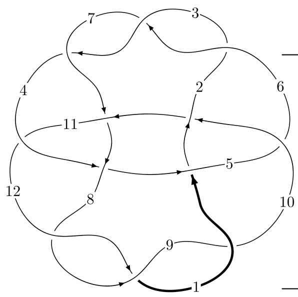
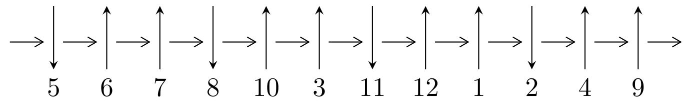
$12a_{1210}$ $(K12a_{1210})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &9u^{11} + 16u^{10} - 55u^9 - 83u^8 + 129u^7 + 99u^6 - 194u^5 + 31u^4 + 169u^3 - 50u^2 + 5b + 11u + 23,\\
&-49u^{11} - 81u^{10} + \cdots + 15a - 123,\\
&u^{12} + 3u^{11} - 4u^{10} - 17u^9 + 3u^8 + 30u^7 - 7u^6 - 25u^5 + 22u^4 + 19u^3 - 6u^2 + 3u + 3\rangle\\
I_2^u = \langle &-5352912u^{25} - 50199792u^{24} + \cdots + 3763339b - 53120096,\\
&208439509u^{25} + 1342309427u^{24} + \cdots + 18816695a + 581471885,\ u^{26} + 8u^{25} + \cdots + 15u + 5\rangle\\
I_3^u = \langle &u^4 - 2u^2 + b,\ -u^2 + a + 1,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle\\
I_4^u = \langle &-u^2 + b + u + 1,\ u^4 - 2u^2 + a + 1,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle\\
I_5^u = \langle &u^4 - u^2 + b - u - 1,\ u^4 - 2u^3 - u^2 + a + 2u,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle\\
I_6^u = \langle &8u^{25}a - 29u^{25} + \cdots + 24a + 58,\ 31u^{25}a - 5u^{25} + \cdots - 138a + 42,\ u^{26} - 2u^{25} + \cdots - 6u + 2\rangle\\
I_7^u = \langle &b - u,\ u^2 + a - 2u,\ u^3 - 2u^2 + u - 1\rangle\\
I_8^u = \langle &-2u^2 + b - u + 7,\ 3u^2 + 5a + 2u - 7,\ u^3 - u^2 - 4u + 5\rangle\\
I_9^u = \langle &b^2 + bu + u,\ a + u - 1,\ u^2 - u - 1\rangle\\
I_{10}^u = \langle &b - 1,\ a^4 - 2a^3 - a^2 + 2a - 1,\ u + 1\rangle
\end{aligned}$$

[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`).

$$
\begin{aligned}
I^u_{11} &= \langle -au + b - 1,\ 2a^2 + au - u - 1,\ u^2 - 2 \rangle \\
I^u_{12} &= \langle b + 1,\ a^2 + a - 1,\ u + 1 \rangle
\end{aligned}
$$

$$
\begin{aligned}
I^v_{1} &= \langle a,\ b + 1,\ v - 1 \rangle \\
I^v_{2} &= \langle a,\ b + v - 2,\ v^2 - 3v + 1 \rangle
\end{aligned}
$$

* 14 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 128 representations.

