$
$$I_9^u = \langle b+u-1,\ a,\ u^2-u+1\rangle$$
$$I_{10}^u = \langle b,\ a-1,\ u^2+u+1\rangle$$

$$I_1^v = \langle a,\ b^2-b+1,\ v-1\rangle$$

* 11 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

I. $I_1^u = \langle b-u,\ -2u^3+u^2+3a-10u-1,\ u^4+4u^2+3u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{16}{3}u^3 + \frac{2}{3}u^2 - \frac{56}{3}u - \frac{41}{3}$

in decimal forms when there is not enough margin.

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$y^4 + 8y^3 + 18y^2 - y + 1$
c_3, c_{12}	$y^4 - y^3 + 18y^2 + 8y + 1$
c_7, c_8	$y^4 - 11y^3 + 25y^2 + 33y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.367893 + 0.310982I$ $a = -0.86789 + 1.17701I$ $b = -0.367893 + 0.310982I$	$-0.650203 + 1.076870I$	$-7.07727 - 6.47057I$
$u = -0.367893 - 0.310982I$ $a = -0.86789 - 1.17701I$ $b = -0.367893 - 0.310982I$	$-0.650203 - 1.076870I$	$-7.07727 + 6.47057I$
$u = 0.36789 + 2.04303I$ $a = -0.132107 + 1.177010I$ $b = 0.36789 + 2.04303I$	$-15.7991 - 11.1024I$	$1.07727 + 3.92173I$
$u = 0.36789 - 2.04303I$ $a = -0.132107 - 1.177010I$ $b = 0.36789 - 2.04303I$	$-15.7991 + 11.1024I$	$1.07727 - 3.92173I$

II. $\boldsymbol{I^u_2 = \langle b+u,\ -u^5-3u^3+u^2+2a+3u-2,\ u^6+4u^4-u^3+2u^2+u+1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{2}u^5+\frac{3}{2}u^3-\frac{1}{2}u^2-\frac{3}{2}u+1 \\ -u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{2}u^5+\frac{3}{2}u^3-\frac{1}{2}u^2-\frac{1}{2}u+1 \\ -u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^5+\frac{3}{2}u^3-\frac{1}{2}u^2-\frac{3}{2}u+1 \\ -\frac{1}{2}u^5-\frac{5}{2}u^3+\frac{1}{2}u^2-\frac{3}{2}u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u^4+\frac{5}{2}u^2-\frac{1}{2}u+\frac{3}{2} \\ \frac{1}{2}u^4+\frac{3}{2}u^2-\frac{1}{2}u-\frac{1}{2} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{1}{4}u^5-\frac{1}{4}u^4+\cdots-\frac{3}{2}u-\frac{3}{4} \\ -\frac{1}{4}u^5-\frac{3}{4}u^4+\cdots-\frac{5}{2}u^2-\frac{1}{4} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{4}u^5+\frac{1}{4}u^4+\cdots-u+\frac{3}{4} \\ -\frac{1}{2}u^5-\frac{3}{2}u^3+\frac{1}{2}u^2+\frac{1}{2}u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{4}u^5+\frac{3}{4}u^4+\cdots+\frac{7}{2}u^2+\frac{9}{4} \\ \frac{1}{4}u^5+\frac{5}{4}u^4+\cdots+\frac{1}{2}u-\frac{1}{4} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{4}u^5+\frac{3}{4}u^4+\cdots-\frac{1}{2}u+\frac{1}{4} \\ \frac{1}{2}u^5+\frac{3}{2}u^3-\frac{3}{2}u^2-\frac{3}{2}u-1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{1}{4}u^5+\frac{3}{4}u^4+\frac{9}{4}u^3+\frac{7}{2}u^2+2u+\frac{5}{4}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_{11}	$u^6 + 4u^4 + u^3 + 2u^2 - u + 1$
c_2, c_4, c_9 c_{10}	$u^6 + 4u^4 - u^3 + 2u^2 + u + 1$
c_3	$u^6 + 3u^5 + 3u^4 + u^3 + u^2 + u + 1$
c_7	$u^6 + 5u^5 + 10u^4 + 13u^3 + 12u^2 + 10u + 13$
c_8	$u^6 - 5u^5 + 10u^4 - 13u^3 + 12u^2 - 10u + 13$
c_{12}	$u^6 - 3u^5 + 3u^4 - u^3 + u^2 - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$y^6 + 8y^5 + 20y^4 + 17y^3 + 14y^2 + 3y + 1$
c_3, c_{12}	$y^6 - 3y^5 + 5y^4 + y^3 + 5y^2 + y + 1$
c_7, c_8	$y^6 - 5y^5 - 6y^4 - 3y^3 + 144y^2 + 212y + 169$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.531659 + 0.753297I$ $a = -0.76444 - 1.54585I$ $b = -0.531659 - 0.753297I$	$9.81524 - 4.74950I$	$-0.79071 + 4.27718I$
$u = 0.531659 - 0.753297I$ $a = -0.76444 + 1.54585I$ $b = -0.531659 + 0.753297I$	$9.81524 + 4.74950I$	$-0.79071 - 4.27718I$
$u = -0.341164 + 0.448642I$ $a = 1.80674 - 0.44864I$ $b = 0.341164 - 0.448642I$	0.108732	$-60.581412 + 0.10I$
$u = -0.341164 - 0.448642I$ $a = 1.80674 + 0.44864I$ $b = 0.341164 + 0.448642I$	0.108732	$-60.581412 + 0.10I$
$u = -0.19050 + 1.91484I$ $a = -0.042290 - 1.122290I$ $b = 0.19050 - 1.91484I$	$9.81524 + 4.74950I$	$-0.79071 - 4.27718I$
$u = -0.19050 - 1.91484I$ $a = -0.042290 + 1.122290I$ $b = 0.19050 + 1.91484I$	$9.81524 - 4.74950I$	$-0.79071 + 4.27718I$

