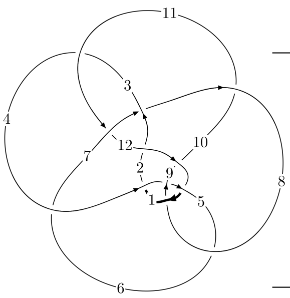
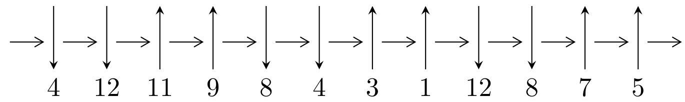
$12n_{0837}$ ($K12n_{0837}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle b+u,\ a-1,\ u^4+2u^3+2u^2-u-1\rangle \\
I_2^u &= \langle b+u,\ -9u^{17}+40u^{16}+\cdots+2a+19,\ u^{18}-5u^{17}+\cdots-6u+2\rangle \\
I_3^u &= \langle 5u^{17}-24u^{16}+\cdots+2b-18,\ a-1,\ u^{18}-5u^{17}+\cdots-6u+2\rangle \\
I_4^u &= \langle -1573066898u^{17}-28039813504u^{16}+\cdots+6554007584b-87714720832, \\
&\quad -2741085026u^{17}-47766463570u^{16}+\cdots+6554007584a-96897616096, \\
&\quad 2u^{18}+36u^{17}+\cdots+288u+64\rangle \\
I_5^u &= \langle b+u,\ a+1,\ u^6-u^5+u^4+2u^3+u+1\rangle \\
I_6^u &= \langle b+u,\ a+1,\ u^4-2u^3+2u^2-u+1\rangle \\
I_7^u &= \langle u^5-u^4+3u^3-au-2u^2+b+u,\ -u^4a+u^5+u^3a-u^4-3u^2a+3u^3+a^2+2au-3u^2-a+2u-3, \\
&\quad u^6-u^5+3u^4-2u^3+2u^2-u+1\rangle \\
I_8^u &= \langle -8u^{11}+27u^{10}-39u^9+7u^8+13u^7+57u^6-222u^5+307u^4-266u^3+151u^2+2b-61u+14, \\
&\quad -6u^{11}+17u^{10}-19u^9-7u^8+7u^7+49u^6-138u^5+147u^4-106u^3+47u^2+2a-11u, \\
&\quad u^{12}-4u^{11}+7u^{10}-4u^9-u^8-6u^7+32u^6-56u^5+58u^4-40u^3+19u^2-6u+1\rangle \\
I_9^u &= \langle 7u^{11}-23u^{10}+31u^9-u^8-13u^7-54u^6+189u^5-242u^4+193u^3-103u^2+2b+36u-6, \\
&\quad 14u^{11}-48u^{10}+71u^9-17u^8-21u^7-97u^6+391u^5-562u^4+505u^3-294u^2+2a+115u-23, \\
&\quad u^{12}-4u^{11}+7u^{10}-4u^9-u^8-6u^7+32u^6-56u^5+58u^4-40u^3+19u^2-6u+1\rangle \\
I_{10}^u &= \langle b-2u,\ a-2,\ 2u^2-2u+1\rangle
\end{aligned}
$$

[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`).

$$
\begin{aligned}
I^u_{11} &= \langle b+u,\ 2a-1,\ u^2+2u+2\rangle \\
I^u_{12} &= \langle 2b-u,\ a+1,\ u^2+2u+2\rangle \\
I^u_{13} &= \langle b+u,\ a-1,\ u^6+3u^5+5u^4+4u^3+2u^2+u+1\rangle \\
I^u_{14} &= \langle -u^4+3u^3-au-4u^2+b+u,\ -u^5+u^3a+2u^4-3u^2a-u^3+a^2+4au-4u^2-a+4u-4, \\
&\quad u^6-3u^5+5u^4-4u^3+4u^2-u+1\rangle \\
I^u_{15} &= \langle b+u,\ -u^3-u^2+a-1,\ u^4+u^3+u^2+u+1\rangle \\
I^u_{16} &= \langle u^2+b+1,\ a+1,\ u^4+u^3+u^2+u+1\rangle \\
I^u_{17} &= \langle u^3-3u^2+b+3u-1,\ u^3-2u^2+a+u+1,\ u^4-3u^3+4u^2-2u+1\rangle
\end{aligned}
$$