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I_1^u = \langle 9u^{11} + 16u^{10} + \cdots + 5b + 23,\ -49u^{11} - 81u^{10} + \cdots + 15a - 123,\ u^{12} + 3u^{11} + \cdots + 3u + 3\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{49}{15}u^{11} + \frac{27}{5}u^{10} + \cdots - \frac{3}{5}u + \frac{41}{5} \\ -\frac{9}{5}u^{11} - \frac{16}{5}u^{10} + \cdots - \frac{11}{5}u - \frac{23}{5} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{76}{15}u^{11} + \frac{43}{5}u^{10} + \cdots + \frac{8}{5}u + \frac{64}{5} \\ -\frac{9}{5}u^{11} - \frac{16}{5}u^{10} + \cdots - \frac{11}{5}u - \frac{23}{5} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{47}{15}u^{11} + \frac{26}{5}u^{10} + \cdots + \frac{11}{5}u + \frac{33}{5} \\ -\frac{8}{5}u^{11} - \frac{12}{5}u^{10} + \cdots + \frac{3}{5}u - \frac{16}{5} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2.26667u^{11} - 3.40000u^{10} + \cdots - 1.40000u - 4.20000 \\ \frac{9}{5}u^{11} + \frac{16}{5}u^{10} + \cdots + \frac{11}{5}u + \frac{23}{5} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{43}{15}u^{11} + \frac{24}{5}u^{10} + \cdots + \frac{4}{5}u + \frac{37}{5} \\ \frac{8}{5}u^{11} + \frac{12}{5}u^{10} + \cdots + \frac{2}{5}u + \frac{16}{5} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{8}{15}u^{11} - \frac{4}{5}u^{10} + \cdots - \frac{9}{5}u - \frac{2}{5} \\ -4.20000u^{11} - 6.80000u^{10} + \cdots - 3.80000u - 9.40000 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{31}{15}u^{11} + \frac{18}{5}u^{10} + \cdots - \frac{2}{5}u + \frac{29}{5} \\ -4.20000u^{11} - 6.80000u^{10} + \cdots - 2.80000u - 9.40000 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{54}{5}u^{11} - \frac{86}{5}u^{10} + 68u^9 + \frac{438}{5}u^8 - \frac{814}{5}u^7 - \frac{474}{5}u^6 + \frac{1184}{5}u^5 - \frac{296}{5}u^4 - \frac{964}{5}u^3 + 72u^2 - \frac{96}{5}u - \frac{108}{5}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^{12} - 5y^{11} + \cdots - 17y + 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$y^{12} - 17y^{11} + \cdots - 45y + 9$
c_5, c_{11}	$y^{12} - 6y^{11} + \cdots - 92y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.680890 + 0.727135I$ $a = 1.248510 - 0.220272I$ $b = 0.971458 - 0.885290I$	$0.23394 + 9.33805I$	$5.53743 - 10.26363I$
$u = 0.680890 - 0.727135I$ $a = 1.248510 + 0.220272I$ $b = 0.971458 + 0.885290I$	$0.23394 - 9.33805I$	$5.53743 + 10.26363I$
$u = -1.324330 + 0.041686I$ $a = -0.211663 - 1.090800I$ $b = 0.378676 + 0.744569I$	$7.08595 - 1.62424I$	$11.35275 + 4.35698I$
$u = -1.324330 - 0.041686I$ $a = -0.211663 + 1.090800I$ $b = 0.378676 - 0.744569I$	$7.08595 + 1.62424I$	$11.35275 - 4.35698I$
$u = 0.290084 + 0.470154I$ $a = -0.244022 - 1.158860I$ $b = -0.759615 - 0.242701I$	$-1.81796 - 0.64242I$	$-1.71526 + 0.28169I$
$u = 0.290084 - 0.470154I$ $a = -0.244022 + 1.158860I$ $b = -0.759615 + 0.242701I$	$-1.81796 + 0.64242I$	$-1.71526 - 0.28169I$
$u = 1.47793$ $a = 1.25559$ $b = 1.72722$	9.20200	9.69630
$u = -0.440388$ $a = 1.38391$ $b = 0.273625$	0.916684	11.0470
$u = -1.60946 + 0.28464I$ $a = -0.987579 + 0.304012I$ $b = -1.21535 - 1.29571I$	$15.3678 - 17.2207I$	$11.19497 + 7.94421I$
$u = -1.60946 - 0.28464I$ $a = -0.987579 - 0.304012I$ $b = -1.21535 + 1.29571I$	$15.3678 + 17.2207I$	$11.19497 - 7.94421I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.74636$ $a = -0.648286$ $b = -0.819063$	16.8884	17.0050
$u = -1.85826$ $a = 0.398303$ $b = 1.06787$	15.1451	-2.48750

II.

