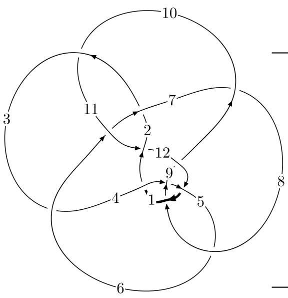
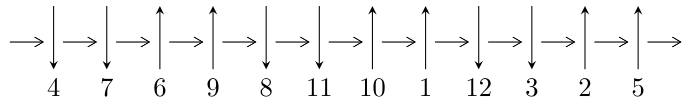
$12a_{1019}$ $(K12a_{1019})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle b+u,\ a-1,\ u^{10}+5u^9+12u^8+15u^7+9u^6-u^5-3u^4+u^3+4u^2+u-1\rangle\\
I_2^u &= \langle b+u,\ -1.75613\times10^{16}u^{21}+1.11888\times10^{17}u^{20}+\cdots+2.50431\times10^{13}a+1.70131\times10^{16},\\
&\quad 5u^{22}-35u^{21}+\cdots-6u+3\rangle\\
I_3^u &= \langle 1.10406\times10^{16}u^{21}-7.03969\times10^{16}u^{20}+\cdots+2.50431\times10^{13}b-1.05368\times10^{16},\ a-1,\\
&\quad 5u^{22}-35u^{21}+\cdots-6u+3\rangle\\
I_4^u &= \langle 3.63226\times10^{15}u^{21}+8.27964\times10^{16}u^{20}+\cdots+3.35609\times10^{15}b+3.49818\times10^{17},\\
&\quad 8.19885\times10^{15}u^{21}+1.82243\times10^{17}u^{20}+\cdots+1.34244\times10^{16}a+4.80275\times10^{17},\\
&\quad 3u^{22}+72u^{21}+\cdots+1792u+512\rangle\\
I_5^u &= \langle b+u,\ a+1,\ u^{14}-5u^{13}+12u^{12}-16u^{11}+13u^{10}-8u^9+8u^8-9u^7+6u^6-3u^5+3u^4-3u^3+u^2+1\rangle\\
I_6^u &= \langle -u^2+b-1,\ u^3-u^2+a-1,\ u^4-u^3+u^2-u+1\rangle\\
I_7^u &= \langle b+u,\ -u^3-2u^2+a-u+1,\ u^4+3u^3+4u^2+2u+1\rangle\\
I_8^u &= \langle u^3+3u^2+b+3u+1,\ a+1,\ u^4+3u^3+4u^2+2u+1\rangle\\
I_9^u &= \langle -2.18056\times10^{72}u^{53}+2.46832\times10^{73}u^{52}+\cdots+5.29251\times10^{67}b+9.57025\times10^{72},\\
&\quad 9.57025\times10^{72}au^{53}+6.77762\times10^{72}u^{53}+\cdots-4.18369\times10^{73}a-3.12165\times10^{73},\\
&\quad 3u^{54}-36u^{53}+\cdots-72u+9\rangle\\
I_{10}^u &= \langle b+u,\ a-1,\ u^4+2u^3+2u^2+u+1\rangle
\end{aligned}$$

[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`).

$$
\begin{aligned}
I^u_{11} = \langle & 3u^5a^3 - 3u^5a^2 + \cdots + 3a + 3,\; -4u^5a^3 + 4u^5a^2 + \cdots + b - 9a, \\
& u^5a^3 + u^4a^3 - u^5a^2 - u^4a^2 - 2u^3a^2 - a^2u^2 + 2u^3a + bau + u^2b - 2bu + 3au + a - 2u + 1, \\
& u^6a^3 - u^6a^2 + \cdots + a - u, \\
& u^5a^4 + a^4u^4 - u^5a^3 - 2u^4a^3 - 2a^3u^3 + u^4a^2 - a^3u^2 + 2u^3a^2 + 2a^2u^2 + 3a^2u - u^2a + a^2 - 3au - a + 1\rangle
\end{aligned}
$$

* 10 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 214 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

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

I. $\boldsymbol{I_1^u = \langle b + u,\ a - 1,\ u^{10} + 5u^9 + \cdots + u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6u^9 - 30u^8 - 66u^7 - 72u^6 - 33u^5 + 6u^4 + 6u^3 - 9u^2 - 15u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_9	$u^{10} - 4u^9 + 9u^8 - 11u^7 + 8u^6 - 7u^5 + 10u^4 - 13u^3 + 3u^2 + 6u - 1$
c_2, c_6, c_{10}	$u^{10} + 5u^9 + 12u^8 + 15u^7 + 9u^6 - u^5 - 3u^4 + u^3 + 4u^2 + u - 1$
c_3, c_7, c_{11}	$u^{10} + 4u^9 + 9u^8 + 11u^7 + 8u^6 + 7u^5 + 10u^4 + 13u^3 + 3u^2 - 6u - 1$
c_4, c_8, c_{12}	$u^{10} - 5u^9 + 12u^8 - 15u^7 + 9u^6 + u^5 - 3u^4 - u^3 + 4u^2 - u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_7, c_9, c_{11}	$y^{10} + 2y^9 + \cdots - 42y + 1$
c_2, c_4, c_6 c_8, c_{10}, c_{12}	$y^{10} - y^9 + 12y^8 - 5y^7 + 37y^6 - y^5 + 29y^4 - 41y^3 + 20y^2 - 9y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.479749 + 0.993559I$ $a = 1.00000$ $b = 0.479749 - 0.993559I$	$-7.19382 + 6.52036I$	$-6.88308 - 3.27411I$
$u = -0.479749 - 0.993559I$ $a = 1.00000$ $b = 0.479749 + 0.993559I$	$-7.19382 - 6.52036I$	$-6.88308 + 3.27411I$
$u = -0.797113$ $a = 1.00000$ $b = 0.797113$	1.30949	7.15720
$u = 0.548565 + 0.400517I$ $a = 1.00000$ $b = -0.548565 - 0.400517I$	$-3.62072I$	$0. + 2.45070I$
$u = 0.548565 - 0.400517I$ $a = 1.00000$ $b = -0.548565 + 0.400517I$	$3.62072I$	$0. - 2.45070I$
$u = -1.17617 + 0.93991I$ $a = 1.00000$ $b = 1.17617 - 0.93991I$	$7.19382 - 6.52036I$	$6.88308 + 3.27411I$
$u = -1.17617 - 0.93991I$ $a = 1.00000$ $b = 1.17617 + 0.93991I$	$7.19382 + 6.52036I$	$6.88308 - 3.27411I$
$u = -1.18492 + 1.08537I$ $a = 1.00000$ $b = 1.18492 - 1.08537I$	$-23.1517I$	$0. + 11.68475I$
$u = -1.18492 - 1.08537I$ $a = 1.00000$ $b = 1.18492 + 1.08537I$	$23.1517I$	$0. - 11.68475I$
$u = 0.381661$ $a = 1.00000$ $b = -0.381661$	-1.30949	-7.15720

II. $\boldsymbol{I_2^u = \langle b+u,\ -1.76\times 10^{16}u^{21} + 1.12\times 10^{17}u^{20} + \cdots + 2.50\times 10^{13}a + 1.70\times 10^{16},\ 5u^{22} - 35u^{21} + \cdots - 6u + 3\rangle}$

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix}701.241u^{21} - 4467.82u^{20} + \cdots + 278.914u - 679.351\\ -u\end{pmatrix}$$

