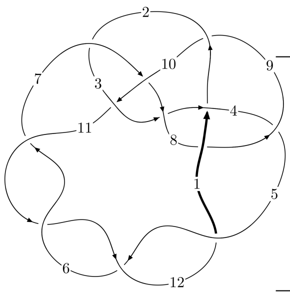
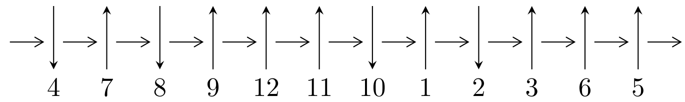
$12a_{1026}$ ($K12a_{1026}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3u^{12} + 17u^{11} + \cdots + 10b - 42,\ 9u^{12} - 46u^{11} + \cdots + 40a + 196,\ u^{13} - 6u^{12} + \cdots + 52u - 8\rangle$$
$$I_2^u = \langle u^7a - 2u^6a + 8u^5a - 10u^4a + 19u^3a - 12u^2a + 15au + 5b - 4a,\ 4u^6a + u^7 + \cdots + 20a - 6,$$
$$u^8 - 3u^7 + 10u^6 - 18u^5 + 29u^4 - 31u^3 + 27u^2 - 14u + 4\rangle$$
$$I_3^u = \langle 13u^4a^3 - 3u^4a^2 + \cdots + 69a - 1,\ -2u^4a^3 - u^4a + \cdots + 6a + 2,\ u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1\rangle$$
$$I_4^u = \langle -1.98276 \times 10^{25}a^7u^4 + 9.89103 \times 10^{25}a^6u^4 + \cdots - 5.40442 \times 10^{26}a + 1.69204 \times 10^{27},$$
$$2a^7u^4 + 3a^6u^4 + \cdots + 299a + 412,\ u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1\rangle$$
$$I_5^u = \langle u^{19} + u^{18} + \cdots + 2b + 7,\ 6u^{19} + 26u^{18} + \cdots + 26a + 299,$$
$$u^{20} + 14u^{18} + 83u^{16} + 274u^{14} + 562u^{12} + 767u^{10} + 738u^8 + 519u^6 + 261u^4 + 85u^2 + 13\rangle$$
$$I_6^u = \langle -u^4 + u^3 - 3u^2 + b + 2u - 1,\ u^3 + a + 2u,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle$$
$$I_7^u = \langle u^4a + 2u^4 + 4u^2a + 3u^3 - au + 8u^2 + 3b + a + 7u + 5,$$
$$2u^4a + u^3a + 6u^2a - u^3 + a^2 + 2au - u^2 + 2a - 3u + 1,\ u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1\rangle$$
$$I_8^u = \langle 2b - u + 1,\ 3a - 2u,\ u^2 + 3\rangle$$
$$I_9^u = \langle b^2 - b + 1,\ a,\ u - 1\rangle$$

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

* 10 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 130 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. $I_1^u = \langle -3u^{12} + 17u^{11} + \cdots + 10b - 42,\ 9u^{12} - 46u^{11} + \cdots + 40a + 196,\ u^{13} - 6u^{12} + \cdots + 52u - 8\rangle$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -0.225000u^{12} + 1.15000u^{11} + \cdots + 20.4000u - 4.90000 \\ \frac{3}{10}u^{12} - \frac{17}{10}u^{11} + \cdots - \frac{91}{5}u + \frac{21}{5} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.175000u^{12} + 0.700000u^{11} + \cdots - 0.300000u + 0.300000 \\ 0.650000u^{12} - 3.60000u^{11} + \cdots - 35.6000u + 6.60000 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.325000u^{12} - 1.55000u^{11} + \cdots - 10.8000u + 2.30000 \\ -\frac{2}{5}u^{12} + \frac{21}{10}u^{11} + \cdots + \frac{43}{5}u - \frac{3}{5} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.325000u^{12} + 2.05000u^{11} + \cdots + 31.8000u - 7.30000 \\ \frac{1}{5}u^{12} - \frac{4}{5}u^{11} + \cdots - \frac{34}{5}u + \frac{9}{5} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.325000u^{12} - 2.05000u^{11} + \cdots - 31.8000u + 7.30000 \\ \frac{2}{5}u^{12} - \frac{21}{10}u^{11} + \cdots - \frac{73}{5}u + \frac{13}{5} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.475000u^{12} + 2.40000u^{11} + \cdots + 25.9000u - 5.90000 \\ \frac{1}{20}u^{12} - \frac{1}{5}u^{11} + \cdots - \frac{51}{5}u + \frac{11}{5} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{7}{10}u^{12} - \frac{24}{5}u^{11} + \frac{199}{10}u^{10} - 62u^9 + \frac{722}{5}u^8 - \frac{1386}{5}u^7 + \frac{2109}{5}u^6 - \frac{2659}{5}u^5 + \frac{5333}{10}u^4 - \frac{2156}{5}u^3 + \frac{1341}{5}u^2 - \frac{644}{5}u + \frac{194}{5}$

in decimal forms when there is not enough margin.