$$\boldsymbol{I^u_2 = \langle -5.35\times 10^6 u^{25} - 5.02\times 10^7 u^{24} + \cdots + 3.76\times 10^6 b - 5.31\times 10^7,\ 2.08\times 10^8 u^{25} + 1.34\times 10^9 u^{24} + \cdots + 1.88\times 10^7 a + 5.81\times 10^8,\ u^{26} + 8u^{25} + \cdots + 15u + 5\rangle}$$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -11.0774u^{25} - 71.3361u^{24} + \cdots - 92.5092u - 30.9019 \\ 1.42238u^{25} + 13.3392u^{24} + \cdots + 24.8637u + 14.1152 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -12.4998u^{25} - 84.6753u^{24} + \cdots - 117.373u - 45.0171 \\ 1.42238u^{25} + 13.3392u^{24} + \cdots + 24.8637u + 14.1152 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2.00003u^{25} - 9.31115u^{24} + \cdots - 10.2443u + 5.69486 \\ 8.26240u^{25} + 51.3885u^{24} + \cdots + 55.6414u + 23.4455 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -7.53188u^{25} - 48.5688u^{24} + \cdots - 76.4824u - 17.3150 \\ 8.02156u^{25} + 54.0428u^{24} + \cdots + 65.7952u + 31.3118 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.393800u^{25} - 0.399903u^{24} + \cdots + 26.8406u - 14.1831 \\ -0.235718u^{25} + 0.476383u^{24} + \cdots + 11.1399u + 3.39516 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -8.23887u^{25} - 55.1220u^{24} + \cdots - 38.3819u - 40.4693 \\ 2.26480u^{25} + 17.3975u^{24} + \cdots + 31.5190u + 12.4612 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 10.2768u^{25} + 63.5874u^{24} + \cdots + 56.8805u + 31.5716 \\ -8.33941u^{25} - 53.4256u^{24} + \cdots - 60.9941u - 23.6603 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{57166208}{3763339}u^{25} + \frac{329816967}{3763339}u^{24} + \cdots + \frac{279336200}{3763339}u + \frac{103669271}{3763339}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^{26} - 3u^{25} + \cdots + 10u - 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$u^{26} - 8u^{25} + \cdots - 15u + 5$
c_5, c_{11}	$(u^{13} - 3u^{12} + \cdots - 4u^2 + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^{26} - 9y^{25} + \cdots - 58y + 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$y^{26} - 28y^{25} + \cdots - 435y + 25$
c_5, c_{11}	$(y^{13} - 7y^{12} + \cdots + 8y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.343289 + 0.874120I$ $a = 0.330309 + 0.915080I$ $b = 0.567628 + 0.481289I$	$-0.79020 - 4.12060I$	$3.35923 + 9.55417I$
$u = 0.343289 - 0.874120I$ $a = 0.330309 - 0.915080I$ $b = 0.567628 - 0.481289I$	$-0.79020 + 4.12060I$	$3.35923 - 9.55417I$
$u = 0.911007 + 0.034245I$ $a = 0.598014 - 0.185260I$ $b = 1.36067 - 0.53532I$	$5.38135 - 0.78993I$	$18.1611 + 8.2316I$
$u = 0.911007 - 0.034245I$ $a = 0.598014 + 0.185260I$ $b = 1.36067 + 0.53532I$	$5.38135 + 0.78993I$	$18.1611 - 8.2316I$
$u = -1.09289$ $a = -1.11726$ $b = 0.126239$	6.54220	13.9260
$u = 0.708346 + 0.858953I$ $a = -1.260640 + 0.418277I$ $b = -0.926363 + 0.940596I$	$7.7698 + 12.9581I$	$8.72824 - 8.95256I$
$u = 0.708346 - 0.858953I$ $a = -1.260640 - 0.418277I$ $b = -0.926363 - 0.940596I$	$7.7698 - 12.9581I$	$8.72824 + 8.95256I$
$u = 0.654603 + 0.506111I$ $a = -1.102020 - 0.068931I$ $b = -1.023120 + 0.862320I$	$-0.79020 + 4.12060I$	$3.35923 - 9.55417I$
$u = 0.654603 - 0.506111I$ $a = -1.102020 + 0.068931I$ $b = -1.023120 - 0.862320I$	$-0.79020 - 4.12060I$	$3.35923 + 9.55417I$
$u = 0.458169 + 1.136120I$ $a = -0.218594 - 0.876180I$ $b = -0.429207 - 0.618806I$	$6.87671 - 6.64700I$	$8.83563 + 10.57231I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.458169 - 1.136120I$ $a = -0.218594 + 0.876180I$ $b = -0.429207 + 0.618806I$	$6.87671 + 6.64700I$	$8.83563 - 10.57231I$
$u = -1.342220 + 0.045442I$ $a = 0.344656 - 0.623993I$ $b = -0.119008 + 0.591119I$	$2.78910 + 0.30737I$	$2.33273 - 1.31692I$
$u = -1.342220 - 0.045442I$ $a = 0.344656 + 0.623993I$ $b = -0.119008 - 0.591119I$	$2.78910 - 0.30737I$	$2.33273 + 1.31692I$
$u = 1.39644$ $a = 0.874395$ $b = 1.24703$	6.54220	13.9260
$u = 1.42342$ $a = -1.12461$ $b = -1.58372$	3.37362	1.93880
$u = -1.57195 + 0.27829I$ $a = -0.356146 + 0.031287I$ $b = -0.240475 - 0.531059I$	$5.38135 - 0.78993I$	$18.1611 + 8.2316I$
$u = -1.57195 - 0.27829I$ $a = -0.356146 - 0.031287I$ $b = -0.240475 + 0.531059I$	$5.38135 + 0.78993I$	$18.1611 - 8.2316I$
$u = -1.60202 + 0.16401I$ $a = -0.594151 + 0.344778I$ $b = -1.24453 - 1.41124I$	$6.87671 - 6.64700I$	$8.83563 + 10.57231I$
$u = -1.60202 - 0.16401I$ $a = -0.594151 - 0.344778I$ $b = -1.24453 + 1.41124I$	$6.87671 + 6.64700I$	$8.83563 - 10.57231I$
$u = -1.59466 + 0.23960I$ $a = 0.840412 - 0.366964I$ $b = 1.19152 + 1.30819I$	$7.7698 - 12.9581I$	$8.72824 + 8.95256I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.59466 - 0.23960I$ $a = 0.840412 + 0.366964I$ $b = 1.19152 - 1.30819I$	$7.7698 + 12.9581I$	$8.72824 - 8.95256I$
$u = 0.077131 + 0.343141I$ $a = 2.09606 + 1.73666I$ $b = 0.889556 - 0.403672I$	$2.78910 + 0.30737I$	$2.33273 - 1.31692I$
$u = 0.077131 - 0.343141I$ $a = 2.09606 - 1.73666I$ $b = 0.889556 + 0.403672I$	$2.78910 - 0.30737I$	$2.33273 + 1.31692I$
$u = -0.196019$ $a = 8.16649$ $b = 1.11179$	3.37362	1.93880
$u = -1.80717 + 0.12130I$ $a = 0.422586 + 0.028364I$ $b = 1.022660 + 0.520856I$	15.1180	0
$u = -1.80717 - 0.12130I$ $a = 0.422586 - 0.028364I$ $b = 1.022660 - 0.520856I$	15.1180	0