III. $\boldsymbol{I_3^u = \langle -25u^7 + 373u^6 + \cdots + 2846b + 4816,\ 306u^7 + 1468u^6 + \cdots + 36998a + 6624,\ u^8 - 2u^7 + \cdots - 12u + 52\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.00827072u^7 - 0.0396778u^6 + \cdots + 0.185983u - 0.179037 \\ 0.00878426u^7 - 0.131061u^6 + \cdots + 1.91848u - 1.69220 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0170550u^7 + 0.0913833u^6 + \cdots - 1.73250u + 1.51316 \\ 0.00878426u^7 - 0.131061u^6 + \cdots + 1.91848u - 1.69220 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.00827072u^7 - 0.0396778u^6 + \cdots + 0.185983u - 0.179037 \\ 0.0351370u^7 - 0.0242446u^6 + \cdots + 1.67393u + 1.23120 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0925050u^7 - 0.268636u^6 + \cdots + 3.35694u - 1.17401 \\ -0.0562193u^7 + 0.138791u^6 + \cdots - 0.278285u - 0.569923 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.0345424u^7 + 0.0107573u^6 + \cdots - 1.10560u - 2.92421 \\ -0.00878426u^7 + 0.131061u^6 + \cdots - 2.91848u + 3.69220 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0255014u^7 + 0.0443267u^6 + \cdots + 1.61511u - 0.552030 \\ 0.0101897u^7 - 0.0720309u^6 + \cdots - 1.37456u - 1.60295 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.214593u^7 - 0.333261u^6 + \cdots + 5.11320u + 4.17471 \\ -0.131061u^7 - 0.00456781u^6 + \cdots + 2.57625u - 8.07238 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -0.111844u^7 + 0.264095u^6 + \cdots - 4.98824u + 3.16714 \\ 0.197119u^7 - 0.221012u^6 + \cdots + 3.65074u + 2.26704 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{3}{1423}u^7 + \frac{126}{1423}u^6 - \frac{115}{1423}u^5 + \frac{584}{1423}u^4 + \frac{211}{1423}u^3 + \frac{644}{1423}u^2 + \frac{2932}{1423}u + \frac{3748}{1423}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$u^8 - 2u^7 + 11u^6 - 16u^5 + 43u^4 - 34u^3 + 70u^2 - 12u + 52$
c_3, c_{12}	$(u^4 - 3u^2 + 2u + 5)^2$
c_7, c_8	$(u^4 + 4u^3 + 3u^2 + 5)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$y^8 + 18y^7 + \cdots + 7136y + 2704$
c_3, c_{12}	$(y^4 - 6y^3 + 19y^2 - 34y + 25)^2$
c_7, c_8	$(y^4 - 10y^3 + 19y^2 + 30y + 25)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.318348 + 0.988585I$ $a = 0.902055 + 0.085959I$ $b = 1.18274 + 1.38356I$	$12.33700 - 3.66386I$	$2.00000 + 2.00000I$
$u = -0.318348 - 0.988585I$ $a = 0.902055 - 0.085959I$ $b = 1.18274 - 1.38356I$	$12.33700 + 3.66386I$	$2.00000 - 2.00000I$
$u = 0.24810 + 1.76504I$ $a = 0.260593 - 1.307340I$ $b = -0.11249 - 2.13718I$	$12.33700 - 3.66386I$	$2.00000 + 2.00000I$
$u = 0.24810 - 1.76504I$ $a = 0.260593 + 1.307340I$ $b = -0.11249 + 2.13718I$	$12.33700 + 3.66386I$	$2.00000 - 2.00000I$
$u = 1.18274 + 1.38356I$ $a = 0.228120 + 0.463986I$ $b = -0.318348 + 0.988585I$	$12.33700 - 3.66386I$	$2.00000 + 2.00000I$
$u = 1.18274 - 1.38356I$ $a = 0.228120 - 0.463986I$ $b = -0.318348 - 0.988585I$	$12.33700 + 3.66386I$	$2.00000 - 2.00000I$
$u = -0.11249 + 2.13718I$ $a = -0.121537 - 1.103540I$ $b = 0.24810 - 1.76504I$	$12.33700 + 3.66386I$	$2.00000 - 2.00000I$
$u = -0.11249 - 2.13718I$ $a = -0.121537 + 1.103540I$ $b = 0.24810 + 1.76504I$	$12.33700 - 3.66386I$	$2.00000 + 2.00000I$