* 17 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 140 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. $\boldsymbol{I_1^u = \langle b + u,\ a - 1,\ u^4 + 2u^3 + 2u^2 - u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6u^3 - 12u^2 - 6u + 9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5 c_6, c_9, c_{10}	$u^4 - 2u^3 + u^2 + 4u - 1$
c_3, c_4, c_7 c_8, c_{11}, 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_2, c_5 c_6, c_9, c_{10}	$y^4 - 2y^3 + 15y^2 - 18y + 1$
c_3, c_4, c_7 c_8, c_{11}, c_{12}	$y^4 + 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.664422$ $a = 1.00000$ $b = -0.664422$	-2.90924	-2.04390
$u = -0.591616$ $a = 1.00000$ $b = 0.591616$	1.01979	9.59200
$u = -1.03640 + 1.21238I$ $a = 1.00000$ $b = 1.03640 - 1.21238I$	$-5.6350 - 19.7459I$	$-0.77406 + 10.13367I$
$u = -1.03640 - 1.21238I$ $a = 1.00000$ $b = 1.03640 + 1.21238I$	$-5.6350 + 19.7459I$	$-0.77406 - 10.13367I$

II. $I_2^u = \langle b+u,\ -9u^{17}+40u^{16}+\cdots+2a+19,\ u^{18}-5u^{17}+\cdots-6u+2\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}\frac{9}{2}u^{17}-20u^{16}+\cdots+\frac{59}{2}u-\frac{19}{2}\\-u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}5u^{17}-\frac{47}{2}u^{16}+\cdots+\frac{73}{2}u-\frac{29}{2}\\-\frac{3}{2}u^{17}+\frac{13}{2}u^{16}+\cdots-8u+2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}10.2500u^{17}-44.7500u^{16}+\cdots+59.2500u-15.5000\\\frac{1}{2}u^{17}-\frac{7}{2}u^{16}+\cdots+7u-5\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-\frac{15}{4}u^{17}+\frac{67}{4}u^{16}+\cdots-\frac{77}{4}u+\frac{7}{2}\\u^{17}-4u^{16}+\cdots-\frac{11}{2}u^2+3u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}\frac{9}{2}u^{17}-20u^{16}+\cdots+\frac{61}{2}u-\frac{19}{2}\\-u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}9.25000u^{17}-37.7500u^{16}+\cdots+47.2500u-5.50000\\\frac{1}{2}u^{17}-\frac{7}{2}u^{16}+\cdots+7u-5\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}4u^{17}-\frac{49}{2}u^{16}+\cdots+\frac{99}{2}u-26\\-\frac{7}{2}u^{17}+15u^{16}+\cdots-16u+4\end{pmatrix}$$
$$a_3 = \begin{pmatrix}\frac{1}{2}u^{17}-\frac{13}{2}u^{16}+\cdots+19u-16\\-\frac{1}{2}u^{17}+\frac{5}{2}u^{16}+\cdots-5u+2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-4.75000u^{17}+21.7500u^{16}+\cdots-26.7500u+7.50000\\2u^{17}-\frac{15}{2}u^{16}+\cdots-\frac{15}{2}u^2+5u\end{pmatrix}$$