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

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

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

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

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

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

$$a_1 = \begin{pmatrix} -u \\ u^3 - u \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u^3 + 16u + 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.21774$ $a = 0.482881$ $b = 0.766826$	4.80216	6.96230
$u = -0.309916 + 0.549911I$ $a = -1.206350 - 0.340852I$ $b = -0.339110 - 0.822375I$	$0.65820 - 3.06116I$	$5.03023 + 8.86130I$
$u = -0.309916 - 0.549911I$ $a = -1.206350 + 0.340852I$ $b = -0.339110 + 0.822375I$	$0.65820 + 3.06116I$	$5.03023 - 8.86130I$
$u = 1.41878 + 0.21917I$ $a = 0.964913 + 0.621896I$ $b = 0.455697 - 1.200150I$	$11.7451 + 8.8017I$	$13.4886 - 6.9972I$
$u = 1.41878 - 0.21917I$ $a = 0.964913 - 0.621896I$ $b = 0.455697 + 1.200150I$	$11.7451 - 8.8017I$	$13.4886 + 6.9972I$

IV. $\boldsymbol{I^u_4 = \langle -u^2 + b + u + 1,\ u^4 - 2u^2 + a + 1,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^3 + 16u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^5 + u^4 - u^3 - 4u^2 - 3u - 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$u^5 + u^4 - 2u^3 - u^2 + u - 1$
c_4, c_7	$u^5 - 2u^4 + 3u^3 + u^2 - 3u + 1$
c_5	$u^5 + u^4 + 3u^3 + 6u^2 + 5u + 1$
c_{11}	$u^5 + 6u^4 + 15u^3 + 21u^2 + 17u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^5 - 3y^4 + 3y^3 - 8y^2 + y - 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1$
c_4, c_7	$y^5 + 2y^4 + 7y^3 - 15y^2 + 7y - 1$
c_5	$y^5 + 5y^4 + 7y^3 - 8y^2 + 13y - 1$
c_{11}	$y^5 - 6y^4 + 7y^3 - 15y^2 - 5y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.21774$ $a=-0.233174$ $b=\ \ 1.70062$	3.15723	0.962290
$u=-0.309916+0.549911I$ $a=-1.33911-0.82238I$ $b=-0.896438-0.890762I$	$-0.98673-3.06116I$	$-0.96977+8.86130I$
$u=-0.309916-0.549911I$ $a=-1.33911+0.82238I$ $b=-0.896438+0.890762I$	$-0.98673+3.06116I$	$-0.96977-8.86130I$
$u=\ \ 1.41878+0.21917I$ $a=-0.544303-1.200150I$ $b=-0.453870+0.402731I$	$10.10020+8.80167I$	$7.48863-6.99717I$
$u=\ \ 1.41878-0.21917I$ $a=-0.544303+1.200150I$ $b=-0.453870-0.402731I$	$10.10020-8.80167I$	$7.48863+6.99717I$

V.

$\boldsymbol{I^u_5 = \langle u^4 - u^2 + b - u - 1,\ u^4 - 2u^3 - u^2 + a + 2u,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -u^3 + 3u - 1 \\ -1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} u^3 - u^2 - u - 1 \\ u^4 + u^3 - u^2 - u - 1 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u^4 + u^3 + 2u^2 - u - 1 \\ -u^4 + u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^3 + 16u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^5 - 2u^4 + 3u^3 + u^2 - 3u + 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$u^5 + u^4 - 2u^3 - u^2 + u - 1$
c_4, c_7	$u^5 + u^4 - u^3 - 4u^2 - 3u - 1$
c_5	$u^5 + 6u^4 + 15u^3 + 21u^2 + 17u + 7$
c_{11}	$u^5 + u^4 + 3u^3 + 6u^2 + 5u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^5 + 2y^4 + 7y^3 - 15y^2 + 7y - 1$
c_2, c_3, c_6 c_8, c_9, c_{12}	$y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1$
c_4, c_7	$y^5 - 3y^4 + 3y^3 - 8y^2 + y - 1$
c_5	$y^5 - 6y^4 + 7y^3 - 15y^2 - 5y - 49$
c_{11}	$y^5 + 5y^4 + 7y^3 - 8y^2 + 13y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.21774$ $a = -1.89210$ $b = -0.933791$	3.15723	0.962290
$u = -0.309916 + 0.549911I$ $a = 0.98986 - 1.59703I$ $b = 0.557328 + 0.068387I$	$-0.98673 - 3.06116I$	$-0.96977 + 8.86130I$
$u = -0.309916 - 0.549911I$ $a = 0.98986 + 1.59703I$ $b = 0.557328 - 0.068387I$	$-0.98673 + 3.06116I$	$-0.96977 - 8.86130I$
$u = 1.41878 + 0.21917I$ $a = 0.956194 + 0.365575I$ $b = 0.90957 - 1.60288I$	$10.10020 + 8.80167I$	$7.48863 - 6.99717I$
$u = 1.41878 - 0.21917I$ $a = 0.956194 - 0.365575I$ $b = 0.90957 + 1.60288I$	$10.10020 - 8.80167I$	$7.48863 + 6.99717I$