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{13} - 11u^{12} + \cdots + 107u + 7$
c_2, c_4, c_8 c_{10}	$u^{13} + u^{12} + 3u^{11} + u^{10} + 9u^9 + 5u^8 + 9u^7 + u^6 + 6u^5 - 2u^3 - u - 1$
c_3, c_9	$u^{13} - 2u^{12} + \cdots + 7u - 24$
c_5, c_6, c_{11} c_{12}	$u^{13} - 6u^{12} + \cdots + 52u - 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{13} + 3y^{12} + \cdots + 15999y - 49$
c_2, c_4, c_8 c_{10}	$y^{13} + 5y^{12} + \cdots + y - 1$
c_3, c_9	$y^{13} - 18y^{12} + \cdots + 4849y - 576$
c_5, c_6, c_{11} c_{12}	$y^{13} + 14y^{12} + \cdots + 208y - 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.925588 + 0.229213I$ $a = 0.251266 - 0.164394I$ $b = -0.719509 - 0.945453I$	$-2.64658 + 9.80964I$	$0.48730 - 9.61538I$
$u = 0.925588 - 0.229213I$ $a = 0.251266 + 0.164394I$ $b = -0.719509 + 0.945453I$	$-2.64658 - 9.80964I$	$0.48730 + 9.61538I$
$u = -0.012360 + 0.896275I$ $a = -0.353446 - 0.826500I$ $b = -0.562920 - 0.195545I$	$-1.71733 + 1.71633I$	$2.68735 - 4.73670I$
$u = -0.012360 - 0.896275I$ $a = -0.353446 + 0.826500I$ $b = -0.562920 + 0.195545I$	$-1.71733 - 1.71633I$	$2.68735 + 4.73670I$
$u = 0.548935 + 1.070790I$ $a = -0.33469 + 1.40815I$ $b = 0.89400 + 1.20313I$	$-6.6253 + 14.6812I$	$-1.43670 - 9.72736I$
$u = 0.548935 - 1.070790I$ $a = -0.33469 - 1.40815I$ $b = 0.89400 - 1.20313I$	$-6.6253 - 14.6812I$	$-1.43670 + 9.72736I$
$u = 0.959730 + 0.890724I$ $a = 0.549017 - 0.142828I$ $b = 0.361184 - 0.750707I$	$-4.30776 - 3.71769I$	$-7.51801 + 8.71663I$
$u = 0.959730 - 0.890724I$ $a = 0.549017 + 0.142828I$ $b = 0.361184 + 0.750707I$	$-4.30776 + 3.71769I$	$-7.51801 - 8.71663I$
$u = 0.418088$ $a = -0.957441$ $b = 0.687897$	0.881810	11.5670
$u = 0.15342 + 1.73647I$ $a = -0.13933 - 1.90579I$ $b = -0.99446 - 1.40865I$	$-16.4057 + 17.5804I$	$-2.58727 - 8.30259I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.15342 - 1.73647I$ $a = -0.13933 + 1.90579I$ $b = -0.99446 + 1.40865I$	$-16.4057 - 17.5804I$	$-2.58727 + 8.30259I$
$u = 0.21564 + 1.85083I$ $a = -0.244097 + 0.817556I$ $b = 0.177755 + 0.770665I$	$-13.97390 + 1.53205I$	$-8.41618 - 4.24758I$
$u = 0.21564 - 1.85083I$ $a = -0.244097 - 0.817556I$ $b = 0.177755 - 0.770665I$	$-13.97390 - 1.53205I$	$-8.41618 + 4.24758I$

II.

$\boldsymbol{I_2^u = \langle u^7a-2u^6a+\cdots+5b-4a,\ 4u^6a+u^7+\cdots+20a-6,\ u^8-3u^7+\cdots-14u+4\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}a\\-\frac{1}{5}u^7a+\frac{2}{5}u^6a+\cdots-3au+\frac{4}{5}a\end{pmatrix}$$
$$a_4 = \begin{pmatrix}\frac{1}{2}u^7a-\frac{3}{2}u^6a+\cdots-2a+\frac{1}{2}\\-\frac{1}{5}u^7a-\frac{1}{2}u^7+\cdots+\frac{14}{5}a+2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-\frac{1}{5}u^7a-\frac{1}{2}u^7+\cdots+\frac{9}{5}a+\frac{5}{2}\\\frac{2}{5}u^7a+\frac{1}{2}u^7+\cdots-\frac{8}{5}a-2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}\frac{1}{5}u^7a-\frac{2}{5}u^6a+\cdots+2au+\frac{1}{5}a\\-au\end{pmatrix}$$
$$a_3 = \begin{pmatrix}\frac{1}{5}u^7a-\frac{2}{5}u^6a+\cdots+\frac{1}{5}a+\frac{1}{2}\\-\frac{1}{5}u^7a-\frac{1}{2}u^7+\cdots+\frac{4}{5}a+2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-\frac{7}{10}u^7a-\frac{1}{4}u^7+\cdots+\frac{14}{5}a+\frac{3}{2}\\-\frac{4}{5}u^7a+\frac{8}{5}u^6a+\cdots+\frac{6}{5}a+1\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7+15u^6-41u^5+79u^4-104u^3+107u^2-70u+30$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{16} - 13u^{15} + \cdots - 328u + 41$
c_2, c_4, c_8 c_{10}	$u^{16} + u^{15} + \cdots - 2u + 1$
c_3, c_9	$(u^8 - u^6 - u^3 + 2u^2 - u + 1)^2$
c_5, c_6, c_{11} c_{12}	$(u^8 - 3u^7 + 10u^6 - 18u^5 + 29u^4 - 31u^3 + 27u^2 - 14u + 4)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{16} + y^{15} + \cdots + 2788y + 1681$
c_2, c_4, c_8 c_{10}	$y^{16} + 7y^{15} + \cdots - 6y + 1$
c_3, c_9	$(y^8 - 2y^7 + y^6 + 4y^5 - 2y^4 - 3y^3 + 2y^2 + 3y + 1)^2$
c_5, c_6, c_{11} c_{12}	$(y^8 + 11y^7 + 50y^6 + 124y^5 + 189y^4 + 181y^3 + 93y^2 + 20y + 16)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.673128 + 1.045810I$ $a = 0.301794 - 1.174260I$ $b = -0.803268 - 1.117440I$	$-6.47283 + 5.59386I$	$-6.60310 - 4.62010I$
$u = 0.673128 + 1.045810I$ $a = -0.633138 + 0.444550I$ $b = -0.073509 + 0.875041I$	$-6.47283 + 5.59386I$	$-6.60310 - 4.62010I$
$u = 0.673128 - 1.045810I$ $a = 0.301794 + 1.174260I$ $b = -0.803268 + 1.117440I$	$-6.47283 - 5.59386I$	$-6.60310 + 4.62010I$
$u = 0.673128 - 1.045810I$ $a = -0.633138 - 0.444550I$ $b = -0.073509 - 0.875041I$	$-6.47283 - 5.59386I$	$-6.60310 + 4.62010I$
$u = 0.504550 + 0.414188I$ $a = -0.841060 + 0.591436I$ $b = 0.745591 + 0.724115I$	$1.86670 + 1.71603I$	$7.94168 - 3.64767I$
$u = 0.504550 + 0.414188I$ $a = -0.275916 - 0.687804I$ $b = -0.631239 + 0.403393I$	$1.86670 + 1.71603I$	$7.94168 - 3.64767I$
$u = 0.504550 - 0.414188I$ $a = -0.841060 - 0.591436I$ $b = 0.745591 - 0.724115I$	$1.86670 - 1.71603I$	$7.94168 + 3.64767I$
$u = 0.504550 - 0.414188I$ $a = -0.275916 + 0.687804I$ $b = -0.631239 - 0.403393I$	$1.86670 - 1.71603I$	$7.94168 + 3.64767I$
$u = 0.143098 + 1.398100I$ $a = 0.462450 + 0.187513I$ $b = 0.412575 - 0.112689I$	$-3.91396 + 3.96633I$	$6.91340 + 0.89673I$
$u = 0.143098 + 1.398100I$ $a = 0.01496 - 1.62294I$ $b = -0.833636 - 1.113530I$	$-3.91396 + 3.96633I$	$6.91340 + 0.89673I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.143098 - 1.398100I$ $a = 0.462450 - 0.187513I$ $b = 0.412575 + 0.112689I$	$-3.91396 - 3.96633I$	$6.91340 - 0.89673I$
$u = 0.143098 - 1.398100I$ $a = 0.01496 + 1.62294I$ $b = -0.833636 + 1.113530I$	$-3.91396 - 3.96633I$	$6.91340 - 0.89673I$
$u = 0.17922 + 1.74365I$ $a = 0.360792 - 1.135170I$ $b = -0.251883 - 1.053690I$	$-16.1539 + 9.0459I$	$-5.25198 - 5.62090I$
$u = 0.17922 + 1.74365I$ $a = 0.11012 + 1.80963I$ $b = 0.93537 + 1.35801I$	$-16.1539 + 9.0459I$	$-5.25198 - 5.62090I$
$u = 0.17922 - 1.74365I$ $a = 0.360792 + 1.135170I$ $b = -0.251883 + 1.053690I$	$-16.1539 - 9.0459I$	$-5.25198 + 5.62090I$
$u = 0.17922 - 1.74365I$ $a = 0.11012 - 1.80963I$ $b = 0.93537 - 1.35801I$	$-16.1539 - 9.0459I$	$-5.25198 + 5.62090I$