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

$$a_2 = \begin{pmatrix}976.258u^{21} - 6219.70u^{20} + \cdots + 388.205u - 943.869\\ 108.799u^{21} - 692.854u^{20} + \cdots + 41.8787u - 103.945\end{pmatrix}$$

$$a_8 = \begin{pmatrix}1700.33u^{21} - 10820.3u^{20} + \cdots + 771.696u - 1669.95\\ 275.017u^{21} - 1751.88u^{20} + \cdots + 109.291u - 264.518\end{pmatrix}$$

$$a_6 = \begin{pmatrix}61.3336u^{21} - 372.520u^{20} + \cdots + 149.128u - 102.182\\ -77.3231u^{21} + 493.468u^{20} + \cdots - 24.7045u + 72.4263\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}701.241u^{21} - 4467.82u^{20} + \cdots + 279.914u - 679.351\\ -u\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}1150.30u^{21} - 7316.58u^{20} + \cdots + 555.113u - 1140.91\\ 275.017u^{21} - 1751.88u^{20} + \cdots + 109.291u - 264.518\end{pmatrix}$$

$$a_7 = \begin{pmatrix}202.358u^{21} - 1275.68u^{20} + \cdots + 198.939u - 228.787\\ -81.7460u^{21} + 519.761u^{20} + \cdots - 28.5216u + 74.5041\end{pmatrix}$$

$$a_3 = \begin{pmatrix}531.498u^{21} - 3324.09u^{20} + \cdots + 609.330u - 637.060\\ 19.5456u^{21} - 123.605u^{20} + \cdots + 22.1415u - 23.6804\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-537.954u^{21} + 3428.49u^{20} + \cdots - 168.930u + 494.299\\ -137.858u^{21} + 877.769u^{20} + \cdots - 54.1322u + 129.505\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{18316216866445270}{37564710667623}u^{21} - \frac{115678549605691945}{37564710667623}u^{20} + \cdots + \frac{11105532068647541}{37564710667623}u - \frac{1881652730664947}{4173856740847}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{22} + 5u^{21} + \cdots + 115u + 55$
c_2	$3(3u^{22} + 72u^{21} + \cdots + 1792u + 512)$
c_3	$75(75u^{22} + 1875u^{21} + \cdots + 3211264u + 262144)$
c_4, c_{12}	$5(5u^{22} + 35u^{21} + \cdots + 6u + 3)$
c_6, c_{10}	$5(5u^{22} - 35u^{21} + \cdots - 6u + 3)$
c_7, c_{11}	$u^{22} - 5u^{21} + \cdots - 115u + 55$
c_8	$3(3u^{22} - 72u^{21} + \cdots - 1792u + 512)$
c_9	$75(75u^{22} - 1875u^{21} + \cdots - 3211264u + 262144)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$y^{22} + 11y^{21} + \cdots + 20875y + 3025$
c_2, c_8	$9(9y^{22} - 84y^{21} + \cdots + 9371648y + 262144)$
c_3, c_9	5625 $\cdot (5625y^{22} - 33375y^{21} + \cdots - 184683593728y + 68719476736)$
c_4, c_6, c_{10} c_{12}	$25(25y^{22} + 25y^{21} + \cdots - 174y + 9)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.424422+0.935543I$ $a=\ 1.44492+0.96232I$ $b=\ 0.424422-0.935543I$	$-3.80225-13.36980I$	$-4.78895+11.87368I$
$u=-0.424422-0.935543I$ $a=\ 1.44492-0.96232I$ $b=\ 0.424422+0.935543I$	$-3.80225+13.36980I$	$-4.78895-11.87368I$
$u=-0.846187+0.332900I$ $a=\ 1.75108-0.39745I$ $b=\ 0.846187-0.332900I$	$3.78801-0.96344I$	$9.72237+2.09748I$
$u=-0.846187-0.332900I$ $a=\ 1.75108+0.39745I$ $b=\ 0.846187+0.332900I$	$3.78801+0.96344I$	$9.72237-2.09748I$
$u=\ 0.449611+0.993975I$ $a=-0.272885-0.146365I$ $b=-0.449611-0.993975I$	$-3.78801-0.96344I$	$-9.72237+2.09748I$
$u=\ 0.449611-0.993975I$ $a=-0.272885+0.146365I$ $b=-0.449611+0.993975I$	$-3.78801+0.96344I$	$-9.72237-2.09748I$
$u=\ 0.634038+0.993177I$ $a=-0.819199-0.140629I$ $b=-0.634038-0.993177I$	$-5.93206+1.93386I$	$-15.6328-1.6122I$
$u=\ 0.634038-0.993177I$ $a=-0.819199+0.140629I$ $b=-0.634038+0.993177I$	$-5.93206-1.93386I$	$-15.6328+1.6122I$
$u=-0.536047+1.061394I$ $a=\ 0.127085-0.174072I$ $b=\ 0.536047-1.061394I$	$-3.40489-7.87661I$	$-4.97285+6.45494I$
$u=-0.536047-1.061394I$ $a=\ 0.127085+0.174072I$ $b=\ 0.536047+1.061394I$	$-3.40489+7.87661I$	$-4.97285-6.45494I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.629786 + 0.256221I$ $a = -1.13406 + 2.82964I$ $b = -0.629786 - 0.256221I$	$-0.44414 + 14.02510I$	$4.9360 - 14.4554I$
$u = 0.629786 - 0.256221I$ $a = -1.13406 - 2.82964I$ $b = -0.629786 + 0.256221I$	$-0.44414 - 14.02510I$	$4.9360 + 14.4554I$
$u = 1.113808 + 0.776539I$ $a = -1.163157 - 0.177259I$ $b = -1.113808 - 0.776539I$	$3.40489 + 7.87661I$	$4.97285 - 6.45494I$
$u = 1.113808 - 0.776539I$ $a = -1.163157 + 0.177259I$ $b = -1.113808 + 0.776539I$	$3.40489 - 7.87661I$	$4.97285 + 6.45494I$
$u = 0.628680 + 0.002790I$ $a = -1.93746 + 2.37902I$ $b = -0.628680 - 0.002790I$	$5.93206 - 1.93386I$	$15.6328 + 1.6122I$
$u = 0.628680 - 0.002790I$ $a = -1.93746 - 2.37902I$ $b = -0.628680 + 0.002790I$	$5.93206 + 1.93386I$	$15.6328 - 1.6122I$
$u = 1.12956 + 1.03672I$ $a = -1.082565 + 0.004380I$ $b = -1.12956 - 1.03672I$	$0.44414 + 14.02510I$	$-4.9360 - 14.4554I$
$u = 1.12956 - 1.03672I$ $a = -1.082565 - 0.004380I$ $b = -1.12956 + 1.03672I$	$0.44414 - 14.02510I$	$-4.9360 + 14.4554I$
$u = 1.11352 + 1.07627I$ $a = -0.980300 + 0.178884I$ $b = -1.11352 - 1.07627I$	$3.80225 + 13.36980I$	$4.78895 - 11.87368I$
$u = 1.11352 - 1.07627I$ $a = -0.980300 - 0.178884I$ $b = -1.11352 + 1.07627I$	$3.80225 - 13.36980I$	$4.78895 + 11.87368I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.392344 + 0.032218I$ $a = 6.89988 - 4.45942I$ $b = 0.392344 - 0.032218I$	$3.92307I$	$0. - 11.69335I$
$u = -0.392344 - 0.032218I$ $a = 6.89988 + 4.45942I$ $b = 0.392344 + 0.032218I$	$-3.92307I$	$0. + 11.69335I$

III. $I_3^u = \langle 1.10 \times 10^{16} u^{21} - 7.04 \times 10^{16} u^{20} + \cdots + 2.50 \times 10^{13} b - 1.05 \times 10^{16},\ a - 1,\ 5u^{22} - 35u^{21} + \cdots - 6u + 3 \rangle$