VI. $\boldsymbol{I^u_6 = \langle 8u^{25}a - 29u^{25} + \cdots + 24a + 58,\ 31u^{25}a - 5u^{25} + \cdots - 138a + 42,\ u^{26} - 2u^{25} + \cdots - 6u + 2\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ -2u^{25}a + \frac{29}{4}u^{25} + \cdots - 6a - \frac{29}{2} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2u^{25}a - \frac{29}{4}u^{25} + \cdots + 7a + \frac{29}{2} \\ -2u^{25}a + \frac{29}{4}u^{25} + \cdots - 6a - \frac{29}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{29}{4}u^{25}a - \frac{11}{2}u^{25} + \cdots - \frac{29}{2}a - 15 \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{19}{4}u^{25}a - \frac{3}{4}u^{25} + \cdots - \frac{31}{2}a + \frac{5}{2} \\ -\frac{13}{4}u^{25}a + 3u^{25} + \cdots + \frac{3}{2}a + 11 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 4u^{25}a - \frac{11}{2}u^{25} + \cdots + 10a - 15 \\ -\frac{9}{4}u^{25}a + \frac{9}{4}u^{25} + \cdots - \frac{1}{2}a + \frac{9}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{25}a + \frac{13}{4}u^{25} + \cdots - 6a + \frac{19}{2} \\ -\frac{3}{4}u^{25}a + \frac{3}{2}u^{25} + \cdots - \frac{9}{2}a + 5 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 2u^{25}a - \frac{25}{4}u^{25} + \cdots + 7a + \frac{11}{2} \\ -2u^{25}a + \frac{13}{2}u^{25} + \cdots - 6a - 10 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{63}{4}u^{25} + \frac{89}{4}u^{24} + \cdots - 44u + \frac{169}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^{52} + 11u^{50} + \cdots + 733u + 337$
c_2, c_3, c_6 c_8, c_9, c_{12}	$(u^{26} + 2u^{25} + \cdots + 6u + 2)^2$
c_5, c_{11}	$(u^{26} - u^{25} + \cdots + 35u + 49)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^{52} + 22y^{51} + \cdots + 1455729y + 113569$
c_2, c_3, c_6 c_8, c_9, c_{12}	$(y^{26} - 28y^{25} + \cdots - 100y + 4)^2$
c_5, c_{11}	$(y^{26} - 15y^{25} + \cdots - 35721y + 2401)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.553208+0.775217I$ $a=\ \ 1.088170+0.312005I$ $b=\ \ 0.524604+0.662614I$	$1.77293-2.59129I$	$14.3131+5.4801I$
$u=-0.553208+0.775217I$ $a=-0.417434-0.520810I$ $b=-0.211040-0.742494I$	$1.77293-2.59129I$	$14.3131+5.4801I$
$u=-0.553208-0.775217I$ $a=\ \ 1.088170-0.312005I$ $b=\ \ 0.524604-0.662614I$	$1.77293+2.59129I$	$14.3131-5.4801I$
$u=-0.553208-0.775217I$ $a=-0.417434+0.520810I$ $b=-0.211040+0.742494I$	$1.77293+2.59129I$	$14.3131-5.4801I$
$u=-0.603297+0.868786I$ $a=\ \ 0.128987+0.870481I$ $b=-0.008992+0.944934I$	$8.28659-2.89485I$	$12.44020+3.54073I$
$u=-0.603297+0.868786I$ $a=-1.337050-0.449840I$ $b=-0.616963-0.787628I$	$8.28659-2.89485I$	$12.44020+3.54073I$
$u=-0.603297-0.868786I$ $a=\ \ 0.128987-0.870481I$ $b=-0.008992-0.944934I$	$8.28659+2.89485I$	$12.44020-3.54073I$
$u=-0.603297-0.868786I$ $a=-1.337050+0.449840I$ $b=-0.616963+0.787628I$	$8.28659+2.89485I$	$12.44020-3.54073I$
$u=-0.943425+0.499174I$ $a=-0.694495-0.686286I$ $b=\ \ 0.366066-0.740622I$	$6.88770+1.05584I$	$11.25609-1.96387I$
$u=-0.943425+0.499174I$ $a=-1.217920+0.300873I$ $b=-0.872153+0.173136I$	$6.88770+1.05584I$	$11.25609-1.96387I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.943425-0.499174I$ $a=-0.694495+0.686286I$ $b=\ \ 0.366066+0.740622I$	$6.88770-1.05584I$	$11.25609+1.96387I$
$u=-0.943425-0.499174I$ $a=-1.217920-0.300873I$ $b=-0.872153-0.173136I$	$6.88770-1.05584I$	$11.25609+1.96387I$
$u=-0.245040+0.733784I$ $a=\ \ 1.15177+1.09789I$ $b=\ \ 0.733903+1.126320I$	$4.78648-5.46357I$	$4.53204+6.67901I$
$u=-0.245040+0.733784I$ $a=-1.77194+0.87563I$ $b=-0.773003-0.171756I$	$4.78648-5.46357I$	$4.53204+6.67901I$
$u=-0.245040-0.733784I$ $a=\ \ 1.15177-1.09789I$ $b=\ \ 0.733903-1.126320I$	$4.78648+5.46357I$	$4.53204-6.67901I$
$u=-0.245040-0.733784I$ $a=-1.77194-0.87563I$ $b=-0.773003+0.171756I$	$4.78648+5.46357I$	$4.53204-6.67901I$
$u=-0.692554$ $a=\ \ 1.32857$ $b=-0.584521$	0.329189	14.3490
$u=-0.692554$ $a=\ \ 1.57517$ $b=\ \ 1.09426$	0.329189	14.3490
$u=-0.547551$ $a=\ \ 1.68040$ $b=\ \ 1.23037$	0.329189	14.3490
$u=-0.547551$ $a=\ \ 1.99230$ $b=-0.501158$	0.329189	14.3490