III. $\boldsymbol{I_3^u = \langle 13u^4a^3 - 3u^4a^2 + \cdots + 69a - 1,\ -2u^4a^3 - u^4a + \cdots + 6a + 2,\ u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1\rangle}$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} a \\ -1.44444a^3u^4 + 0.333333a^2u^4 + \cdots - 7.66667a + 0.111111 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{2}{9}u^4a^3 + \frac{2}{3}u^4a^2 + \cdots - \frac{1}{3}a - \frac{2}{9} \\ -2.44444a^3u^4 + 2.66667a^2u^4 + \cdots - 17.3333a - 5.55556 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{13}{9}u^4a^3 - \frac{1}{3}u^4a^2 + \cdots + \frac{20}{3}a - \frac{1}{9} \\ -1.22222a^3u^4 + 1.66667a^2u^4 + \cdots - 10.3333a - 2.44444 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.222222a^3u^4 - 1.33333a^2u^4 + \cdots + 3.66667a + 2.55556 \\ -\frac{5}{3}u^4a^3 - u^4a^2 + \cdots - 5a + \frac{8}{3} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{2}{9}u^4a^3 + \frac{4}{3}u^4a^2 + \cdots - \frac{11}{3}a - \frac{23}{9} \\ -1.55556a^3u^4 - 0.333333a^2u^4 + \cdots - 5.33333a + 0.888889 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{5}{9}u^4a^3 + \frac{2}{3}u^4a^2 + \cdots - \frac{7}{3}a - \frac{14}{9} \\ -3u^4a^3 - u^4a^2 + \cdots - a^2 - 14a \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{40}{3}u^4a^3 + 16a^3u^3 - 16u^4a^2 + \frac{136}{3}a^3u^2 + 32u^4a + \frac{128}{3}a^3u - 48a^2u^2 + 48u^3a + \frac{92}{3}u^4 + \frac{64}{3}a^3 + 8a^2u + 120u^2a + 20u^3 - 16a^2 + 128au + \frac{320}{3}u^2 + 88a + \frac{148}{3}u + \frac{110}{3}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^2 + u + 1)^{10}$
c_2, c_4, c_8 c_{10}	$u^{20} - u^{19} + \cdots + 6u + 1$
c_3, c_9	$u^{20} - 3u^{19} + \cdots - 12u + 21$
c_5, c_6, c_{11} c_{12}	$(u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^2 + y + 1)^{10}$
c_2, c_4, c_8 c_{10}	$y^{20} + 7y^{19} + \cdots - 4y + 1$
c_3, c_9	$y^{20} + 11y^{19} + \cdots - 1908y + 441$
c_5, c_6, c_{11} c_{12}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.233677+0.885557I$ $a=-0.904693-0.769663I$ $b=-0.632026-0.556108I$	$-1.81981+1.84580I$	$3.11432-2.70531I$
$u=-0.233677+0.885557I$ $a=-0.963301-0.933717I$ $b=\quad 0.861170-0.585785I$	$-1.81981-6.27374I$	$3.11432+11.15109I$
$u=-0.233677+0.885557I$ $a=\quad 0.158195-0.630606I$ $b=-0.252831+0.191559I$	$-1.81981+1.84580I$	$3.11432-2.70531I$
$u=-0.233677+0.885557I$ $a=\quad 0.12388+2.28034I$ $b=-0.73445+1.53437I$	$-1.81981-6.27374I$	$3.11432+11.15109I$
$u=-0.233677-0.885557I$ $a=-0.904693+0.769663I$ $b=-0.632026+0.556108I$	$-1.81981-1.84580I$	$3.11432+2.70531I$
$u=-0.233677-0.885557I$ $a=-0.963301+0.933717I$ $b=\quad 0.861170+0.585785I$	$-1.81981+6.27374I$	$3.11432-11.15109I$
$u=-0.233677-0.885557I$ $a=\quad 0.158195+0.630606I$ $b=-0.252831-0.191559I$	$-1.81981-1.84580I$	$3.11432+2.70531I$
$u=-0.233677-0.885557I$ $a=\quad 0.12388-2.28034I$ $b=-0.73445-1.53437I$	$-1.81981+6.27374I$	$3.11432-11.15109I$
$u=-0.416284$ $a=-0.354528+0.090103I$ $b=\quad 0.805501-1.021500I$	$0.88218-4.05977I$	$11.60884+6.92820I$
$u=-0.416284$ $a=-0.354528-0.090103I$ $b=\quad 0.805501+1.021500I$	$0.88218+4.05977I$	$11.60884-6.92820I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.416284$ $a=\ 1.45208+1.99112I$ $b=-0.482901-0.462743I$	$0.88218+4.05977I$	$11.60884-6.92820I$
$u=-0.416284$ $a=\ 1.45208-1.99112I$ $b=-0.482901+0.462743I$	$0.88218-4.05977I$	$11.60884+6.92820I$
$u=-0.05818+1.69128I$ $a=\ 0.073865+1.064830I$ $b=-1.074080+0.655525I$	$-10.95830-7.39151I$	$2.08126+9.29048I$
$u=-0.05818+1.69128I$ $a=\ 0.686831-0.325631I$ $b=\ 1.137160-0.408183I$	$-10.95830+0.72802I$	$2.08126-4.56592I$
$u=-0.05818+1.69128I$ $a=\ 0.37758+1.42971I$ $b=\ 0.113419+0.766429I$	$-10.95830+0.72802I$	$2.08126-4.56592I$
$u=-0.05818+1.69128I$ $a=\ 0.35009-2.53868I$ $b=\ 0.75904-1.91768I$	$-10.95830-7.39151I$	$2.08126+9.29048I$
$u=-0.05818-1.69128I$ $a=\ 0.073865-1.064830I$ $b=-1.074080-0.655525I$	$-10.95830+7.39151I$	$2.08126-9.29048I$
$u=-0.05818-1.69128I$ $a=\ 0.686831+0.325631I$ $b=\ 1.137160+0.408183I$	$-10.95830-0.72802I$	$2.08126+4.56592I$
$u=-0.05818-1.69128I$ $a=\ 0.37758-1.42971I$ $b=\ 0.113419-0.766429I$	$-10.95830-0.72802I$	$2.08126+4.56592I$
$u=-0.05818-1.69128I$ $a=\ 0.35009+2.53868I$ $b=\ 0.75904+1.91768I$	$-10.95830+7.39151I$	$2.08126-9.29048I$