(ii) Obstruction class $=-1$

(iii) Cusp Shapes $=-13u^{17}+63u^{16}-165u^{15}+258u^{14}-297u^{13}+308u^{12}-454u^{11}+751u^{10}-1156u^9+1416u^8-1411u^7+1045u^6-635u^5+324u^4-212u^3+137u^2-92u+24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5 c_{10}	$u^{18} + 5u^{17} + \cdots + 29u + 11$
c_3, c_4, c_{11} c_{12}	$u^{18} + 5u^{17} + \cdots + 6u + 2$
c_6, c_9	$2(2u^{18} - 42u^{17} + \cdots - 32768u + 4096)$
c_7, c_8	$2(2u^{18} - 36u^{17} + \cdots - 288u + 64)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_{10}	$y^{18} - 7y^{17} + \cdots - 1171y + 121$
c_3, c_4, c_{11} c_{12}	$y^{18} + 3y^{17} + \cdots + 16y + 4$
c_6, c_9	$4(4y^{18} - 48y^{17} + \cdots + 5242880y^2 + 1.67772 \times 10^7)$
c_7, c_8	$4(4y^{18} - 36y^{17} + \cdots - 50176y + 4096)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.117461 + 1.055770I$ $a = -0.197487 - 0.226554I$ $b = 0.117461 - 1.055770I$	$-0.27448 - 4.94689I$	$-1.21757 + 8.17867I$
$u = -0.117461 - 1.055770I$ $a = -0.197487 + 0.226554I$ $b = 0.117461 + 1.055770I$	$-0.27448 + 4.94689I$	$-1.21757 - 8.17867I$
$u = 0.685691 + 0.586681I$ $a = -1.71323 - 0.43588I$ $b = -0.685691 - 0.586681I$	$-0.27448 + 4.94689I$	$-1.21757 - 8.17867I$
$u = 0.685691 - 0.586681I$ $a = -1.71323 + 0.43588I$ $b = -0.685691 + 0.586681I$	$-0.27448 - 4.94689I$	$-1.21757 + 8.17867I$
$u = 0.138696 + 0.833961I$ $a = 0.96269 + 1.98234I$ $b = -0.138696 - 0.833961I$	$-5.85311 - 8.22123I$	$-7.71204 + 4.47530I$
$u = 0.138696 - 0.833961I$ $a = 0.96269 - 1.98234I$ $b = -0.138696 + 0.833961I$	$-5.85311 + 8.22123I$	$-7.71204 - 4.47530I$
$u = 0.944753 + 0.780899I$ $a = -0.410800 + 0.178193I$ $b = -0.944753 - 0.780899I$	$3.08112 - 1.34368I$	$2.02039 + 5.00957I$
$u = 0.944753 - 0.780899I$ $a = -0.410800 - 0.178193I$ $b = -0.944753 + 0.780899I$	$3.08112 + 1.34368I$	$2.02039 - 5.00957I$
$u = 0.474610 + 0.583553I$ $a = -0.06054 + 2.66696I$ $b = -0.474610 - 0.583553I$	$-4.67654 + 10.79130I$	$-3.31192 - 12.75342I$
$u = 0.474610 - 0.583553I$ $a = -0.06054 - 2.66696I$ $b = -0.474610 + 0.583553I$	$-4.67654 - 10.79130I$	$-3.31192 + 12.75342I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.105760 + 0.758854I$ $a = 0.702132 - 0.134728I$ $b = 1.105760 - 0.758854I$	$3.08112 - 1.34368I$	$2.02039 + 5.00957I$
$u = -1.105760 - 0.758854I$ $a = 0.702132 + 0.134728I$ $b = 1.105760 + 0.758854I$	$3.08112 + 1.34368I$	$2.02039 - 5.00957I$
$u = -0.462479 + 0.431703I$ $a = 1.79515 + 3.21804I$ $b = 0.462479 - 0.431703I$	-2.64827	$-6 - 0.557711 + 0.10I$
$u = -0.462479 - 0.431703I$ $a = 1.79515 - 3.21804I$ $b = 0.462479 + 0.431703I$	-2.64827	$-6 - 0.557711 + 0.10I$
$u = 0.97105 + 1.12180I$ $a = -1.125730 - 0.023180I$ $b = -0.97105 - 1.12180I$	$-4.67654 + 10.79130I$	$-3.31192 - 12.75342I$
$u = 0.97105 - 1.12180I$ $a = -1.125730 + 0.023180I$ $b = -0.97105 + 1.12180I$	$-4.67654 - 10.79130I$	$-3.31192 + 12.75342I$
$u = 0.97090 + 1.14798I$ $a = -0.952181 - 0.151413I$ $b = -0.97090 - 1.14798I$	$-5.85311 + 8.22123I$	$-7.71204 - 4.47530I$
$u = 0.97090 - 1.14798I$ $a = -0.952181 + 0.151413I$ $b = -0.97090 + 1.14798I$	$-5.85311 - 8.22123I$	$-7.71204 + 4.47530I$