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.45899 + 0.14778I$ $a = -0.037244 + 1.042010I$ $b = 0.145904 - 0.472929I$	$4.78648 + 5.46357I$	$4.53204 - 6.67901I$
$u = 1.45899 + 0.14778I$ $a = -0.777632 - 0.316112I$ $b = -1.20223 + 1.53623I$	$4.78648 + 5.46357I$	$4.53204 - 6.67901I$
$u = 1.45899 - 0.14778I$ $a = -0.037244 - 1.042010I$ $b = 0.145904 + 0.472929I$	$4.78648 - 5.46357I$	$4.53204 + 6.67901I$
$u = 1.45899 - 0.14778I$ $a = -0.777632 + 0.316112I$ $b = -1.20223 - 1.53623I$	$4.78648 - 5.46357I$	$4.53204 + 6.67901I$
$u = 0.491328 + 0.130745I$ $a = -1.98866 - 0.35148I$ $b = -0.565063 - 1.196090I$	$8.64852 + 6.39232I$	$13.2062 - 6.3296I$
$u = 0.491328 + 0.130745I$ $a = 2.96644 + 0.81564I$ $b = 0.477569 - 0.943122I$	$8.64852 + 6.39232I$	$13.2062 - 6.3296I$
$u = 0.491328 - 0.130745I$ $a = -1.98866 + 0.35148I$ $b = -0.565063 + 1.196090I$	$8.64852 - 6.39232I$	$13.2062 + 6.3296I$
$u = 0.491328 - 0.130745I$ $a = 2.96644 - 0.81564I$ $b = 0.477569 + 0.943122I$	$8.64852 - 6.39232I$	$13.2062 + 6.3296I$
$u = 1.50128 + 0.07571I$ $a = 0.633748 - 0.625993I$ $b = 0.226697 + 0.451550I$	$6.88770 + 1.05584I$	$11.25609 - 1.96387I$
$u = 1.50128 + 0.07571I$ $a = 0.673013 + 0.166410I$ $b = 1.53145 - 1.12805I$	$6.88770 + 1.05584I$	$11.25609 - 1.96387I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.50128 - 0.07571I$ $a = 0.633748 + 0.625993I$ $b = 0.226697 - 0.451550I$	$6.88770 - 1.05584I$	$11.25609 + 1.96387I$
$u = 1.50128 - 0.07571I$ $a = 0.673013 - 0.166410I$ $b = 1.53145 + 1.12805I$	$6.88770 - 1.05584I$	$11.25609 + 1.96387I$
$u = -1.50898 + 0.02041I$ $a = -0.801385 + 0.579109I$ $b = -0.83666 - 1.26270I$	$8.28659 - 2.89485I$	$12.44020 + 3.54073I$
$u = -1.50898 + 0.02041I$ $a = 0.548938 + 0.281185I$ $b = 1.00115 - 1.65322I$	$8.28659 - 2.89485I$	$12.44020 + 3.54073I$
$u = -1.50898 - 0.02041I$ $a = -0.801385 - 0.579109I$ $b = -0.83666 + 1.26270I$	$8.28659 + 2.89485I$	$12.44020 - 3.54073I$
$u = -1.50898 - 0.02041I$ $a = 0.548938 - 0.281185I$ $b = 1.00115 + 1.65322I$	$8.28659 + 2.89485I$	$12.44020 - 3.54073I$
$u = -1.53064 + 0.05712I$ $a = 1.125240 - 0.491051I$ $b = 1.04497 + 1.04117I$	$15.5113 - 7.1776I$	$13.07799 + 4.48831I$
$u = -1.53064 + 0.05712I$ $a = -0.603671 - 0.025101I$ $b = -1.29543 + 1.62004I$	$15.5113 - 7.1776I$	$13.07799 + 4.48831I$
$u = -1.53064 - 0.05712I$ $a = 1.125240 + 0.491051I$ $b = 1.04497 - 1.04117I$	$15.5113 + 7.1776I$	$13.07799 - 4.48831I$
$u = -1.53064 - 0.05712I$ $a = -0.603671 + 0.025101I$ $b = -1.29543 - 1.62004I$	$15.5113 + 7.1776I$	$13.07799 - 4.48831I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.54568 + 0.26203I$ $a = 0.933615 + 0.351925I$ $b = 0.897541 - 1.028160I$	$8.64852 + 6.39232I$	$13.2062 - 6.3296I$
$u = 1.54568 + 0.26203I$ $a = -0.631712 - 0.172853I$ $b = -0.482731 + 1.227480I$	$8.64852 + 6.39232I$	$13.2062 - 6.3296I$
$u = 1.54568 - 0.26203I$ $a = 0.933615 - 0.351925I$ $b = 0.897541 + 1.028160I$	$8.64852 - 6.39232I$	$13.2062 + 6.3296I$
$u = 1.54568 - 0.26203I$ $a = -0.631712 + 0.172853I$ $b = -0.482731 - 1.227480I$	$8.64852 - 6.39232I$	$13.2062 + 6.3296I$
$u = 0.416447 + 0.057781I$ $a = 1.50682 - 0.12386I$ $b = 0.392920 + 1.238970I$	$1.77293 + 2.59129I$	$14.3131 - 5.4801I$
$u = 0.416447 + 0.057781I$ $a = -2.20737 - 1.30490I$ $b = -0.334074 + 0.982377I$	$1.77293 + 2.59129I$	$14.3131 - 5.4801I$
$u = 0.416447 - 0.057781I$ $a = 1.50682 + 0.12386I$ $b = 0.392920 - 1.238970I$	$1.77293 - 2.59129I$	$14.3131 + 5.4801I$
$u = 0.416447 - 0.057781I$ $a = -2.20737 + 1.30490I$ $b = -0.334074 - 0.982377I$	$1.77293 - 2.59129I$	$14.3131 + 5.4801I$
$u = 1.59092 + 0.28889I$ $a = -1.121140 - 0.309256I$ $b = -1.08933 + 0.96858I$	$15.5113 + 7.1776I$	$13.07799 - 4.48831I$
$u = 1.59092 + 0.28889I$ $a = 0.562694 - 0.104657I$ $b = 0.32542 - 1.43702I$	$15.5113 + 7.1776I$	$13.07799 - 4.48831I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.59092 - 0.28889I$ $a = -1.121140 + 0.309256I$ $b = -1.08933 - 0.96858I$	$15.5113 - 7.1776I$	$13.07799 + 4.48831I$
$u = 1.59092 - 0.28889I$ $a = 0.562694 + 0.104657I$ $b = 0.32542 + 1.43702I$	$15.5113 - 7.1776I$	$13.07799 + 4.48831I$