IV. $\boldsymbol{I^u_4 = \langle -1.98\times 10^{25}a^7u^4 + 9.89\times 10^{25}a^6u^4 + \cdots - 5.40\times 10^{26}a + 1.69\times 10^{27},\ 2a^7u^4 + 3a^6u^4 + \cdots + 299a + 412,\ u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ 0.0231630a^7u^4 - 0.115549a^6u^4 + \cdots + 0.631354a - 1.97668 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.0274758a^7u^4 + 0.111775a^6u^4 + \cdots - 1.19459a + 5.60018 \\ -0.0428376a^7u^4 + 0.165420a^6u^4 + \cdots + 0.718981a + 9.06528 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0396479a^7u^4 + 0.0263946a^6u^4 + \cdots - 2.42546a - 5.34257 \\ 0.0754551a^7u^4 - 0.0524429a^6u^4 + \cdots + 1.43917a + 0.579745 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.000834185a^7u^4 - 0.110753a^6u^4 + \cdots + 2.51506a - 1.28133 \\ 0.0223288a^7u^4 - 0.226302a^6u^4 + \cdots + 2.14641a - 3.25800 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.00657335a^7u^4 - 0.0196410a^6u^4 + \cdots - 3.57265a - 4.76746 \\ 0.0175399a^7u^4 - 0.111532a^6u^4 + \cdots + 1.18704a + 0.722514 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.105247a^7u^4 + 0.0542594a^6u^4 + \cdots - 3.18898a - 6.29722 \\ 0.0451415a^7u^4 + 0.205954a^6u^4 + \cdots - 1.91313a + 1.74778 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{953952338244223651076 8}{1493119503606325149780 53}a^7u^4 - \frac{16476323491243846628909 6}{4479358510818975449341 59}a^6u^4 + \cdots - \frac{12136936150589391237320 8}{1493119503606325149780 53}a - \frac{91143979838801505566444 78}{4479358510818975449341 59}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^4 + u^3 - 2u + 1)^{10}$
c_2, c_4, c_8 c_{10}	$u^{40} + u^{39} + \cdots - 708u + 2217$
c_3, c_9	$(u^{20} + u^{19} + \cdots + 40u + 343)^2$
c_5, c_6, c_{11} c_{12}	$(u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1)^8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^4 - y^3 + 6y^2 - 4y + 1)^{10}$
c_2, c_4, c_8 c_{10}	$y^{40} + 13y^{39} + \cdots + 124590744y + 4915089$
c_3, c_9	$(y^{20} - 25y^{19} + \cdots - 1012764y + 117649)^2$
c_5, c_6, c_{11} c_{12}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.233677+0.885557I$ $a=-0.784642-0.791408I$ $b=-0.009371-1.153560I$	$-5.10967+1.84580I$	$-8.88568-2.70531I$
$u=-0.233677+0.885557I$ $a=-0.367052-1.285790I$ $b=-1.25398-1.03539I$	$-5.10967+1.84580I$	$-8.88568-2.70531I$
$u=-0.233677+0.885557I$ $a=\ 1.35477+0.43992I$ $b=\ 0.139544+0.771173I$	$-5.10967+1.84580I$	$-8.88568-2.70531I$
$u=-0.233677+0.885557I$ $a=\ 1.03773+1.17397I$ $b=\ 1.63591+1.17695I$	$-5.10967-6.27374I$	$-8.8857+11.1511I$
$u=-0.233677+0.885557I$ $a=-0.43815-1.52704I$ $b=\ 0.99956-1.23269I$	$-5.10967-6.27374I$	$-8.8857+11.1511I$
$u=-0.233677+0.885557I$ $a=\ 0.98322+1.91625I$ $b=-0.596618+1.204390I$	$-5.10967-6.27374I$	$-8.8857+11.1511I$
$u=-0.233677+0.885557I$ $a=\ 0.72926-2.45624I$ $b=-0.014486-0.843941I$	$-5.10967+1.84580I$	$-8.88568-2.70531I$
$u=-0.233677+0.885557I$ $a=-0.92923+2.58398I$ $b=-0.142425+0.529033I$	$-5.10967-6.27374I$	$-8.8857+11.1511I$
$u=-0.233677-0.885557I$ $a=-0.784642+0.791408I$ $b=-0.009371+1.153560I$	$-5.10967-1.84580I$	$-8.88568+2.70531I$
$u=-0.233677-0.885557I$ $a=-0.367052+1.285790I$ $b=-1.25398+1.03539I$	$-5.10967-1.84580I$	$-8.88568+2.70531I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.233677 - 0.885557I$ $a = 1.35477 - 0.43992I$ $b = 0.139544 - 0.771173I$	$-5.10967 - 1.84580I$	$-8.88568 + 2.70531I$
$u = -0.233677 - 0.885557I$ $a = 1.03773 - 1.17397I$ $b = 1.63591 - 1.17695I$	$-5.10967 + 6.27374I$	$-8.8857 - 11.1511I$
$u = -0.233677 - 0.885557I$ $a = -0.43815 + 1.52704I$ $b = 0.99956 + 1.23269I$	$-5.10967 + 6.27374I$	$-8.8857 - 11.1511I$
$u = -0.233677 - 0.885557I$ $a = 0.98322 - 1.91625I$ $b = -0.596618 - 1.204390I$	$-5.10967 + 6.27374I$	$-8.8857 - 11.1511I$
$u = -0.233677 - 0.885557I$ $a = 0.72926 + 2.45624I$ $b = -0.014486 + 0.843941I$	$-5.10967 - 1.84580I$	$-8.88568 + 2.70531I$
$u = -0.233677 - 0.885557I$ $a = -0.92923 - 2.58398I$ $b = -0.142425 - 0.529033I$	$-5.10967 + 6.27374I$	$-8.8857 - 11.1511I$
$u = -0.416284$ $a = -1.12225 + 1.12774I$ $b = 0.411711 - 1.062380I$	$-2.40769 - 4.05977I$	$-0.39116 + 6.92820I$
$u = -0.416284$ $a = -1.12225 - 1.12774I$ $b = 0.411711 + 1.062380I$	$-2.40769 + 4.05977I$	$-0.39116 - 6.92820I$
$u = -0.416284$ $a = 0.35045 + 1.64035I$ $b = -0.638561 - 0.911711I$	$-2.40769 + 4.05977I$	$-0.39116 - 6.92820I$
$u = -0.416284$ $a = 0.35045 - 1.64035I$ $b = -0.638561 + 0.911711I$	$-2.40769 - 4.05977I$	$-0.39116 + 6.92820I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.416284$ $a=\ \ 0.82181+2.33488I$ $b=-0.750115+0.948474I$	$-2.40769+4.05977I$	$-0.39116-6.92820I$
$u=-0.416284$ $a=\ \ 0.82181-2.33488I$ $b=-0.750115-0.948474I$	$-2.40769-4.05977I$	$-0.39116+6.92820I$
$u=-0.416284$ $a=-1.14757+2.85557I$ $b=\ \ 0.654365+0.577136I$	$-2.40769+4.05977I$	$-0.39116-6.92820I$
$u=-0.416284$ $a=-1.14757-2.85557I$ $b=\ \ 0.654365-0.577136I$	$-2.40769-4.05977I$	$-0.39116+6.92820I$
$u=-0.05818+1.69128I$ $a=-0.575468-1.023550I$ $b=\ \ 0.243518-0.838061I$	$-14.2482+0.7280I$	$-9.91874-4.56592I$
$u=-0.05818+1.69128I$ $a=\ \ 0.13851+1.50113I$ $b=-0.36137+1.37434I$	$-14.2482+0.7280I$	$-9.91874-4.56592I$
$u=-0.05818+1.69128I$ $a=-0.52468+1.82556I$ $b=\ \ 0.344459+0.817677I$	$-14.2482+0.7280I$	$-9.91874-4.56592I$
$u=-0.05818+1.69128I$ $a=-0.44379+1.84920I$ $b=-1.25771+1.45285I$	$-14.2482-7.3915I$	$-9.91874+9.29048I$
$u=-0.05818+1.69128I$ $a=\ \ 0.71144-1.93489I$ $b=-0.103995-0.622502I$	$-14.2482-7.3915I$	$-9.91874+9.29048I$
$u=-0.05818+1.69128I$ $a=-0.16586-2.06676I$ $b=\ \ 0.71770-1.35351I$	$-14.2482-7.3915I$	$-9.91874+9.29048I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.05818+1.69128I$ $a=1.17815+1.74863I$ $b=1.65404+1.52859I$	$-14.2482+0.7280I$	$-9.91874-4.56592I$
$u=-0.05818+1.69128I$ $a=-1.80666-1.52955I$ $b=-2.17218-1.45548I$	$-14.2482-7.3915I$	$-9.91874+9.29048I$
$u=-0.05818-1.69128I$ $a=-0.575468+1.023550I$ $b=0.243518+0.838061I$	$-14.2482-0.7280I$	$-9.91874+4.56592I$
$u=-0.05818-1.69128I$ $a=0.13851-1.50113I$ $b=-0.36137-1.37434I$	$-14.2482-0.7280I$	$-9.91874+4.56592I$
$u=-0.05818-1.69128I$ $a=-0.52468-1.82556I$ $b=0.344459-0.817677I$	$-14.2482-0.7280I$	$-9.91874+4.56592I$
$u=-0.05818-1.69128I$ $a=-0.44379-1.84920I$ $b=-1.25771-1.45285I$	$-14.2482+7.3915I$	$-9.91874-9.29048I$
$u=-0.05818-1.69128I$ $a=0.71144+1.93489I$ $b=-0.103995+0.622502I$	$-14.2482+7.3915I$	$-9.91874-9.29048I$
$u=-0.05818-1.69128I$ $a=-0.16586+2.06676I$ $b=0.71770+1.35351I$	$-14.2482+7.3915I$	$-9.91874-9.29048I$
$u=-0.05818-1.69128I$ $a=1.17815-1.74863I$ $b=1.65404-1.52859I$	$-14.2482-0.7280I$	$-9.91874+4.56592I$
$u=-0.05818-1.69128I$ $a=-1.80666+1.52955I$ $b=-2.17218+1.45548I$	$-14.2482+7.3915I$	$-9.91874-9.29048I$