III. $\boldsymbol{I_3^u = \langle 5u^{17} - 24u^{16} + \cdots + 2b - 18,\ a - 1,\ u^{18} - 5u^{17} + \cdots - 6u + 2\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -\frac{5}{2}u^{17} + 12u^{16} + \cdots - \frac{35}{2}u + 9 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{5}{2}u^{17} - 12u^{16} + \cdots + \frac{35}{2}u - 8 \\ -\frac{7}{2}u^{17} + \frac{31}{2}u^{16} + \cdots - \frac{39}{2}u + 8 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ \frac{1}{2}u^{17} - \frac{7}{2}u^{16} + \cdots + 7u - 5 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^{17} - \frac{7}{2}u^{16} + \cdots + 2u + 2 \\ u^{17} - 4u^{16} + \cdots - \frac{11}{2}u^2 + 3u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{5}{2}u^{17} - 12u^{16} + \cdots + \frac{35}{2}u - 8 \\ -\frac{5}{2}u^{17} + 12u^{16} + \cdots - \frac{35}{2}u + 9 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^{16} + 4u^{15} + \cdots + \frac{11}{2}u - 3 \\ -\frac{1}{2}u^{17} + \frac{9}{2}u^{16} + \cdots - \frac{23}{2}u + 8 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2u^{16} + \frac{15}{2}u^{15} + \cdots + \frac{15}{2}u - 5 \\ \frac{3}{2}u^{17} - 7u^{16} + \cdots + 7u - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^{17} + \frac{13}{2}u^{16} + \cdots - u - 4 \\ u^{17} - 4u^{16} + \cdots + 3u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^{17} - \frac{9}{2}u^{16} + \cdots + 6u - 1 \\ u^{16} - \frac{7}{2}u^{15} + \cdots - 3u + 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -13u^{17} + 63u^{16} - 165u^{15} + 258u^{14} - 297u^{13} + 308u^{12} - 454u^{11} + 751u^{10} - 1156u^9 + 1416u^8 - 1411u^7 + 1045u^6 - 635u^5 + 324u^4 - 212u^3 + 137u^2 - 92u + 24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$2(2u^{18} - 42u^{17} + \cdots - 32768u + 4096)$
c_2, c_5, c_6 c_9	$u^{18} + 5u^{17} + \cdots + 29u + 11$
c_3, c_4, c_7 c_8	$u^{18} + 5u^{17} + \cdots + 6u + 2$
c_{11}, c_{12}	$2(2u^{18} - 36u^{17} + \cdots - 288u + 64)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$4(4y^{18} - 48y^{17} + \cdots + 5242880y^2 + 1.67772 \times 10^7)$
c_2, c_5, c_6 c_9	$y^{18} - 7y^{17} + \cdots - 1171y + 121$
c_3, c_4, c_7 c_8	$y^{18} + 3y^{17} + \cdots + 16y + 4$
c_{11}, c_{12}	$4(4y^{18} - 36y^{17} + \cdots - 50176y + 4096)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.117461 + 1.055770I$ $a = 1.00000$ $b = -0.262386 + 0.181889I$	$-0.27448 - 4.94689I$	$-1.21757 + 8.17867I$
$u = -0.117461 - 1.055770I$ $a = 1.00000$ $b = -0.262386 - 0.181889I$	$-0.27448 + 4.94689I$	$-1.21757 - 8.17867I$
$u = 0.685691 + 0.586681I$ $a = 1.00000$ $b = 0.91902 + 1.30400I$	$-0.27448 + 4.94689I$	$-1.21757 - 8.17867I$
$u = 0.685691 - 0.586681I$ $a = 1.00000$ $b = 0.91902 - 1.30400I$	$-0.27448 - 4.94689I$	$-1.21757 + 8.17867I$
$u = 0.138696 + 0.833961I$ $a = 1.00000$ $b = 1.51967 - 1.07779I$	$-5.85311 - 8.22123I$	$-7.71204 + 4.47530I$
$u = 0.138696 - 0.833961I$ $a = 1.00000$ $b = 1.51967 + 1.07779I$	$-5.85311 + 8.22123I$	$-7.71204 - 4.47530I$
$u = 0.944753 + 0.780899I$ $a = 1.00000$ $b = 0.527255 + 0.152445I$	$3.08112 - 1.34368I$	$2.02039 + 5.00957I$
$u = 0.944753 - 0.780899I$ $a = 1.00000$ $b = 0.527255 - 0.152445I$	$3.08112 + 1.34368I$	$2.02039 - 5.00957I$
$u = 0.474610 + 0.583553I$ $a = 1.00000$ $b = 1.58505 - 1.23044I$	$-4.67654 + 10.79130I$	$-3.31192 - 12.75342I$
$u = 0.474610 - 0.583553I$ $a = 1.00000$ $b = 1.58505 + 1.23044I$	$-4.67654 - 10.79130I$	$-3.31192 + 12.75342I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.105760 + 0.758854I$ $a = 1.00000$ $b = 0.674150 - 0.681792I$	$3.08112 - 1.34368I$	$2.02039 + 5.00957I$
$u = -1.105760 - 0.758854I$ $a = 1.00000$ $b = 0.674150 + 0.681792I$	$3.08112 + 1.34368I$	$2.02039 - 5.00957I$
$u = -0.462479 + 0.431703I$ $a = 1.00000$ $b = 2.21945 + 0.71331I$	-2.64827	$-6 - 0.557711 + 0.10I$
$u = -0.462479 - 0.431703I$ $a = 1.00000$ $b = 2.21945 - 0.71331I$	-2.64827	$-6 - 0.557711 + 0.10I$
$u = 0.97105 + 1.12180I$ $a = 1.00000$ $b = 1.06713 + 1.28535I$	$-4.67654 + 10.79130I$	$-3.31192 - 12.75342I$
$u = 0.97105 - 1.12180I$ $a = 1.00000$ $b = 1.06713 - 1.28535I$	$-4.67654 - 10.79130I$	$-3.31192 + 12.75342I$
$u = 0.97090 + 1.14798I$ $a = 1.00000$ $b = 0.75065 + 1.24009I$	$-5.85311 + 8.22123I$	$-7.71204 - 4.47530I$
$u = 0.97090 - 1.14798I$ $a = 1.00000$ $b = 0.75065 - 1.24009I$	$-5.85311 - 8.22123I$	$-7.71204 + 4.47530I$