IV. $I_4^u = \langle b + u,\ u^2 + a + 1,\ u^4 + 2u^2 + u + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$y^4 + 4y^3 + 6y^2 + 3y + 1$
c_3, c_{12}	$y^4 + 7y^3 + 18y^2 + 20y + 9$
c_7, c_8	$y^4 - 3y^3 + 5y^2 + 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.343815 + 0.625358I$ $a = -0.727136 + 0.430014I$ $b = 0.343815 - 0.625358I$	$-1.13814 + 3.38562I$	$-6.32177 - 8.18198I$
$u = -0.343815 - 0.625358I$ $a = -0.727136 - 0.430014I$ $b = 0.343815 + 0.625358I$	$-1.13814 - 3.38562I$	$-6.32177 + 8.18198I$
$u = 0.343815 + 1.358440I$ $a = 0.727136 - 0.934099I$ $b = -0.343815 - 1.358440I$	$4.42801 - 2.37936I$	$0.32177 + 1.76734I$
$u = 0.343815 - 1.358440I$ $a = 0.727136 + 0.934099I$ $b = -0.343815 + 1.358440I$	$4.42801 + 2.37936I$	$0.32177 - 1.76734I$

V. $\boldsymbol{I_5^u = \langle b - u,\ 11u^9 + 7u^8 + \cdots + 4a - 13,\ u^{10} + 7u^8 + \cdots - 3u + 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{11}{4}u^9 - \frac{7}{4}u^8 + \cdots - \frac{11}{2}u + \frac{13}{4} \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{11}{4}u^9 - \frac{7}{4}u^8 + \cdots - \frac{13}{2}u + \frac{13}{4} \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{11}{4}u^9 - \frac{7}{4}u^8 + \cdots - \frac{11}{2}u + \frac{13}{4} \\ -\frac{3}{4}u^9 - \frac{1}{4}u^8 + \cdots - \frac{3}{2}u + \frac{7}{4} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{7}{4}u^9 - \frac{3}{4}u^8 + \cdots - 5u + \frac{15}{4} \\ -\frac{1}{4}u^9 - \frac{1}{4}u^8 + \cdots - \frac{1}{2}u + \frac{3}{4} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^9 - u^8 + \cdots - \frac{9}{2}u + 5 \\ -\frac{3}{4}u^9 - \frac{1}{4}u^8 + \cdots - \frac{3}{2}u + \frac{5}{4} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{7}{4}u^9 + \frac{7}{4}u^8 + \cdots + u - \frac{9}{4} \\ \frac{3}{4}u^9 + \frac{1}{4}u^8 + \cdots + \frac{7}{2}u - \frac{7}{4} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{15}{4}u^9 - \frac{7}{4}u^8 + \cdots - \frac{17}{2}u + \frac{35}{4} \\ -u^9 - \frac{1}{2}u^8 + \cdots - 3u + 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{11}{2}u^9 - \frac{7}{2}u^8 + \cdots - \frac{29}{2}u + \frac{15}{2} \\ -\frac{11}{4}u^9 - \frac{7}{4}u^8 + \cdots - 5u + \frac{15}{4} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{1}{4}u^9 + \frac{3}{4}u^8 - u^7 + \frac{27}{4}u^6 - \frac{1}{2}u^5 + \frac{31}{2}u^4 - \frac{11}{4}u^3 + \frac{19}{4}u^2 - \frac{15}{2}u - \frac{3}{4}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$u^{10} + 7u^8 - 3u^7 + 13u^6 - 12u^5 + 5u^4 - 6u^3 + 5u^2 - 3u + 1$
c_3, c_{12}	$u^{10} + 6u^9 + \cdots + 8u + 4$
c_7, c_8	$u^{10} - 8u^9 + \cdots - 34u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$y^{10} + 14y^9 + 75y^8 + 183y^7 + 177y^6 + 22y^5 + 7y^4 - 32y^3 - y^2 + y + 1$
c_3, c_{12}	$y^{10} + 2y^9 + \cdots + 120y + 16$