V. $I^u_5 = \langle u^{19} + u^{18} + \cdots + 2b + 7,\ 6u^{19} + 26u^{18} + \cdots + 26a + 299,\ u^{20} + 14u^{18} + \cdots + 85u^2 + 13\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{3}{13}u^{19} - u^{18} + \cdots - \frac{263}{26}u - \frac{23}{2} \\ -\frac{1}{2}u^{19} - \frac{1}{2}u^{18} + \cdots - 8u - \frac{7}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1.30769u^{19} - 0.500000u^{18} + \cdots + 16.6538u - 5.50000 \\ \frac{1}{2}u^{19} - u^{18} + \cdots + 4u - \frac{21}{2} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{19}{26}u^{19} - \frac{1}{2}u^{18} + \cdots + \frac{393}{26}u - 2 \\ -\frac{3}{2}u^{18} + \frac{1}{2}u^{17} + \cdots + \frac{9}{2}u - 16 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{19}{26}u^{19} - \frac{1}{2}u^{18} + \cdots - \frac{177}{13}u - 5 \\ -u^{19} - 13u^{17} + \cdots - \frac{23}{2}u + 3 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{19}{26}u^{19} - \frac{1}{2}u^{18} + \cdots + \frac{177}{13}u - 5 \\ -\frac{1}{2}u^{19} - \frac{1}{2}u^{18} + \cdots - 2u - \frac{19}{2} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{4}{13}u^{19} - u^{18} + \cdots - \frac{93}{13}u - 13 \\ -\frac{1}{2}u^{19} - \frac{13}{2}u^{17} + \cdots - \frac{19}{2}u + 4 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 6u^{18} + 72u^{16} + 352u^{14} + 914u^{12} + 1408u^{10} + 1415u^8 + 1015u^6 + 512u^4 + 158u^2 + 15$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{20} - 8u^{19} + \cdots + 2u + 1$
c_2, c_4, c_8 c_{10}	$u^{20} - 2u^{19} + \cdots - 4u + 1$
c_3, c_9	$(u^{10} - u^9 - 3u^8 + 3u^7 + 7u^6 - 4u^5 - 8u^4 - u^3 + 5u^2 + 3u - 1)^2$
c_5, c_6, c_{11} c_{12}	$u^{20} + 14u^{18} + \cdots + 85u^2 + 13$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{20} + 14y^{18} + \cdots - 16y + 1$
c_2, c_4, c_8 c_{10}	$y^{20} + 8y^{19} + \cdots + 4y + 1$
c_3, c_9	$(y^{10} - 7y^9 + \cdots - 19y + 1)^2$
c_5, c_6, c_{11} c_{12}	$(y^{10} + 14y^9 + \cdots + 85y + 13)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.292954 + 0.839226I$ $a = -0.45802 + 1.38942I$ $b = -0.699531 + 0.471567I$	$-4.45321 + 5.61478I$	$-0.94997 - 3.81742I$
$u = 0.292954 - 0.839226I$ $a = -0.45802 - 1.38942I$ $b = -0.699531 - 0.471567I$	$-4.45321 - 5.61478I$	$-0.94997 + 3.81742I$
$u = -0.292954 + 0.839226I$ $a = -0.76762 - 1.54520I$ $b = 0.759941 - 1.172910I$	$-4.45321 - 5.61478I$	$-0.94997 + 3.81742I$
$u = -0.292954 - 0.839226I$ $a = -0.76762 + 1.54520I$ $b = 0.759941 + 1.172910I$	$-4.45321 + 5.61478I$	$-0.94997 - 3.81742I$
$u = -0.578949 + 0.658786I$ $a = -0.825562 + 0.060286I$ $b = -0.321887 - 0.870956I$	$-3.49395 + 2.59792I$	$-3.58756 - 3.56344I$
$u = -0.578949 - 0.658786I$ $a = -0.825562 - 0.060286I$ $b = -0.321887 + 0.870956I$	$-3.49395 - 2.59792I$	$-3.58756 + 3.56344I$
$u = 0.578949 + 0.658786I$ $a = 0.944411 - 0.622307I$ $b = 0.575029 - 0.074063I$	$-3.49395 - 2.59792I$	$-3.58756 + 3.56344I$
$u = 0.578949 - 0.658786I$ $a = 0.944411 + 0.622307I$ $b = 0.575029 + 0.074063I$	$-3.49395 + 2.59792I$	$-3.58756 - 3.56344I$
$u = 0.701594I$ $a = -1.19157 - 1.33290I$ $b = 0.233625 - 0.999908I$	-4.42214	-6.61610
$u = -0.701594I$ $a = -1.19157 + 1.33290I$ $b = 0.233625 + 0.999908I$	-4.42214	-6.61610