IV. $\boldsymbol{I^u_4 =}$
$\boldsymbol{\langle -1.57\times 10^{9}u^{17} - 2.80\times 10^{10}u^{16} + \cdots + 6.55\times 10^{9}b - 8.77\times 10^{10},\ -2.74\times 10^{9}u^{17} - 4.78\times 10^{10}u^{16} + \cdots + 6.55\times 10^{9}a - 9.69\times 10^{10},\ 2u^{18} + 36u^{17} + \cdots + 288u + 64\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.418230u^{17} + 7.28813u^{16} + \cdots + 55.0668u + 14.7845 \\ 0.240016u^{17} + 4.27827u^{16} + \cdots + 45.4407u + 13.3834 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.220233u^{17} + 3.85283u^{16} + \cdots + 30.8051u + 9.08162 \\ 0.279696u^{17} + 4.70292u^{16} + \cdots + 33.2504u + 9.26644 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.405049u^{17} - 7.06890u^{16} + \cdots - 66.2576u - 23.6467 \\ -0.221980u^{17} - 3.87748u^{16} + \cdots - 33.6803u - 12.9616 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0814254u^{17} - 1.40331u^{16} + \cdots - 6.57667u - 8.03340 \\ 0.0558069u^{17} + 1.04276u^{16} + \cdots + 16.3117u + 4.49774 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.178214u^{17} + 3.00986u^{16} + \cdots + 9.62612u + 1.40111 \\ 0.240016u^{17} + 4.27827u^{16} + \cdots + 45.4407u + 13.3834 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.0792438u^{17} - 1.38641u^{16} + \cdots - 15.9005u - 4.82694 \\ -0.103825u^{17} - 1.80501u^{16} + \cdots - 14.6768u - 5.85821 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.669793u^{17} - 11.6921u^{16} + \cdots - 106.612u - 38.3152 \\ -0.305026u^{17} - 5.38385u^{16} + \cdots - 51.3580u - 20.0086 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.407230u^{17} + 7.09082u^{16} + \cdots + 65.9981u + 22.7461 \\ 0.463276u^{17} + 7.95175u^{16} + \cdots + 61.0907u + 21.1249 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.229775u^{17} - 3.95065u^{16} + \cdots - 29.2608u - 14.5263 \\ -0.0526146u^{17} - 0.945653u^{16} + \cdots + 3.35320u + 0.563147 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{867904991}{819250948}u^{17} - \frac{7549831247}{409625474}u^{16} + \cdots - \frac{35978777006}{204812737}u - \frac{12280937430}{204812737}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6, c_9 c_{10}	$u^{18} + 5u^{17} + \cdots + 29u + 11$
c_2, c_5	$2(2u^{18} - 42u^{17} + \cdots - 32768u + 4096)$
c_3, c_4	$2(2u^{18} - 36u^{17} + \cdots - 288u + 64)$
c_7, c_8, c_{11} c_{12}	$u^{18} + 5u^{17} + \cdots + 6u + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9 c_{10}	$y^{18} - 7y^{17} + \cdots - 1171y + 121$