c_7, c_8	$y^{10} - 20y^9 + \cdots - 300y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.486518 + 0.632836I$ $a = \ \ 0.079644 + 0.328409I$ $b = -0.486518 + 0.632836I$	$-0.61761 + 1.79087I$	$-3.17008 - 3.84422I$
$u = -0.486518 - 0.632836I$ $a = \ \ 0.079644 - 0.328409I$ $b = -0.486518 - 0.632836I$	$-0.61761 - 1.79087I$	$-3.17008 + 3.84422I$
$u = \ \ 0.621008 + 0.075641I$ $a = \ \ 1.79439 - 1.51840I$ $b = \ \ 0.621008 + 0.075641I$	$9.12328 - 3.14851I$	$-1.88527 + 0.97081I$
$u = \ \ 0.621008 - 0.075641I$ $a = \ \ 1.79439 + 1.51840I$ $b = \ \ 0.621008 - 0.075641I$	$9.12328 + 3.14851I$	$-1.88527 - 0.97081I$
$u = \ \ 0.239585 + 0.499962I$ $a = -1.76390 + 0.24899I$ $b = \ \ 0.239585 + 0.499962I$	$-0.61761 + 1.79087I$	$-3.17008 - 3.84422I$
$u = \ \ 0.239585 - 0.499962I$ $a = -1.76390 - 0.24899I$ $b = \ \ 0.239585 - 0.499962I$	$-0.61761 - 1.79087I$	$-3.17008 + 3.84422I$
$u = -0.06345 + 1.88716I$ $a = -0.084885 + 1.197580I$ $b = -0.06345 + 1.88716I$	$9.12328 + 3.14851I$	$-1.88527 - 0.97081I$
$u = -0.06345 - 1.88716I$ $a = -0.084885 - 1.197580I$ $b = -0.06345 - 1.88716I$	$9.12328 - 3.14851I$	$-1.88527 + 0.97081I$
$u = -0.31062 + 1.88752I$ $a = \ \ 0.474749 + 1.077290I$ $b = -0.31062 + 1.88752I$	-17.0114	$-\ 61.110699 + 0.10I$
$u = -0.31062 - 1.88752I$ $a = \ \ 0.474749 - 1.077290I$ $b = -0.31062 - 1.88752I$	-17.0114	$-\ 61.110699 + 0.10I$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u - 2$

(iv) u-Polynomials at the component

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

(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}	$y^2 + y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = -1.00000$ $b = -0.500000 - 0.866025I$	$2.02988I$	$0. - 3.46410I$
$u = -0.500000 - 0.866025I$ $a = -1.00000$ $b = -0.500000 + 0.866025I$	$-2.02988I$	$0. + 3.46410I$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(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}	$y^2 + y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = \quad 0.500000 - 0.866025I$ $b = -0.500000 - 0.866025I$	$-\ 2.02988I$	$0. + 3.46410I$
$u = -0.500000 - 0.866025I$ $a = \quad 0.500000 + 0.866025I$ $b = -0.500000 + 0.866025I$	$2.02988I$	$0. - 3.46410I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.50000 + 1.65831I$ $a = -0.333333 + 1.105540I$ $b = -0.50000 + 1.65831I$	13.1595	3.00000
$u = \quad 0.50000 - 1.65831I$ $a = -0.333333 - 1.105540I$ $b = -0.50000 - 1.65831I$	13.1595	3.00000

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

(i) Arc colorings

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

(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_5, c_6, c_9 c_{10}, c_{11}	$u^2 - u + 1$
c_3, c_{12}	$(u-1)^2$
c_7, c_8	u^2

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_9^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.500000 + 0.866025I$		
$a =$	0	3.28987	3.00000
$b =$	$0.500000 - 0.866025I$		
$u =$	$0.500000 - 0.866025I$		
$a =$	0	3.28987	3.00000
$b =$	$0.500000 + 0.866025I$		