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.060025 + 1.313210I$ $a = 0.544429 + 0.310811I$ $b = 0.198498 + 0.446154I$	$-4.33175 + 4.31090I$	$-5.13581 - 8.57420I$
$u = 0.060025 - 1.313210I$ $a = 0.544429 - 0.310811I$ $b = 0.198498 - 0.446154I$	$-4.33175 - 4.31090I$	$-5.13581 + 8.57420I$
$u = -0.060025 + 1.313210I$ $a = -0.11611 - 1.73797I$ $b = 0.80084 - 1.17005I$	$-4.33175 - 4.31090I$	$-5.13581 + 8.57420I$
$u = -0.060025 - 1.313210I$ $a = -0.11611 + 1.73797I$ $b = 0.80084 + 1.17005I$	$-4.33175 + 4.31090I$	$-5.13581 - 8.57420I$
$u = -0.06323 + 1.68896I$ $a = -0.12947 + 1.91613I$ $b = -0.96456 + 1.37630I$	$-13.4730 + 6.8978I$	$-0.54611 + 3.29895I$
$u = -0.06323 - 1.68896I$ $a = -0.12947 - 1.91613I$ $b = -0.96456 - 1.37630I$	$-13.4730 - 6.8978I$	$-0.54611 - 3.29895I$
$u = 0.06323 + 1.68896I$ $a = 0.48519 - 1.38402I$ $b = 0.942552 - 0.808832I$	$-13.4730 - 6.8978I$	$-0.54611 - 3.29895I$
$u = 0.06323 - 1.68896I$ $a = 0.48519 + 1.38402I$ $b = 0.942552 + 0.808832I$	$-13.4730 + 6.8978I$	$-0.54611 + 3.29895I$
$u = 1.71295I$ $a = 0.014324 + 1.229180I$ $b = -0.524504 + 0.922982I$	-13.1612	-2.94490
$u = - 1.71295I$ $a = 0.014324 - 1.229180I$ $b = -0.524504 - 0.922982I$	-13.1612	-2.94490