c_2, c_5	$4(4y^{18} - 48y^{17} + \cdots + 5242880y^2 + 1.67772 \times 10^7)$
c_3, c_4	$4(4y^{18} - 36y^{17} + \cdots - 50176y + 4096)$
c_7, c_8, c_{11} c_{12}	$y^{18} + 3y^{17} + \cdots + 16y + 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.674150 + 0.681792I$ $a = 1.373660 + 0.263583I$ $b = 1.105760 - 0.758854I$	$3.08112 - 1.34368I$	$2.02039 + 5.00957I$
$u = -0.674150 - 0.681792I$ $a = 1.373660 - 0.263583I$ $b = 1.105760 + 0.758854I$	$3.08112 + 1.34368I$	$2.02039 - 5.00957I$
$u = -0.75065 + 1.24009I$ $a = -1.024320 - 0.162884I$ $b = -0.97090 + 1.14798I$	$-5.85311 - 8.22123I$	$-7.71204 + 4.47530I$
$u = -0.75065 - 1.24009I$ $a = -1.024320 + 0.162884I$ $b = -0.97090 - 1.14798I$	$-5.85311 + 8.22123I$	$-7.71204 - 4.47530I$
$u = -0.527255 + 0.152445I$ $a = -2.04878 + 0.88870I$ $b = -0.944753 + 0.780899I$	$3.08112 + 1.34368I$	$2.02039 - 5.00957I$
$u = -0.527255 - 0.152445I$ $a = -2.04878 - 0.88870I$ $b = -0.944753 - 0.780899I$	$3.08112 - 1.34368I$	$2.02039 + 5.00957I$
$u = -0.91902 + 1.30400I$ $a = -0.548208 - 0.139474I$ $b = -0.685691 + 0.586681I$	$-0.27448 - 4.94689I$	$-1.21757 + 8.17867I$
$u = -0.91902 - 1.30400I$ $a = -0.548208 + 0.139474I$ $b = -0.685691 - 0.586681I$	$-0.27448 + 4.94689I$	$-1.21757 - 8.17867I$
$u = -1.06713 + 1.28535I$ $a = -0.887939 - 0.018284I$ $b = -0.97105 + 1.12180I$	$-4.67654 - 10.79130I$	$-3.31192 + 12.75342I$
$u = -1.06713 - 1.28535I$ $a = -0.887939 + 0.018284I$ $b = -0.97105 - 1.12180I$	$-4.67654 + 10.79130I$	$-3.31192 - 12.75342I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.262386 + 0.181889I$ $a = -2.18634 - 2.50813I$ $b = 0.117461 + 1.055770I$	$-0.27448 + 4.94689I$	$-1.21757 - 8.17867I$
$u = 0.262386 - 0.181889I$ $a = -2.18634 + 2.50813I$ $b = 0.117461 - 1.055770I$	$-0.27448 - 4.94689I$	$-1.21757 + 8.17867I$
$u = -1.51967 + 1.07779I$ $a = 0.198230 - 0.408188I$ $b = -0.138696 - 0.833961I$	$-5.85311 - 8.22123I$	$-7.71204 + 4.47530I$
$u = -1.51967 - 1.07779I$ $a = 0.198230 + 0.408188I$ $b = -0.138696 + 0.833961I$	$-5.85311 + 8.22123I$	$-7.71204 - 4.47530I$
$u = -1.58505 + 1.23044I$ $a = -0.008508 - 0.374766I$ $b = -0.474610 - 0.583553I$	$-4.67654 + 10.79130I$	$-3.31192 - 12.75342I$
$u = -1.58505 - 1.23044I$ $a = -0.008508 + 0.374766I$ $b = -0.474610 + 0.583553I$	$-4.67654 - 10.79130I$	$-3.31192 + 12.75342I$
$u = -2.21945 + 0.71331I$ $a = 0.132207 + 0.236998I$ $b = 0.462479 + 0.431703I$	-2.64827	0
$u = -2.21945 - 0.71331I$ $a = 0.132207 - 0.236998I$ $b = 0.462479 - 0.431703I$	-2.64827	0