X. $I_{10}^u = \langle b,\ a-1,\ u^2+u+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{10}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = 1.00000$ $b = 0$	0	0
$u = -0.500000 - 0.866025I$ $a = 1.00000$ $b = 0$	0	0

XI. $I_1^v = \langle a,\ b^2 - b + 1,\ v - 1 \rangle$

(i) Arc colorings

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

(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_6 c_{10}	u^2
c_2, c_3, c_8 c_9	$u^2 + u + 1$
c_5, c_7, c_{11} c_{12}	$u^2 - u + 1$

(v) Riley Polynomials at the component

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

(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	0	0
$b =$	$0.500000 + 0.866025I$		
$v =$	1.00000		
$a =$	0	0	0
$b =$	$0.500000 - 0.866025I$		

XII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_{11}	$u^2(u^2-u+1)^2(u^2+u+1)^2(u^2+u+3)(u^4+2u^2-u+1)$ $\cdot(u^4+4u^2+3u+1)(u^6+4u^4+u^3+2u^2-u+1)$ $\cdot(u^8-2u^7+11u^6-16u^5+43u^4-34u^3+70u^2-12u+52)$ $\cdot(u^{10}+7u^8-3u^7+13u^6-12u^5+5u^4-6u^3+5u^2-3u+1)$
c_2, c_4, c_9 c_{10}	$u^2(u^2-u+1)(u^2-u+3)(u^2+u+1)^3(u^4+2u^2+u+1)(u^4+4u^2+3u+1)$ $\cdot(u^6+4u^4-u^3+2u^2+u+1)$ $\cdot(u^8-2u^7+11u^6-16u^5+43u^4-34u^3+70u^2-12u+52)$ $\cdot(u^{10}+7u^8-3u^7+13u^6-12u^5+5u^4-6u^3+5u^2-3u+1)$
c_3	$(u-1)^4(u^2-u+1)^2(u^2+u+1)^2(u^4-3u^2+2u+5)^2$ $\cdot(u^4+u^3+4u^2+2u+3)(u^4+3u^3+4u^2+1)$ $\cdot(u^6+3u^5+3u^4+u^3+u^2+u+1)(u^{10}+6u^9+\cdots+8u+4)$
c_7	$u^2(u-2)^2(u^2-u+1)^2(u^2+u+1)^2(u^4-5u^3+7u^2-3u+3)$ $\cdot(u^4+3u^3+3u^2+u+1)(u^4+4u^3+3u^2+5)^2$ $\cdot(u^6+5u^5+\cdots+10u+13)(u^{10}-8u^9+\cdots-34u+4)$
c_8	$u^2(u+2)^2(u^2+u+1)^4(u^4-5u^3+7u^2-3u+3)$ $\cdot(u^4-3u^3+3u^2-u+1)(u^4+4u^3+3u^2+5)^2$ $\cdot(u^6-5u^5+\cdots-10u+13)(u^{10}-8u^9+\cdots-34u+4)$
c_{12}	$(u-1)^2(u+1)^2(u^2-u+1)^4(u^4-3u^2+2u+5)^2$ $\cdot(u^4-u^3+4u^2-2u+3)(u^4+3u^3+4u^2+1)$ $\cdot(u^6-3u^5+3u^4-u^3+u^2-u+1)(u^{10}+6u^9+\cdots+8u+4)$

XIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_9 c_{10}, c_{11}	$y^2(y^2+y+1)^4(y^2+5y+9)(y^4+4y^3+6y^2+3y+1)$ $\cdot(y^4+8y^3+18y^2-y+1)(y^6+8y^5+20y^4+17y^3+14y^2+3y+1)$ $\cdot(y^8+18y^7+\cdots+7136y+2704)$ $\cdot(y^{10}+14y^9+75y^8+183y^7+177y^6+22y^5+7y^4-32y^3-y^2+y+1)$
c_3, c_{12}	$(y-1)^4(y^2+y+1)^4(y^4-6y^3+19y^2-34y+25)^2$ $\cdot(y^4-y^3+18y^2+8y+1)(y^4+7y^3+18y^2+20y+9)$ $\cdot(y^6-3y^5+5y^4+y^3+5y^2+y+1)(y^{10}+2y^9+\cdots+120y+16)$
c_7, c_8	$y^2(y-4)^2(y^2+y+1)^4(y^4-11y^3+25y^2+33y+9)$ $\cdot(y^4-10y^3+19y^2+30y+25)^2(y^4-3y^3+5y^2+5y+1)$ $\cdot(y^6-5y^5-6y^4-3y^3+144y^2+212y+169)$ $\cdot(y^{10}-20y^9+\cdots-300y+16)$