VII. $I_7^u = \langle b - u,\ u^2 + a - 2u,\ u^3 - 2u^2 + u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6u^2 + 3u + 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^3 + 2y^2 + 5y - 1$
c_2, c_3, c_6 c_7, c_{10}	$y^3 - 2y^2 - 3y - 1$
c_5, c_{11}	$y^3 - y^2 + 2y - 1$
c_8, c_9, c_{12}	$y^3 - 9y^2 + 26y - 25$

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_7^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.122561 + 0.744862I$		
$a =$	$0.78492 + 1.30714I$	$7.11122 - 5.65624I$	$9.12890 + 3.33008I$
$b =$	$0.122561 + 0.744862I$		
$u =$	$0.122561 - 0.744862I$		
$a =$	$0.78492 - 1.30714I$	$7.11122 + 5.65624I$	$9.12890 - 3.33008I$
$b =$	$0.122561 - 0.744862I$		
$u =$	1.75488		
$a =$	0.430160	15.3864	35.7420
$b =$	1.75488		

VIII. $\boldsymbol{I_8^u = \langle -2u^2 + b - u + 7,\ 3u^2 + 5a + 2u - 7,\ u^3 - u^2 - 4u + 5\rangle}$

(i) Arc colorings

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

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

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

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

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ 3u^2 - u - 5 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -\frac{13}{5}u^2 - \frac{7}{5}u + \frac{42}{5} \\ 2u^2 + u - 7 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{11}{5}u^2 - \frac{4}{5}u + \frac{29}{5} \\ 2u^2 - u - 4 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{6}{5}u^2 - \frac{4}{5}u + \frac{19}{5} \\ u^2 + u - 4 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{5}u^2 - \frac{1}{5}u + \frac{1}{5} \\ u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{4}{5}u^2 - \frac{6}{5}u + \frac{16}{5} \\ u^2 + 2u - 6 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{3}{5}u^2 + \frac{3}{5}u + \frac{7}{5} \\ -2u + 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^2 - 9u + 30$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_8 c_9, c_{12}	$y^3 - 2y^2 - 3y - 1$
c_2, c_3, c_6	$y^3 - 9y^2 + 26y - 25$
c_5, c_{11}	$y^3 - y^2 + 2y - 1$
c_7, c_{10}	$y^3 + 2y^2 + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.53980 + 0.18258I$ $a = -0.618504 - 0.410401I$ $b = -0.78492 + 1.30714I$	$7.11122 + 5.65624I$	$9.12890 - 3.33008I$
$u = 1.53980 - 0.18258I$ $a = -0.618504 + 0.410401I$ $b = -0.78492 - 1.30714I$	$7.11122 - 5.65624I$	$9.12890 + 3.33008I$
$u = -2.07960$ $a = -0.362993$ $b = -0.430160$	15.3864	35.7420

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

(i) Arc colorings

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

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

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

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

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

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

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

$$a_8 = \begin{pmatrix} bu - b + 1 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u + 1 \\ b + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} bu - b + 2 \\ -bu - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} b + u + 1 \\ -bu - u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -b - 2u + 1 \\ b + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.618034$ $a=\ \ 1.61803$ $b=\ \ 1.15372$	0.328987	14.0000
$u=-0.618034$ $a=\ \ 1.61803$ $b=-0.535687$	0.328987	14.0000
$u=\ \ 1.61803$ $a=-0.618034$ $b=-0.809017+0.981593I$	16.1204	14.0000
$u=\ \ 1.61803$ $a=-0.618034$ $b=-0.809017-0.981593I$	16.1204	14.0000

X. $I^u_{10} = \langle b-1,\ a^4-2a^3-a^2+2a-1,\ u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{10}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.13224$ $b = 1.00000$	4.93480	8.00000
$u = -1.00000$ $a = 0.500000 + 0.405233I$ $b = 1.00000$	4.93480	8.00000
$u = -1.00000$ $a = 0.500000 - 0.405233I$ $b = 1.00000$	4.93480	8.00000
$u = -1.00000$ $a = 2.13224$ $b = 1.00000$	4.93480	8.00000