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix} 1 \\ -440.863u^{21} + 2811.02u^{20} + \cdots - 162.138u + 420.745 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 440.863u^{21} - 2811.02u^{20} + \cdots + 162.138u - 419.745 \\ -267.622u^{21} + 1707.14u^{20} + \cdots - 96.6350u + 255.734 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ 275.017u^{21} - 1751.88u^{20} + \cdots + 109.291u - 264.518 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -173.241u^{21} + 1103.89u^{20} + \cdots - 65.5030u + 166.010 \\ -77.3231u^{21} + 493.468u^{20} + \cdots - 24.7045u + 72.4263 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 440.863u^{21} - 2811.02u^{20} + \cdots + 162.138u - 419.745 \\ -440.863u^{21} + 2811.02u^{20} + \cdots - 162.138u + 420.745 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 120.710u^{21} - 767.650u^{20} + \cdots + 60.5867u - 120.148 \\ -395.728u^{21} + 2519.53u^{20} + \cdots - 168.878u + 384.666 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -39.4674u^{21} + 256.726u^{20} + \cdots + 14.2498u + 25.2194 \\ -35.2420u^{21} + 218.436u^{20} + \cdots - 38.3921u + 41.1163 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 215.842u^{21} - 1373.04u^{20} + \cdots + 90.6322u - 204.878 \\ 106.519u^{21} - 678.178u^{20} + \cdots + 37.8759u - 99.8725 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -124.174u^{21} + 787.469u^{20} + \cdots - 60.6488u + 120.487 \\ -110.111u^{21} + 704.990u^{20} + \cdots - 26.5354u + 101.718 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{18316216866445270}{37564710667623}u^{21} - \frac{115678549605691945}{37564710667623}u^{20} + \cdots + \frac{11105532068647541}{37564710667623}u - \frac{1881652730664947}{4173856740847}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$75(75u^{22} - 1875u^{21} + \cdots - 3211264u + 262144)$
c_2, c_{10}	$5(5u^{22} - 35u^{21} + \cdots - 6u + 3)$
c_3, c_{11}	$u^{22} - 5u^{21} + \cdots - 115u + 55$
c_4, c_8	$5(5u^{22} + 35u^{21} + \cdots + 6u + 3)$
c_5, c_9	$u^{22} + 5u^{21} + \cdots + 115u + 55$
c_6	$3(3u^{22} + 72u^{21} + \cdots + 1792u + 512)$
c_7	$75(75u^{22} + 1875u^{21} + \cdots + 3211264u + 262144)$
c_{12}	$3(3u^{22} - 72u^{21} + \cdots - 1792u + 512)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	5625 $\cdot(5625y^{22} - 33375y^{21} + \cdots - 184683593728y + 68719476736)$
c_2, c_4, c_8 c_{10}	$25(25y^{22} + 25y^{21} + \cdots - 174y + 9)$
c_3, c_5, c_9 c_{11}	$y^{22} + 11y^{21} + \cdots + 20875y + 3025$
c_6, c_{12}	$9(9y^{22} - 84y^{21} + \cdots + 9371648y + 262144)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.424422 + 0.935543I$ $a = \ 1.00000$ $b = \ 1.51354 - 0.94335I$	$-3.80225 - 13.36980I$	$-4.78895 + 11.87368I$
$u = -0.424422 - 0.935543I$ $a = \ 1.00000$ $b = \ 1.51354 + 0.94335I$	$-3.80225 + 13.36980I$	$-4.78895 - 11.87368I$
$u = -0.846187 + 0.332900I$ $a = \ 1.00000$ $b = \ 1.34943 - 0.91925I$	$3.78801 - 0.96344I$	$9.72237 + 2.09748I$
$u = -0.846187 - 0.332900I$ $a = \ 1.00000$ $b = \ 1.34943 + 0.91925I$	$3.78801 + 0.96344I$	$9.72237 - 2.09748I$
$u = \ 0.449611 + 0.993975I$ $a = \ 1.00000$ $b = -0.022791 + 0.337049I$	$-3.78801 - 0.96344I$	$-9.72237 + 2.09748I$
$u = \ 0.449611 - 0.993975I$ $a = \ 1.00000$ $b = -0.022791 - 0.337049I$	$-3.78801 + 0.96344I$	$-9.72237 - 2.09748I$
$u = \ 0.634038 + 0.993177I$ $a = \ 1.00000$ $b = \ 0.379734 + 0.902774I$	$-5.93206 + 1.93386I$	$-15.6328 - 1.6122I$
$u = \ 0.634038 - 0.993177I$ $a = \ 1.00000$ $b = \ 0.379734 - 0.902774I$	$-5.93206 - 1.93386I$	$-15.6328 + 1.6122I$
$u = -0.536047 + 1.061394I$ $a = \ 1.00000$ $b = -0.116635 - 0.228199I$	$-3.40489 - 7.87661I$	$-4.97285 + 6.45494I$
$u = -0.536047 - 1.061394I$ $a = \ 1.00000$ $b = -0.116635 + 0.228199I$	$-3.40489 + 7.87661I$	$-4.97285 - 6.45494I$

	Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$0.629786+0.256221I$		
$a=$	1.00000	$-0.44414+14.02510I$	$4.9360-14.4554I$
$b=$	$1.43923-1.49150I$		
$u=$	$0.629786-0.256221I$		
$a=$	1.00000	$-0.44414-14.02510I$	$4.9360+14.4554I$
$b=$	$1.43923+1.49150I$		
$u=$	$1.113808+0.776539I$		
$a=$	1.00000	$3.40489+7.87661I$	$4.97285-6.45494I$
$b=$	$1.15789+1.10067I$		
$u=$	$1.113808-0.776539I$		
$a=$	1.00000	$3.40489-7.87661I$	$4.97285+6.45494I$
$b=$	$1.15789-1.10067I$		
$u=$	$0.628680+0.002790I$		
$a=$	1.00000	$5.93206-1.93386I$	$15.6328+1.6122I$
$b=$	$1.22468-1.49024I$		
$u=$	$0.628680-0.002790I$		
$a=$	1.00000	$5.93206+1.93386I$	$15.6328-1.6122I$
$b=$	$1.22468+1.49024I$		
$u=$	$1.12956+1.03672I$		
$a=$	1.00000	$0.44414+14.02510I$	$-4.9360-14.4554I$
$b=$	$1.22736+1.11737I$		
$u=$	$1.12956-1.03672I$		
$a=$	1.00000	$0.44414-14.02510I$	$-4.9360+14.4554I$
$b=$	$1.22736-1.11737I$		
$u=$	$1.11352+1.07627I$		
$a=$	1.00000	$3.80225+13.36980I$	$4.78895-11.87368I$
$b=$	$1.28411+0.85588I$		
$u=$	$1.11352-1.07627I$		
$a=$	1.00000	$3.80225-13.36980I$	$4.78895+11.87368I$
$b=$	$1.28411-0.85588I$		

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.392344 + 0.032218I$ $a = \quad 1.00000$ $b = \quad 2.56345 - 1.97192I$	$3.92307I$	$0. - 11.69335I$
$u = -0.392344 - 0.032218I$ $a = \quad 1.00000$ $b = \quad 2.56345 + 1.97192I$	$-3.92307I$	$0. + 11.69335I$