V. $I_5^u = \langle b+u,\ a+1,\ u^6-u^5+u^4+2u^3+u+1\rangle$

(i) Arc colorings

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

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

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

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

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

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

$$a_6 = \begin{pmatrix} u^3-u^2+1 \\ u^4-2u^3+u^2 \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} u^5-u^4+u^3+2u^2+1 \\ -u^5+2u^4-3u^3-2 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u^5-2u^4+3u^3-u^2+1 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^5+6u^4-12u^3+3u^2-3u-12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6, c_9, c_{10}	$y^6 - 6y^5 + 25y^4 - 63y^3 + 92y^2 - 69y + 25$
c_3, c_4, c_7 c_8, c_{11}, c_{12}	$y^6 + y^5 + 5y^4 - 2y^2 - y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.284920 + 0.820791I$ $a = -1.00000$ $b = -0.284920 - 0.820791I$	-3.96484	$-8.68367 + 0.I$
$u = 0.284920 - 0.820791I$ $a = -1.00000$ $b = -0.284920 + 0.820791I$	-3.96484	$-8.68367 + 0.I$
$u = -0.747005 + 0.135499I$ $a = -1.00000$ $b = 0.747005 - 0.135499I$	$-4.59731 + 9.42707I$	$-1.65816 - 5.60826I$
$u = -0.747005 - 0.135499I$ $a = -1.00000$ $b = 0.747005 + 0.135499I$	$-4.59731 - 9.42707I$	$-1.65816 + 5.60826I$
$u = 0.96209 + 1.17164I$ $a = -1.00000$ $b = -0.96209 - 1.17164I$	$-4.59731 + 9.42707I$	$-1.65816 - 5.60826I$
$u = 0.96209 - 1.17164I$ $a = -1.00000$ $b = -0.96209 + 1.17164I$	$-4.59731 - 9.42707I$	$-1.65816 + 5.60826I$

VI. $I_6^u = \langle b+u,\ a+1,\ u^4-2u^3+2u^2-u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(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}	$(u^2 + u + 1)^2$
c_3, c_7, c_{11}	$u^4 + 2u^3 + 2u^2 + u + 1$
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_2, c_5 c_6, c_9, c_{10}	$(y^2 + y + 1)^2$
c_3, c_4, c_7 c_8, c_{11}, c_{12}	$y^4 + 2y^2 + 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.070696 + 0.758745I$ $a = -1.00000$ $b = \quad 0.070696 - 0.758745I$	$-1.74699 - 3.49426I$	$-4.15464 + 7.10504I$
$u = -0.070696 - 0.758745I$ $a = -1.00000$ $b = \quad 0.070696 + 0.758745I$	$-1.74699 + 3.49426I$	$-4.15464 - 7.10504I$
$u = \quad 1.070700 + 0.758745I$ $a = -1.00000$ $b = -1.070700 - 0.758745I$	$5.03685 + 8.68504I$	$7.15464 - 8.48342I$
$u = \quad 1.070700 - 0.758745I$ $a = -1.00000$ $b = -1.070700 + 0.758745I$	$5.03685 - 8.68504I$	$7.15464 + 8.48342I$

VII. $\boldsymbol{I^u_7 = \langle u^5 - u^4 + 3u^3 - au - 2u^2 + b + u,\ -u^4a + u^5 + \cdots - a - 3,\ u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^5 - 20u^3 - 8u^2 - 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.616765 + 0.580357I$ $a = 1.57092 + 0.24410I$ $b = 1.30393 + 0.83343I$	$2.18727 + 7.89459I$	$4.23219 - 13.00098I$
$u = 0.616765 + 0.580357I$ $a = -1.79571 + 0.33842I$ $b = -0.827224 - 1.062250I$	$2.18727 + 7.89459I$	$4.23219 - 13.00098I$
$u = 0.616765 - 0.580357I$ $a = 1.57092 - 0.24410I$ $b = 1.30393 - 0.83343I$	$2.18727 - 7.89459I$	$4.23219 + 13.00098I$
$u = 0.616765 - 0.580357I$ $a = -1.79571 - 0.33842I$ $b = -0.827224 + 1.062250I$	$2.18727 - 7.89459I$	$4.23219 + 13.00098I$
$u = -0.291649 + 0.757555I$ $a = -0.923318 - 0.267732I$ $b = -1.26214 - 1.01347I$	$-3.90376 - 2.86500I$	$-8.91554 + 9.10702I$
$u = -0.291649 + 0.757555I$ $a = 0.60651 - 1.89957I$ $b = -0.472106 + 0.621380I$	$-3.90376 - 2.86500I$	$-8.91554 + 9.10702I$
$u = -0.291649 - 0.757555I$ $a = -0.923318 + 0.267732I$ $b = -1.26214 + 1.01347I$	$-3.90376 + 2.86500I$	$-8.91554 - 9.10702I$
$u = -0.291649 - 0.757555I$ $a = 0.60651 + 1.89957I$ $b = -0.472106 - 0.621380I$	$-3.90376 + 2.86500I$	$-8.91554 - 9.10702I$
$u = 0.17488 + 1.44407I$ $a = -0.077332 - 0.438982I$ $b = -0.122069 + 0.573149I$	$-3.21831 - 0.69024I$	$2.68334 + 10.61298I$
$u = 0.17488 + 1.44407I$ $a = -0.381072 - 0.130681I$ $b = -0.620396 + 0.188443I$	$-3.21831 - 0.69024I$	$2.68334 + 10.61298I$