VI.

$$\boldsymbol{I^u_6 = \langle -u^4 + u^3 - 3u^2 + b + 2u - 1,\ u^3 + a + 2u,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle}$$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^2 - 1 \\ u^4 + 2u^2 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^4 - 4u^3 + 16u^2 - 12u + 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.233677 + 0.885557I$ $a = 0.069642 - 1.221720I$ $b = -0.758138 - 0.584034I$	$-1.81981 + 2.21397I$	$3.11432 - 4.22289I$
$u = 0.233677 - 0.885557I$ $a = 0.069642 + 1.221720I$ $b = -0.758138 + 0.584034I$	$-1.81981 - 2.21397I$	$3.11432 + 4.22289I$
$u = 0.416284$ $a = -0.904706$ $b = 0.645200$	0.882183	11.6090
$u = 0.05818 + 1.69128I$ $a = 0.38271 + 1.43804I$ $b = 0.935538 + 0.903908I$	$-10.95830 + 3.33174I$	$2.08126 - 2.36228I$
$u = 0.05818 - 1.69128I$ $a = 0.38271 - 1.43804I$ $b = 0.935538 - 0.903908I$	$-10.95830 - 3.33174I$	$2.08126 + 2.36228I$

VII.

$\boldsymbol{I^u_7 = \langle u^4a+2u^4+\cdots+a+5,\ 2u^4a+u^3a+\cdots+2a+1,\ u^5+u^4+4u^3+3u^2+3u+1\rangle}$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} -\frac{1}{3}u^4a + \frac{4}{3}u^4 + \cdots + \frac{2}{3}a + \frac{7}{3} \\ -\frac{1}{3}u^4a + \frac{1}{3}u^4 + \cdots + \frac{2}{3}a - \frac{2}{3} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{3}u^4a + \frac{4}{3}u^4 + \cdots + \frac{2}{3}a + \frac{7}{3} \\ -\frac{1}{3}u^4a + \frac{1}{3}u^4 + \cdots + \frac{2}{3}a - \frac{2}{3} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{1}{3}u^4a - \frac{1}{3}u^4 + \cdots + \frac{4}{3}a - \frac{1}{3} \\ -u^4 - 2u^3 + au - 4u^2 - 4u - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{3}u^4a + \frac{5}{3}u^4 + \cdots + \frac{4}{3}a + \frac{8}{3} \\ -\frac{1}{3}u^4a + \frac{1}{3}u^4 + \cdots - \frac{1}{3}a - \frac{2}{3} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{3}u^4a - \frac{1}{3}u^4 + \cdots + \frac{4}{3}a + \frac{2}{3} \\ -2u^4 - 2u^3 + au - 6u^2 - 4u - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^4 + 4u^3 + 16u^2 + 12u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u+1)^{10}$
c_2, c_4, c_8 c_{10}	$u^{10}+u^9+4u^8+16u^6+2u^5+19u^4+3u^3+12u^2+2u+3$
c_3, c_9	$(u^5+u^4-u^2+u+1)^2$
c_5, c_6, c_{11} c_{12}	$(u^5+u^4+4u^3+3u^2+3u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y-1)^{10}$
c_2, c_4, c_8 c_{10}	$y^{10}+7y^9+\cdots+68y+9$
c_3, c_9	$(y^5-y^4+4y^3-3y^2+3y-1)^2$
c_5, c_6, c_{11} c_{12}	$(y^5+7y^4+16y^3+13y^2+3y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_7	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.233677 + 0.885557I$ $a = 0.128608 - 1.279670I$ $b = 0.92954 - 1.29747I$	$-5.10967 - 2.21397I$	$-8.88568 + 4.22289I$
$u = -0.233677 + 0.885557I$ $a = 1.45731 + 1.33332I$ $b = -0.171405 + 0.713431I$	$-5.10967 - 2.21397I$	$-8.88568 + 4.22289I$
$u = -0.233677 - 0.885557I$ $a = 0.128608 + 1.279670I$ $b = 0.92954 + 1.29747I$	$-5.10967 + 2.21397I$	$-8.88568 - 4.22289I$
$u = -0.233677 - 0.885557I$ $a = 1.45731 - 1.33332I$ $b = -0.171405 - 0.713431I$	$-5.10967 + 2.21397I$	$-8.88568 - 4.22289I$
$u = -0.416284$ $a = -1.09755 + 0.97112I$ $b = -0.322600 - 0.692564I$	-2.40769	-0.391160
$u = -0.416284$ $a = -1.09755 - 0.97112I$ $b = -0.322600 + 0.692564I$	-2.40769	-0.391160
$u = -0.05818 + 1.69128I$ $a = -0.68121 - 1.55202I$ $b = 0.363268 - 0.820011I$	$-14.2482 - 3.3317I$	$-9.91874 + 2.36228I$
$u = -0.05818 + 1.69128I$ $a = -0.80715 + 1.92179I$ $b = -1.29881 + 1.72392I$	$-14.2482 - 3.3317I$	$-9.91874 + 2.36228I$
$u = -0.05818 - 1.69128I$ $a = -0.68121 + 1.55202I$ $b = 0.363268 + 0.820011I$	$-14.2482 + 3.3317I$	$-9.91874 - 2.36228I$
$u = -0.05818 - 1.69128I$ $a = -0.80715 - 1.92179I$ $b = -1.29881 - 1.72392I$	$-14.2482 + 3.3317I$	$-9.91874 - 2.36228I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.73205I$ $a = 1.154700I$ $b = -0.500000 + 0.866025I$	-13.1595	-3.00000
$u = -1.73205I$ $a = -1.154700I$ $b = -0.500000 - 0.866025I$	-13.1595	-3.00000