IV. $I^u_4 =$
$\langle 3.63\times10^{15}u^{21}+8.28\times10^{16}u^{20}+\cdots+3.36\times10^{15}b+3.50\times10^{17},\ 8.20\times10^{15}u^{21}+1.82\times10^{17}u^{20}+\cdots+1.34\times10^{16}a+4.80\times10^{17},\ 3u^{22}+72u^{21}+\cdots+1792u+512\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.610745u^{21} - 13.5756u^{20} + \cdots - 133.759u - 35.7764\\-1.08229u^{21} - 24.6705u^{20} + \cdots - 329.042u - 104.234\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.832932u^{21} - 19.6028u^{20} + \cdots - 346.972u - 116.254\\1.37731u^{21} + 29.6426u^{20} + \cdots + 123.865u + 14.3337\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.320221u^{21} + 7.51486u^{20} + \cdots + 113.953u + 45.4949\\0.170429u^{21} + 4.56439u^{20} + \cdots + 146.784u + 54.6510\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.661396u^{21} - 14.5522u^{20} + \cdots - 140.067u - 42.3997\\-0.847192u^{21} - 20.2905u^{20} + \cdots - 398.826u - 141.965\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.471546u^{21} + 11.0949u^{20} + \cdots + 195.283u + 68.4574\\-1.08229u^{21} - 24.6705u^{20} + \cdots - 329.042u - 104.234\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.494738u^{21} - 11.1459u^{20} + \cdots - 130.462u - 34.7206\\0.644530u^{21} + 14.0964u^{20} + \cdots + 99.6319u + 25.5645\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.846816u^{21} - 18.4961u^{20} + \cdots - 64.3540u - 11.3598\\-0.103089u^{21} - 4.25329u^{20} + \cdots - 328.016u - 120.337\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.0288036u^{21} + 0.643679u^{20} + \cdots - 41.9611u - 8.87420\\-0.100826u^{21} - 3.30811u^{20} + \cdots - 158.801u - 61.2026\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-1.01615u^{21} - 24.2331u^{20} + \cdots - 490.561u - 163.035\\1.98464u^{21} + 42.4414u^{20} + \cdots + 97.8266u - 16.0462\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{57173920307444841}{16780442909704000}u^{21} - \frac{25170067340752893}{335608858194080}u^{20} + \cdots - \frac{160655803191745028}{262194420464125}u - \frac{48126678289140558}{262194420464125}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9	$u^{22} + 5u^{21} + \cdots + 115u + 55$
c_2, c_6	$5(5u^{22} - 35u^{21} + \cdots - 6u + 3)$
c_3, c_7	$u^{22} - 5u^{21} + \cdots - 115u + 55$
c_4	$3(3u^{22} - 72u^{21} + \cdots - 1792u + 512)$
c_5	$75(75u^{22} - 1875u^{21} + \cdots - 3211264u + 262144)$
c_8, c_{12}	$5(5u^{22} + 35u^{21} + \cdots + 6u + 3)$
c_{10}	$3(3u^{22} + 72u^{21} + \cdots + 1792u + 512)$
c_{11}	$75(75u^{22} + 1875u^{21} + \cdots + 3211264u + 262144)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_7 c_9	$y^{22} + 11y^{21} + \cdots + 20875y + 3025$
c_2, c_6, c_8 c_{12}	$25(25y^{22} + 25y^{21} + \cdots - 174y + 9)$
c_4, c_{10}	$9(9y^{22} - 84y^{21} + \cdots + 9371648y + 262144)$
c_5, c_{11}	5625 $\cdot(5625y^{22} - 33375y^{21} + \cdots - 184683593728y + 68719476736)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.379734 + 0.902774I$ $a = -1.185761 - 0.203556I$ $b = -0.634038 + 0.993177I$	$-5.93206 - 1.93386I$	$-15.6328 + 1.6122I$
$u = -0.379734 - 0.902774I$ $a = -1.185761 + 0.203556I$ $b = -0.634038 - 0.993177I$	$-5.93206 + 1.93386I$	$-15.6328 - 1.6122I$
$u = -1.28411 + 0.85588I$ $a = -0.987222 + 0.180147I$ $b = -1.11352 + 1.07627I$	$3.80225 - 13.36980I$	$0. + 11.87368I$
$u = -1.28411 - 0.85588I$ $a = -0.987222 - 0.180147I$ $b = -1.11352 - 1.07627I$	$3.80225 + 13.36980I$	$0. - 11.87368I$
$u = -1.15789 + 1.10067I$ $a = -0.840216 - 0.128044I$ $b = -1.113808 + 0.776539I$	$3.40489 - 7.87661I$	0
$u = -1.15789 - 1.10067I$ $a = -0.840216 + 0.128044I$ $b = -1.113808 - 0.776539I$	$3.40489 + 7.87661I$	0
$u = -1.34943 + 0.91925I$ $a = 0.543096 + 0.123269I$ $b = 0.846187 - 0.332900I$	$3.78801 - 0.96344I$	0
$u = -1.34943 - 0.91925I$ $a = 0.543096 - 0.123269I$ $b = 0.846187 + 0.332900I$	$3.78801 + 0.96344I$	0
$u = -1.22736 + 1.11737I$ $a = -0.923717 + 0.003737I$ $b = -1.12956 + 1.03672I$	$0.44414 - 14.02510I$	0
$u = -1.22736 - 1.11737I$ $a = -0.923717 - 0.003737I$ $b = -1.12956 - 1.03672I$	$0.44414 + 14.02510I$	0

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.022791 + 0.337049I$ $a = -2.84584 - 1.52640I$ $b = -0.449611 + 0.993975I$	$-3.78801 + 0.96344I$	$-9.72237 - 2.09748I$
$u = 0.022791 - 0.337049I$ $a = -2.84584 + 1.52640I$ $b = -0.449611 - 0.993975I$	$-3.78801 - 0.96344I$	$-9.72237 + 2.09748I$
$u = 0.116635 + 0.228199I$ $a = 2.73586 + 3.74737I$ $b = 0.536047 - 1.061394I$	$-3.40489 - 7.87661I$	$-4.97285 + 6.45494I$
$u = 0.116635 - 0.228199I$ $a = 2.73586 - 3.74737I$ $b = 0.536047 + 1.061394I$	$-3.40489 + 7.87661I$	$-4.97285 - 6.45494I$
$u = -1.51354 + 0.94335I$ $a = 0.479427 - 0.319300I$ $b = 0.424422 - 0.935543I$	$-3.80225 - 13.36980I$	0
$u = -1.51354 - 0.94335I$ $a = 0.479427 + 0.319300I$ $b = 0.424422 + 0.935543I$	$-3.80225 + 13.36980I$	0
$u = -1.22468 + 1.49024I$ $a = -0.205817 - 0.252725I$ $b = -0.628680 - 0.002790I$	$5.93206 - 1.93386I$	0
$u = -1.22468 - 1.49024I$ $a = -0.205817 + 0.252725I$ $b = -0.628680 + 0.002790I$	$5.93206 + 1.93386I$	0
$u = -1.43923 + 1.49150I$ $a = -0.122034 - 0.304493I$ $b = -0.629786 - 0.256221I$	$-0.44414 + 14.02510I$	0
$u = -1.43923 - 1.49150I$ $a = -0.122034 + 0.304493I$ $b = -0.629786 + 0.256221I$	$-0.44414 - 14.02510I$	0

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -2.56345 + 1.97192I$ $a = 0.1022284 + 0.0660707I$ $b = 0.392344 - 0.032218I$	$3.92307I$	0
$u = -2.56345 - 1.97192I$ $a = 0.1022284 - 0.0660707I$ $b = 0.392344 + 0.032218I$	$-3.92307I$	0

V. $I_5^u = \langle b+u,\ a+1,\ u^{14}-5u^{13}+\cdots+u^2+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $=1$

(iii) Cusp Shapes
$= 3u^{13}-21u^{12}+60u^{11}-93u^{10}+75u^9-27u^8+9u^7-27u^6+21u^5+3u^4-3u^3-9u^2+3u+6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_9	$u^{14} - 4u^{13} + \cdots - 2u + 1$
c_2, c_6, c_{10}	$u^{14} + 5u^{13} + \cdots + u^2 + 1$
c_3, c_7, c_{11}	$u^{14} + 4u^{13} + \cdots + 2u + 1$
c_4, c_8, c_{12}	$u^{14} - 5u^{13} + \cdots + u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_7, c_9, c_{11}	$y^{14} + 4y^{13} + \cdots + 24y + 1$
c_2, c_4, c_6 c_8, c_{10}, c_{12}	$y^{14} - y^{13} + \cdots + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.582376 + 0.920079I$ $a = -1.00000$ $b = -0.582376 - 0.920079I$	$-4.87762 + 2.24155I$	$-5.71062 - 4.08315I$
$u = 0.582376 - 0.920079I$ $a = -1.00000$ $b = -0.582376 + 0.920079I$	$-4.87762 - 2.24155I$	$-5.71062 + 4.08315I$
$u = 1.080860 + 0.257141I$ $a = -1.00000$ $b = -1.080860 - 0.257141I$	$1.97436 + 7.13139I$	$5.73836 - 7.19904I$
$u = 1.080860 - 0.257141I$ $a = -1.00000$ $b = -1.080860 + 0.257141I$	$1.97436 - 7.13139I$	$5.73836 + 7.19904I$
$u = -0.631419 + 0.425056I$ $a = -1.00000$ $b = 0.631419 - 0.425056I$	$-1.19637 + 13.10040I$	$-1.00584 - 7.21157I$
$u = -0.631419 - 0.425056I$ $a = -1.00000$ $b = 0.631419 + 0.425056I$	$-1.19637 - 13.10040I$	$-1.00584 + 7.21157I$
$u = -0.220218 + 0.697336I$ $a = -1.00000$ $b = 0.220218 - 0.697336I$	$-4.24748I$	$0. + 7.94314I$
$u = -0.220218 - 0.697336I$ $a = -1.00000$ $b = 0.220218 + 0.697336I$	$4.24748I$	$0. - 7.94314I$
$u = -0.427969 + 0.558421I$ $a = -1.00000$ $b = 0.427969 - 0.558421I$	$4.87762 - 2.24155I$	$5.71062 + 4.08315I$
$u = -0.427969 - 0.558421I$ $a = -1.00000$ $b = 0.427969 + 0.558421I$	$4.87762 + 2.24155I$	$5.71062 - 4.08315I$