XI. $I^u_{11} = \langle -au + b - 1,\ 2a^2 + au - u - 1,\ u^2 - 2 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{11}^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = 0.800616$ $b = 2.13224$	4.93480	8.00000
$u = 1.41421$ $a = -1.50772$ $b = -1.13224$	4.93480	8.00000
$u = -1.41421$ $a = 0.353553 + 0.286543I$ $b = 0.500000 - 0.405233I$	4.93480	8.00000
$u = -1.41421$ $a = 0.353553 - 0.286543I$ $b = 0.500000 + 0.405233I$	4.93480	8.00000

XII. $I^u_{12} = \langle b+1,\ a^2+a-1,\ u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{12}^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.618034$ $b = -1.00000$	0	-10.0000
$u = -1.00000$ $a = -1.61803$ $b = -1.00000$	0	-10.0000

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

XIV. $\boldsymbol{I_2^v = \langle a,\ b+v-2,\ v^2-3v+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.381966$ $a = 0$ $b = 1.61803$	0	-10.0000
$v = 2.61803$ $a = 0$ $b = -0.618034$	0	-10.0000

XV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$((u-1)^2)(u+1)^5(u^2+u-1)(u^3-2u^2+3u-1)(u^3+2u^2+u+1)$ $\cdot(u^4+u^3-2u-1)(u^4+2u^3-u^2-2u-1)(u^5-2u^4+\cdots-3u+1)$ $\cdot(u^5+u^4-u^3-4u^2-3u-1)(u^5+u^4+2u^3+u^2+u+1)$ $\cdot(u^{12}-u^{11}+\cdots+3u-1)(u^{26}-3u^{25}+\cdots+10u-1)$ $\cdot(u^{52}+11u^{50}+\cdots+733u+337)$
c_2, c_3, c_8 c_9	$u^3(u+1)^6(u^2-2)^2(u^2+u-1)^2(u^3-2u^2+u-1)(u^3-u^2-4u+5)$ $\cdot(u^5-u^4-2u^3+u^2+u+1)(u^5+u^4-2u^3-u^2+u-1)^2$ $\cdot(u^{12}-3u^{11}+\cdots-3u+3)(u^{26}-8u^{25}+\cdots-15u+5)$ $\cdot(u^{26}+2u^{25}+\cdots+6u+2)^2$
c_5, c_{11}	$((u-1)^4)(u+1)(u^2+u-1)^2(u^3-u^2+1)^2(u^4-2u^3+\cdots+2u-1)^2$ $\cdot(u^5+u^4+3u^3+6u^2+5u+1)(u^5+3u^4+4u^3+u^2-u-1)$ $\cdot(u^5+6u^4+15u^3+21u^2+17u+7)(u^{12}+6u^{11}+\cdots-6u-4)$ $\cdot((u^{13}-3u^{12}+\cdots-4u^2+1)^2)(u^{26}-u^{25}+\cdots+35u+49)^2$
c_6, c_{12}	$u^3(u-1)^6(u^2-2)^2(u^2+u-1)^2(u^3+u^2-4u-5)(u^3+2u^2+u+1)$ $\cdot((u^5+u^4-2u^3-u^2+u-1)^3)(u^{12}-3u^{11}+\cdots-3u+3)$ $\cdot(u^{26}-8u^{25}+\cdots-15u+5)(u^{26}+2u^{25}+\cdots+6u+2)^2$

XVI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$(y-1)^7(y^2-3y+1)(y^3-2y^2-3y-1)(y^3+2y^2+5y-1)$ $\cdot(y^4-6y^3+7y^2-2y+1)(y^4-y^3+2y^2-4y+1)$ $\cdot(y^5-3y^4+3y^3-8y^2+y-1)(y^5+2y^4+7y^3-15y^2+7y-1)$ $\cdot(y^5+3y^4+4y^3+y^2-y-1)(y^{12}-5y^{11}+\cdots-17y+1)$ $\cdot(y^{26}-9y^{25}+\cdots-58y+1)(y^{52}+22y^{51}+\cdots+1455729y+113569)$
c_2, c_3, c_6 c_8, c_9, c_{12}	$y^3(y-2)^4(y-1)^6(y^2-3y+1)^2(y^3-9y^2+26y-25)$ $\cdot(y^3-2y^2-3y-1)(y^5-5y^4+8y^3-3y^2-y-1)^3$ $\cdot(y^{12}-17y^{11}+\cdots-45y+9)(y^{26}-28y^{25}+\cdots-435y+25)$ $\cdot(y^{26}-28y^{25}+\cdots-100y+4)^2$
c_5, c_{11}	$(y-1)^5(y^2-3y+1)^2(y^3-y^2+2y-1)^2$ $\cdot(y^4-6y^3+7y^2-2y+1)^2(y^5-6y^4+7y^3-15y^2-5y-49)$ $\cdot(y^5-y^4+8y^3-3y^2+3y-1)(y^5+5y^4+7y^3-8y^2+13y-1)$ $\cdot(y^{12}-6y^{11}+\cdots-92y+16)(y^{13}-7y^{12}+\cdots+8y-1)^2$ $\cdot(y^{26}-15y^{25}+\cdots-35721y+2401)^2$