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

(i) Arc colorings

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

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

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

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

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

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

$$a_2 = \begin{pmatrix} b-1 \\ -2b+2 \end{pmatrix}$$

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

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

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

$$a_7 = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} b-1 \\ -b+2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I^u_9	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	0	-3.28987	-3.00000
$b =$	$0.500000 + 0.866025I$		
$u =$	1.00000		
$a =$	0	-3.28987	-3.00000
$b =$	$0.500000 - 0.866025I$		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8b + 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = -0.500000 + 0.866025I$	$-4.05977I$	$0. + 6.92820I$
$v = -1.00000$ $a = 0$ $b = -0.500000 - 0.866025I$	$4.05977I$	$0. - 6.92820I$

XI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^5(u+1)^{10}(u^2-3u+3)(u^2-u+1)^2(u^2+u+1)^{10}$ $\cdot((u^4+u^3-2u+1)^{10})(u^{13}-11u^{12}+\cdots+107u+7)$ $\cdot(u^{16}-13u^{15}+\cdots-328u+41)(u^{20}-8u^{19}+\cdots+2u+1)$
c_2, c_4, c_8 c_{10}	$(u^2-u+1)(u^2+u+1)^2(u^5-u^4+u^2+u-1)$ $\cdot(u^{10}+u^9+4u^8+16u^6+2u^5+19u^4+3u^3+12u^2+2u+3)$ $\cdot(u^{13}+u^{12}+3u^{11}+u^{10}+9u^9+5u^8+9u^7+u^6+6u^5-2u^3-u-1)$ $\cdot(u^{16}+u^{15}+\cdots-2u+1)(u^{20}-2u^{19}+\cdots-4u+1)$ $\cdot(u^{20}-u^{19}+\cdots+6u+1)(u^{40}+u^{39}+\cdots-708u+2217)$
c_3, c_9	$(u+1)^4(u^2-u+1)(u^5-u^4+u^2+u-1)(u^5+u^4-u^2+u+1)^2$ $\cdot(u^8-u^6-u^3+2u^2-u+1)^2$ $\cdot(u^{10}-u^9-3u^8+3u^7+7u^6-4u^5-8u^4-u^3+5u^2+3u-1)^2$ $\cdot(u^{13}-2u^{12}+\cdots+7u-24)(u^{20}-3u^{19}+\cdots-12u+21)$ $\cdot(u^{20}+u^{19}+\cdots+40u+343)^2$
c_5, c_6, c_{11} c_{12}	$u^2(u-1)^2(u^2+3)(u^5-u^4+4u^3-3u^2+3u-1)$ $\cdot(u^5+u^4+4u^3+3u^2+3u+1)^{14}$ $\cdot(u^8-3u^7+10u^6-18u^5+29u^4-31u^3+27u^2-14u+4)^2$ $\cdot(u^{13}-6u^{12}+\cdots+52u-8)(u^{20}+14u^{18}+\cdots+85u^2+13)$

XII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^5(y-1)^{10}(y^2-3y+9)(y^2+y+1)^{12}(y^4-y^3+6y^2-4y+1)^{10}$ $\cdot\,(y^{13}+3y^{12}+\cdots+15999y-49)(y^{16}+y^{15}+\cdots+2788y+1681)$ $\cdot\,(y^{20}+14y^{18}+\cdots-16y+1)$
c_2, c_4, c_8 c_{10}	$((y^2+y+1)^3)(y^5-y^4+\cdots+3y-1)(y^{10}+7y^9+\cdots+68y+9)$ $\cdot\,(y^{13}+5y^{12}+\cdots+y-1)(y^{16}+7y^{15}+\cdots-6y+1)$ $\cdot\,(y^{20}+7y^{19}+\cdots-4y+1)(y^{20}+8y^{19}+\cdots+4y+1)$ $\cdot\,(y^{40}+13y^{39}+\cdots+124590744y+4915089)$
c_3, c_9	$(y-1)^4(y^2+y+1)(y^5-y^4+4y^3-3y^2+3y-1)^3$ $\cdot\,(y^8-2y^7+y^6+4y^5-2y^4-3y^3+2y^2+3y+1)^2$ $\cdot\,((y^{10}-7y^9+\cdots-19y+1)^2)(y^{13}-18y^{12}+\cdots+4849y-576)$ $\cdot\,(y^{20}-25y^{19}+\cdots-1012764y+117649)^2$ $\cdot\,(y^{20}+11y^{19}+\cdots-1908y+441)$
c_5, c_6, c_{11} c_{12}	$y^2(y-1)^2(y+3)^2(y^5+7y^4+16y^3+13y^2+3y-1)^{15}$ $\cdot\,(y^8+11y^7+50y^6+124y^5+189y^4+181y^3+93y^2+20y+16)^2$ $\cdot\,((y^{10}+14y^9+\cdots+85y+13)^2)(y^{13}+14y^{12}+\cdots+208y-64)$