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.958798 + 0.953720I$ $a = -1.00000$ $b = -0.958798 - 0.953720I$	$-1.97436 + 7.13139I$	$-5.73836 - 7.19904I$
$u = \quad 0.958798 - 0.953720I$ $a = -1.00000$ $b = -0.958798 + 0.953720I$	$-1.97436 - 7.13139I$	$-5.73836 + 7.19904I$
$u = \quad 1.15757 + 1.04690I$ $a = -1.00000$ $b = -1.15757 - 1.04690I$	$1.19637 + 13.10040I$	$1.00584 - 7.21157I$
$u = \quad 1.15757 - 1.04690I$ $a = -1.00000$ $b = -1.15757 + 1.04690I$	$1.19637 - 13.10040I$	$1.00584 + 7.21157I$

VI. $I^u_6 = \langle -u^2 + b - 1,\ u^3 - u^2 + a - 1,\ u^4 - u^3 + u^2 - u + 1 \rangle$

(i) Arc colorings

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

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

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

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

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

$$a_8 = \begin{pmatrix} -u^2 - u - 1 \\ -u^3 - u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 4u^3 - u^2 + 2u - 2 \\ u^3 - u^2 - 3 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} u^3 - u^2 - u - 1 \\ -u^3 - u^2 - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 3u^3 - 2u^2 + 2u - 3 \\ -2u - 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -9u^3 - 7u^2 - 2u + 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.309017 + 0.951057I$ $a = -0.618034$ $b = 0.190983 - 0.587785I$	$-4.25078I$	$0. + 7.50245I$
$u = -0.309017 - 0.951057I$ $a = -0.618034$ $b = 0.190983 + 0.587785I$	$4.25078I$	$0. - 7.50245I$
$u = 0.809017 + 0.587785I$ $a = 1.61803$ $b = 1.30902 + 0.95106I$	$9.97355I$	$0. - 16.3925I$
$u = 0.809017 - 0.587785I$ $a = 1.61803$ $b = 1.30902 - 0.95106I$	$-9.97355I$	$0. + 16.3925I$

VII. $I_7^u = \langle b+u,\ -u^3-2u^2+a-u+1,\ u^4+3u^3+4u^2+2u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7u^3+12u^2+19u+6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.190983 + 0.587785I$ $a = -1.61803$ $b = 0.190983 - 0.587785I$	$-4.25078I$	$0. + 7.50245I$
$u = -0.190983 - 0.587785I$ $a = -1.61803$ $b = 0.190983 + 0.587785I$	$4.25078I$	$0. - 7.50245I$
$u = -1.30902 + 0.95106I$ $a = 0.618034$ $b = 1.30902 - 0.95106I$	$-9.97355I$	$0. + 16.3925I$
$u = -1.30902 - 0.95106I$ $a = 0.618034$ $b = 1.30902 + 0.95106I$	$9.97355I$	$0. - 16.3925I$

VIII. $I_8^u = \langle u^3+3u^2+b+3u+1,\ a+1,\ u^4+3u^3+4u^2+2u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7u^3+12u^2+19u+6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.190983+0.587785I$ $a=-1.00000$ $b=\ \ 0.309017-0.951057I$	$-4.25078I$	$0.+7.50245I$
$u=-0.190983-0.587785I$ $a=-1.00000$ $b=\ \ 0.309017+0.951057I$	$4.25078I$	$0.-7.50245I$
$u=-1.30902+0.95106I$ $a=-1.00000$ $b=-0.809017+0.587785I$	$-9.97355I$	$0.+16.3925I$
$u=-1.30902-0.95106I$ $a=-1.00000$ $b=-0.809017-0.587785I$	$9.97355I$	$0.-16.3925I$

IX. $I_9^u = \langle -2.18\times10^{72}u^{53} + 2.47\times10^{73}u^{52} + \cdots + 5.29\times10^{67}b + 9.57\times10^{72},\ 9.57\times10^{72}au^{53} + 6.78\times10^{72}u^{53} + \cdots - 4.18\times10^{73}a - 3.12\times10^{73},\ 3u^{54} - 36u^{53} + \cdots - 72u + 9\rangle$

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix}a\\41200.9u^{53} - 466379.u^{52} + \cdots + 1.18311\times10^{6}u - 180826.\end{pmatrix}$$

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

$$a_2 = \begin{pmatrix}-41200.9u^{53} + 466379.u^{52} + \cdots + a + 180826.\\22230.5u^{53} - 251496.u^{52} + \cdots + 633953.u - 96730.9\end{pmatrix}$$

$$a_8 = \begin{pmatrix}41200.9au^{53} + 27950.4u^{53} + \cdots - 180826.a - 128061.\\18393.7u^{53} - 208573.u^{52} + \cdots + 542749.u - 83851.1\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-30139.1au^{53} - 57012.6u^{53} + \cdots + 132325.a + 252463.\\-26414.5u^{53} + 299009.u^{52} + \cdots - 758244.u + 115857.\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-41200.9u^{53} + 466379.u^{52} + \cdots + a + 180826.\\41200.9u^{53} - 466379.u^{52} + \cdots + 1.18311\times10^{6}u - 180826.\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}22230.5au^{53} + 22500.6u^{53} + \cdots - 96730.9a - 99384.4\\18970.5au^{53} - 12943.9u^{53} + \cdots - 84095.3a + 55174.9\end{pmatrix}$$

$$a_7 = \begin{pmatrix}6087.10au^{53} + 3655.90u^{53} + \cdots - 27139.9a - 17096.3\\5841.57au^{53} - 4585.74u^{53} + \cdots - 26764.6a + 19417.5\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-52.1287au^{53} - 32353.2u^{53} + \cdots + 1864.50a + 141799.\\-3095.10au^{53} + 16497.3u^{53} + \cdots + 14696.6a - 70803.7\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}206.422au^{53} + 32288.3u^{53} + \cdots - 2714.92a - 146255.\\-41.2686au^{53} + 620.517u^{53} + \cdots - 1017.84a - 1637.48\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -231987.u^{53} + 2.62465\times10^{6}u^{52} + \cdots - 6.62939\times10^{6}u + 1.01301\times10^{6}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_9 c_{11}	$(3u^{54} + 42u^{53} + \cdots + 110u + 11)^2$
c_2, c_6, c_8 c_{12}	$(3u^{54} - 36u^{53} + \cdots - 72u + 9)^2$
c_3, c_7	$(3u^{54} - 42u^{53} + \cdots - 110u + 11)^2$
c_4, c_{10}	$(3u^{54} + 36u^{53} + \cdots + 72u + 9)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_7, c_9, c_{11}	$(9y^{54} + 126y^{53} + \cdots + 3762y + 121)^2$
c_2, c_4, c_6 c_8, c_{10}, c_{12}	$(9y^{54} - 162y^{53} + \cdots - 2754y + 81)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.539584 + 0.861312I$ $a = -1.079029 - 0.089755I$ $b = -1.26647 - 0.91537I$	$-3.86284 + 5.00342I$	0
$u = 0.539584 + 0.861312I$ $a = 1.42476 - 0.57783I$ $b = 0.504919 + 0.977810I$	$-3.86284 + 5.00342I$	0
$u = 0.539584 - 0.861312I$ $a = -1.079029 + 0.089755I$ $b = -1.26647 + 0.91537I$	$-3.86284 - 5.00342I$	0
$u = 0.539584 - 0.861312I$ $a = 1.42476 + 0.57783I$ $b = 0.504919 - 0.977810I$	$-3.86284 - 5.00342I$	0
$u = -0.823135 + 0.507661I$ $a = 0.520149 + 0.283468I$ $b = 1.56112 - 0.21438I$	$0.428605 + 0.663668I$	0
$u = -0.823135 + 0.507661I$ $a = 1.49031 + 0.65869I$ $b = 0.572058 - 0.030727I$	$0.428605 + 0.663668I$	0
$u = -0.823135 - 0.507661I$ $a = 0.520149 - 0.283468I$ $b = 1.56112 + 0.21438I$	$0.428605 - 0.663668I$	0
$u = -0.823135 - 0.507661I$ $a = 1.49031 - 0.65869I$ $b = 0.572058 + 0.030727I$	$0.428605 - 0.663668I$	0
$u = 0.810036 + 0.694455I$ $a = 0.248006 - 0.817597I$ $b = 0.424298 + 0.518741I$	$-0.92545 + 3.91157I$	0
$u = 0.810036 + 0.694455I$ $a = -0.618344 - 0.110278I$ $b = -0.768678 + 0.490054I$	$-0.92545 + 3.91157I$	0

Solutions to I_9^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.810036 - 0.694455I$ $a = 0.248006 + 0.817597I$ $b = 0.424298 - 0.518741I$	$-0.92545 - 3.91157I$	0
$u = 0.810036 - 0.694455I$ $a = -0.618344 + 0.110278I$ $b = -0.768678 - 0.490054I$	$-0.92545 - 3.91157I$	0
$u = -0.867525 + 0.293489I$ $a = -0.696975 - 0.231197I$ $b = -1.24038 - 1.08864I$	$3.86284 - 5.00342I$	0
$u = -0.867525 + 0.293489I$ $a = -0.90202 - 1.56004I$ $b = -0.672497 + 0.003985I$	$3.86284 - 5.00342I$	0
$u = -0.867525 - 0.293489I$ $a = -0.696975 + 0.231197I$ $b = -1.24038 + 1.08864I$	$3.86284 + 5.00342I$	0
$u = -0.867525 - 0.293489I$ $a = -0.90202 + 1.56004I$ $b = -0.672497 - 0.003985I$	$3.86284 + 5.00342I$	0
$u = 0.768678 + 0.490054I$ $a = 0.339747 - 1.120039I$ $b = 0.424298 - 0.518741I$	$-0.92545 - 3.91157I$	0
$u = 0.768678 + 0.490054I$ $a = -0.086565 + 0.730036I$ $b = -0.810036 + 0.694455I$	$-0.92545 - 3.91157I$	0
$u = 0.768678 - 0.490054I$ $a = 0.339747 + 1.120039I$ $b = 0.424298 + 0.518741I$	$-0.92545 + 3.91157I$	0
$u = 0.768678 - 0.490054I$ $a = -0.086565 - 0.730036I$ $b = -0.810036 - 0.694455I$	$-0.92545 + 3.91157I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.504919 + 0.977810I$ $a = -0.920391 - 0.076560I$ $b = -1.26647 + 0.91537I$	$-3.86284 - 5.00342I$	0
$u = -0.504919 + 0.977810I$ $a = -1.26709 - 0.64091I$ $b = -0.539584 + 0.861312I$	$-3.86284 - 5.00342I$	0
$u = -0.504919 - 0.977810I$ $a = -0.920391 + 0.076560I$ $b = -1.26647 - 0.91537I$	$-3.86284 + 5.00342I$	0
$u = -0.504919 - 0.977810I$ $a = -1.26709 + 0.64091I$ $b = -0.539584 - 0.861312I$	$-3.86284 + 5.00342I$	0
$u = 0.854551 + 0.280570I$ $a = -0.570820 - 0.215971I$ $b = -1.49575 - 0.85577I$	$-0.428605 + 0.663668I$	0
$u = 0.854551 + 0.280570I$ $a = 1.87681 + 0.38522I$ $b = 0.427200 + 0.344713I$	$-0.428605 + 0.663668I$	0
$u = 0.854551 - 0.280570I$ $a = -0.570820 + 0.215971I$ $b = -1.49575 + 0.85577I$	$-0.428605 - 0.663668I$	0
$u = 0.854551 - 0.280570I$ $a = 1.87681 - 0.38522I$ $b = 0.427200 - 0.344713I$	$-0.428605 - 0.663668I$	0
$u = 0.919013 + 0.715336I$ $a = -1.279558 - 0.156026I$ $b = -1.24334 - 1.06666I$	$-0.73009 + 8.94435I$	0
$u = 0.919013 + 0.715336I$ $a = 1.405056 + 0.066994I$ $b = 1.06432 + 1.05870I$	$-0.73009 + 8.94435I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.919013 - 0.715336I$ $a = -1.279558 + 0.156026I$ $b = -1.24334 + 1.06666I$	$-0.73009 - 8.94435I$	0
$u = 0.919013 - 0.715336I$ $a = 1.405056 - 0.066994I$ $b = 1.06432 - 1.05870I$	$-0.73009 - 8.94435I$	0
$u = 0.678933 + 0.310643I$ $a = -1.70402 + 0.37941I$ $b = -1.15297 - 1.03584I$	$0.73009 + 8.94435I$	0
$u = 0.678933 + 0.310643I$ $a = 1.98147 + 0.61908I$ $b = 1.274774 + 0.271751I$	$0.73009 + 8.94435I$	0
$u = 0.678933 - 0.310643I$ $a = -1.70402 - 0.37941I$ $b = -1.15297 + 1.03584I$	$0.73009 - 8.94435I$	0
$u = 0.678933 - 0.310643I$ $a = 1.98147 - 0.61908I$ $b = 1.274774 - 0.271751I$	$0.73009 - 8.94435I$	0
$u = 0.677493 + 0.258191I$ $a = -0.851798 - 0.189255I$ $b = -1.22830 + 1.32821I$	$5.59970I$	0
$u = 0.677493 + 0.258191I$ $a = 0.93070 - 2.31517I$ $b = 0.528224 + 0.348146I$	$5.59970I$	0
$u = 0.677493 - 0.258191I$ $a = -0.851798 + 0.189255I$ $b = -1.22830 - 1.32821I$	$-5.59970I$	0
$u = 0.677493 - 0.258191I$ $a = 0.93070 + 2.31517I$ $b = 0.528224 - 0.348146I$	$-5.59970I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.274774 + 0.271751I$ $a = -1.030830 + 0.592823I$ $b = -0.678933 + 0.310643I$	$0.73009 - 8.94435I$	0
$u = -1.274774 + 0.271751I$ $a = -0.559129 + 0.124492I$ $b = -1.15297 + 1.03584I$	$0.73009 - 8.94435I$	0
$u = -1.274774 - 0.271751I$ $a = -1.030830 - 0.592823I$ $b = -0.678933 - 0.310643I$	$0.73009 + 8.94435I$	0
$u = -1.274774 - 0.271751I$ $a = -0.559129 - 0.124492I$ $b = -1.15297 - 1.03584I$	$0.73009 + 8.94435I$	0
$u = 0.672497 + 0.003985I$ $a = -1.292546 - 0.428757I$ $b = -1.24038 + 1.08864I$	$3.86284 + 5.00342I$	$8.94097 - 8.21473I$
$u = 0.672497 + 0.003985I$ $a = 1.83478 - 1.62968I$ $b = 0.867525 + 0.293489I$	$3.86284 + 5.00342I$	$8.94097 - 8.21473I$
$u = 0.672497 - 0.003985I$ $a = -1.292546 + 0.428757I$ $b = -1.24038 - 1.08864I$	$3.86284 - 5.00342I$	$8.94097 + 8.21473I$
$u = 0.672497 - 0.003985I$ $a = 1.83478 + 1.62968I$ $b = 0.867525 - 0.293489I$	$3.86284 - 5.00342I$	$8.94097 + 8.21473I$
$u = -0.424298 + 0.518741I$ $a = -0.160173 - 1.350803I$ $b = -0.810036 + 0.694455I$	$-0.92545 - 3.91157I$	0
$u = -0.424298 + 0.518741I$ $a = -1.56737 - 0.27953I$ $b = -0.768678 - 0.490054I$	$-0.92545 - 3.91157I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.424298 - 0.518741I$ $a = -0.160173 + 1.350803I$ $b = -0.810036 - 0.694455I$	$-0.92545 + 3.91157I$	0
$u = -0.424298 - 0.518741I$ $a = -1.56737 + 0.27953I$ $b = -0.768678 + 0.490054I$	$-0.92545 + 3.91157I$	0
$u = -0.528224 + 0.348146I$ $a = -1.118759 - 0.248569I$ $b = -1.22830 - 1.32821I$	$-5.59970I$	$0. + 19.2060I$
$u = -0.528224 + 0.348146I$ $a = -0.46575 - 2.82146I$ $b = -0.677493 + 0.258191I$	$-5.59970I$	$0. + 19.2060I$
$u = -0.528224 - 0.348146I$ $a = -1.118759 + 0.248569I$ $b = -1.22830 + 1.32821I$	$5.59970I$	$0. - 19.2060I$
$u = -0.528224 - 0.348146I$ $a = -0.46575 + 2.82146I$ $b = -0.677493 - 0.258191I$	$5.59970I$	$0. - 19.2060I$
$u = 0.604104 + 0.098652I$ $a = 0.793542 - 0.523402I$ $b = 0.63555 - 1.44341I$	$0.92545 - 3.91157I$	$9.79615 + 4.67347I$
$u = 0.604104 + 0.098652I$ $a = -0.64467 + 2.49461I$ $b = -0.531016 + 0.237905I$	$0.92545 - 3.91157I$	$9.79615 + 4.67347I$
$u = 0.604104 - 0.098652I$ $a = 0.793542 + 0.523402I$ $b = 0.63555 + 1.44341I$	$0.92545 + 3.91157I$	$9.79615 - 4.67347I$
$u = 0.604104 - 0.098652I$ $a = -0.64467 - 2.49461I$ $b = -0.531016 - 0.237905I$	$0.92545 + 3.91157I$	$9.79615 - 4.67347I$

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.531016 + 0.237905I$ $a = 0.878144 - 0.579203I$ $b = 0.63555 + 1.44341I$	$0.92545 + 3.91157I$	$9.79615 - 4.67347I$
$u = 0.531016 + 0.237905I$ $a = -2.01100 - 1.81723I$ $b = -0.604104 + 0.098652I$	$0.92545 + 3.91157I$	$9.79615 - 4.67347I$
$u = 0.531016 - 0.237905I$ $a = 0.878144 + 0.579203I$ $b = 0.63555 - 1.44341I$	$0.92545 - 3.91157I$	$9.79615 + 4.67347I$
$u = 0.531016 - 0.237905I$ $a = -2.01100 + 1.81723I$ $b = -0.604104 - 0.098652I$	$0.92545 - 3.91157I$	$9.79615 + 4.67347I$
$u = -0.572058 + 0.030727I$ $a = 1.48229 - 0.80781I$ $b = 1.56112 - 0.21438I$	$0.428605 + 0.663668I$	$3.84366 - 7.01212I$
$u = -0.572058 + 0.030727I$ $a = 2.74117 - 0.22751I$ $b = 0.823135 - 0.507661I$	$0.428605 + 0.663668I$	$3.84366 - 7.01212I$
$u = -0.572058 - 0.030727I$ $a = 1.48229 + 0.80781I$ $b = 1.56112 + 0.21438I$	$0.428605 - 0.663668I$	$3.84366 + 7.01212I$
$u = -0.572058 - 0.030727I$ $a = 2.74117 + 0.22751I$ $b = 0.823135 + 0.507661I$	$0.428605 - 0.663668I$	$3.84366 + 7.01212I$
$u = -0.427200 + 0.344713I$ $a = -1.53249 - 0.57982I$ $b = -1.49575 + 0.85577I$	$-0.428605 - 0.663668I$	$-3.84366 + 7.01212I$
$u = -0.427200 + 0.344713I$ $a = -3.09955 - 0.49787I$ $b = -0.854551 + 0.280570I$	$-0.428605 - 0.663668I$	$-3.84366 + 7.01212I$

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.427200-0.344713I$ $a=-1.53249+0.57982I$ $b=-1.49575-0.85577I$	$-0.428605+0.663668I$	$-3.84366-7.01212I$
$u=-0.427200-0.344713I$ $a=-3.09955+0.49787I$ $b=-0.854551-0.280570I$	$-0.428605+0.663668I$	$-3.84366-7.01212I$
$u=-1.06432+1.05870I$ $a=-1.088282-0.080345I$ $b=-0.919013+0.715336I$	$-0.73009-8.94435I$	0
$u=-1.06432+1.05870I$ $a=-0.770070-0.093900I$ $b=-1.24334+1.06666I$	$-0.73009-8.94435I$	0
$u=-1.06432-1.05870I$ $a=-1.088282+0.080345I$ $b=-0.919013-0.715336I$	$-0.73009+8.94435I$	0
$u=-1.06432-1.05870I$ $a=-0.770070+0.093900I$ $b=-1.24334-1.06666I$	$-0.73009+8.94435I$	0
$u=\ \ 1.15297+1.03584I$ $a=-0.728992+0.419238I$ $b=-0.678933-0.310643I$	$0.73009+8.94435I$	0
$u=\ \ 1.15297+1.03584I$ $a=\ \ 0.459792-0.143655I$ $b=\ \ 1.274774+0.271751I$	$0.73009+8.94435I$	0
$u=\ \ 1.15297-1.03584I$ $a=-0.728992-0.419238I$ $b=-0.678933+0.310643I$	$0.73009-8.94435I$	0
$u=\ \ 1.15297-1.03584I$ $a=\ \ 0.459792+0.143655I$ $b=\ \ 1.274774-0.271751I$	$0.73009-8.94435I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.26647 + 0.91537I$ $a = -0.628427 - 0.317865I$ $b = -0.539584 - 0.861312I$	$-3.86284 + 5.00342I$	0
$u = 1.26647 + 0.91537I$ $a = 0.602735 + 0.244448I$ $b = 0.504919 + 0.977810I$	$-3.86284 + 5.00342I$	0
$u = 1.26647 - 0.91537I$ $a = -0.628427 + 0.317865I$ $b = -0.539584 + 0.861312I$	$-3.86284 - 5.00342I$	0
$u = 1.26647 - 0.91537I$ $a = 0.602735 - 0.244448I$ $b = 0.504919 - 0.977810I$	$-3.86284 - 5.00342I$	0
$u = -1.56112 + 0.21438I$ $a = 0.561343 - 0.248105I$ $b = 0.572058 - 0.030727I$	$0.428605 + 0.663668I$	0
$u = -1.56112 + 0.21438I$ $a = 0.362312 + 0.030071I$ $b = 0.823135 - 0.507661I$	$0.428605 + 0.663668I$	0
$u = -1.56112 - 0.21438I$ $a = 0.561343 + 0.248105I$ $b = 0.572058 + 0.030727I$	$0.428605 - 0.663668I$	0
$u = -1.56112 - 0.21438I$ $a = 0.362312 - 0.030071I$ $b = 0.823135 + 0.507661I$	$0.428605 - 0.663668I$	0
$u = -0.63555 + 1.44341I$ $a = -0.097108 - 0.375768I$ $b = -0.531016 + 0.237905I$	$0.92545 - 3.91157I$	0
$u = -0.63555 + 1.44341I$ $a = -0.273737 - 0.247361I$ $b = -0.604104 - 0.098652I$	$0.92545 - 3.91157I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.63555 - 1.44341I$ $a = -0.097108 + 0.375768I$ $b = -0.531016 - 0.237905I$	$0.92545 + 3.91157I$	0
$u = -0.63555 - 1.44341I$ $a = -0.273737 + 0.247361I$ $b = -0.604104 + 0.098652I$	$0.92545 + 3.91157I$	0
$u = 1.24334 + 1.06666I$ $a = -0.913898 - 0.067471I$ $b = -0.919013 - 0.715336I$	$-0.73009 + 8.94435I$	0
$u = 1.24334 + 1.06666I$ $a = 0.710101 - 0.033858I$ $b = 1.06432 + 1.05870I$	$-0.73009 + 8.94435I$	0
$u = 1.24334 - 1.06666I$ $a = -0.913898 + 0.067471I$ $b = -0.919013 + 0.715336I$	$-0.73009 - 8.94435I$	0
$u = 1.24334 - 1.06666I$ $a = 0.710101 + 0.033858I$ $b = 1.06432 - 1.05870I$	$-0.73009 - 8.94435I$	0
$u = 1.24038 + 1.08864I$ $a = -0.277770 + 0.480402I$ $b = -0.672497 + 0.003985I$	$3.86284 - 5.00342I$	0
$u = 1.24038 + 1.08864I$ $a = 0.304666 - 0.270609I$ $b = 0.867525 - 0.293489I$	$3.86284 - 5.00342I$	0
$u = 1.24038 - 1.08864I$ $a = -0.277770 - 0.480402I$ $b = -0.672497 - 0.003985I$	$3.86284 + 5.00342I$	0
$u = 1.24038 - 1.08864I$ $a = 0.304666 + 0.270609I$ $b = 0.867525 + 0.293489I$	$3.86284 + 5.00342I$	0

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.49575 + 0.85577I$ $a = 0.511279 - 0.104941I$ $b = 0.427200 + 0.344713I$	$-0.428605 + 0.663668I$	0
$u = 1.49575 + 0.85577I$ $a = -0.314512 - 0.050519I$ $b = -0.854551 - 0.280570I$	$-0.428605 + 0.663668I$	0
$u = 1.49575 - 0.85577I$ $a = 0.511279 + 0.104941I$ $b = 0.427200 - 0.344713I$	$-0.428605 - 0.663668I$	0
$u = 1.49575 - 0.85577I$ $a = -0.314512 + 0.050519I$ $b = -0.854551 + 0.280570I$	$-0.428605 - 0.663668I$	0
$u = 1.22830 + 1.32821I$ $a = 0.149481 - 0.371843I$ $b = 0.528224 - 0.348146I$	$- 5.59970I$	0
$u = 1.22830 + 1.32821I$ $a = -0.056954 + 0.345025I$ $b = -0.677493 + 0.258191I$	$- 5.59970I$	0
$u = 1.22830 - 1.32821I$ $a = 0.149481 + 0.371843I$ $b = 0.528224 + 0.348146I$	$5.59970I$	0
$u = 1.22830 - 1.32821I$ $a = -0.056954 - 0.345025I$ $b = -0.677493 - 0.258191I$	$5.59970I$	0

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6u^3+9u^2+3u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{10}	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.070696 + 0.758745I$ $a = 1.00000$ $b = -0.070696 - 0.758745I$	$-3.39192 - 2.59539I$	$-5.65464 + 0.68919I$
$u = 0.070696 - 0.758745I$ $a = 1.00000$ $b = -0.070696 + 0.758745I$	$-3.39192 + 2.59539I$	$-5.65464 - 0.68919I$
$u = -1.070696 + 0.758745I$ $a = 1.00000$ $b = 1.070696 - 0.758745I$	$3.39192 - 2.59539I$	$5.65464 + 0.68919I$
$u = -1.070696 - 0.758745I$ $a = 1.00000$ $b = 1.070696 + 0.758745I$	$3.39192 + 2.59539I$	$5.65464 - 0.68919I$

XI.

$\boldsymbol{I^u_{11} = \langle 3u^5a^3 - 3u^5a^2 + \cdots + 3a + 3,\ -4u^5a^3 + 4u^5a^2 + \cdots + b - 9a,\ u^5a^3 - u^5a^2 + \cdots + a + 1,\ u^6a^3 - u^6a^2 + \cdots + a - u,\ u^5a^4 - u^5a^3 + \cdots - a + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I^u_{11}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$	0	0

XII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_9	$75(u^2-u+1)^2(u^4+5u^2+5)(u^4+u^3+u^2+u+1)^2$ $\cdot\,(u^{10}-4u^9+9u^8-11u^7+8u^6-7u^5+10u^4-13u^3+3u^2+6u-1)$ $\cdot\,(u^{14}-4u^{13}+\cdots-2u+1)(u^{22}+5u^{21}+\cdots+115u+55)^2$ $\cdot\,(75u^{22}-1875u^{21}+\cdots-3211264u+262144)$
c_2, c_6, c_{10}	$75(u^4-3u^3+4u^2-2u+1)^2(u^4+u^3+u^2+u+1)$ $\cdot\,(u^4+2u^3+2u^2+u+1)$ $\cdot\,(u^{10}+5u^9+12u^8+15u^7+9u^6-u^5-3u^4+u^3+4u^2+u-1)$ $\cdot\,(u^{14}+5u^{13}+\cdots+u^2+1)(3u^{22}+72u^{21}+\cdots+1792u+512)$ $\cdot\,(5u^{22}-35u^{21}+\cdots-6u+3)^2$
c_3, c_7, c_{11}	$75(u^2+u+1)^2(u^4+5u^2+5)(u^4-u^3+u^2-u+1)^2$ $\cdot\,(u^{10}+4u^9+9u^8+11u^7+8u^6+7u^5+10u^4+13u^3+3u^2-6u-1)$ $\cdot\,(u^{14}+4u^{13}+\cdots+2u+1)(u^{22}-5u^{21}+\cdots-115u+55)^2$ $\cdot\,(75u^{22}+1875u^{21}+\cdots+3211264u+262144)$
c_4, c_8, c_{12}	$75(u^4-2u^3+2u^2-u+1)(u^4-u^3+u^2-u+1)$ $\cdot\,(u^4+3u^3+4u^2+2u+1)^2$ $\cdot\,(u^{10}-5u^9+12u^8-15u^7+9u^6+u^5-3u^4-u^3+4u^2-u-1)$ $\cdot\,(u^{14}-5u^{13}+\cdots+u^2+1)(3u^{22}-72u^{21}+\cdots-1792u+512)$ $\cdot\,(5u^{22}+35u^{21}+\cdots+6u+3)^2$

XIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_7, c_9, c_{11}	$5625(y^2+y+1)^2(y^2+5y+5)^2(y^4+y^3+y^2+y+1)^2$ $\cdot\,(y^{10}+2y^9+\cdots-42y+1)(y^{14}+4y^{13}+\cdots+24y+1)$ $\cdot\,(y^{22}+11y^{21}+\cdots+20875y+3025)^2$ $\cdot\,(5625y^{22}-33375y^{21}+\cdots-184683593728y+68719476736)$
c_2, c_4, c_6 c_8, c_{10}, c_{12}	$5625(y^4+2y^2+3y+1)(y^4-y^3+\cdots+4y+1)^2(y^4+y^3+\cdots+y+1)$ $\cdot\,(y^{10}-y^9+12y^8-5y^7+37y^6-y^5+29y^4-41y^3+20y^2-9y+1)$ $\cdot\,(y^{14}-y^{13}+\cdots+2y+1)(9y^{22}-84y^{21}+\cdots+9371648y+262144)$ $\cdot\,(25y^{22}+25y^{21}+\cdots-174y+9)^2$