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.17488 - 1.44407I$ $a = -0.077332 + 0.438982I$ $b = -0.122069 - 0.573149I$	$-3.21831 + 0.69024I$	$2.68334 - 10.61298I$
$u = 0.17488 - 1.44407I$ $a = -0.381072 + 0.130681I$ $b = -0.620396 - 0.188443I$	$-3.21831 + 0.69024I$	$2.68334 - 10.61298I$

VIII. $I^u_8 = \langle -8u^{11} + 27u^{10} + \cdots + 2b + 14,\ -6u^{11} + 17u^{10} + \cdots + 2a - 11u,\ u^{12} - 4u^{11} + \cdots - 6u + 1\rangle$

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix} 3u^{11} - \frac{17}{2}u^{10} + \cdots - \frac{47}{2}u^2 + \frac{11}{2}u \\ 4u^{11} - \frac{27}{2}u^{10} + \cdots + \frac{61}{2}u - 7 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} \frac{3}{2}u^{11} - 4u^{10} + \cdots - 7u + \frac{7}{2} \\ \frac{5}{2}u^{11} - \frac{17}{2}u^{10} + \cdots + 23u - \frac{11}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{1}{2}u^{11} - \frac{9}{2}u^{10} + \cdots + 16u - 3 \\ -\frac{5}{2}u^{11} + \frac{19}{2}u^{10} + \cdots - \frac{41}{2}u + 5 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -4u^{11} + 16u^{10} + \cdots - 41u + \frac{19}{2} \\ -u^{11} + \frac{9}{2}u^{10} + \cdots - \frac{33}{2}u + 5 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^{11} + 5u^{10} + \cdots - 25u + 7 \\ 4u^{11} - \frac{27}{2}u^{10} + \cdots + \frac{61}{2}u - 7 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 6u^{11} - 24u^{10} + \cdots + 56u - 12 \\ -3u^{11} + 10u^{10} + \cdots - \frac{35}{2}u + 4 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 3u^{11} - 11u^{10} + \cdots + \frac{49}{2}u - 6 \\ 3u^{11} - 10u^{10} + \cdots + 21u - 4 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{15}{2}u^{11} - 28u^{10} + \cdots + 49u - \frac{17}{2} \\ -\frac{1}{2}u^{11} + \frac{3}{2}u^{10} + \cdots + \frac{9}{2}u - \frac{3}{2} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{3}{2}u^{11} + \frac{13}{2}u^{10} + \cdots - \frac{41}{2}u + \frac{9}{2} \\ -2u^{11} + 7u^{10} + \cdots - 16u + \frac{9}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -42u^{11} + 148u^{10} - 218u^9 + 46u^8 + 84u^7 + 300u^6 - 1216u^5 + 1720u^4 - 1468u^3 + 822u^2 - 320u + 70$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.472106 + 0.621380I$ $a = -0.05564 - 2.07346I$ $b = 0.291649 + 0.757555I$	$-3.90376 + 2.86500I$	$-8.91554 - 9.10702I$
$u = 0.472106 - 0.621380I$ $a = -0.05564 + 2.07346I$ $b = 0.291649 - 0.757555I$	$-3.90376 - 2.86500I$	$-8.91554 + 9.10702I$
$u = 0.827224 + 1.062250I$ $a = -1.083450 + 0.383784I$ $b = -0.616765 - 0.580357I$	$2.18727 + 7.89459I$	$4.23219 - 13.00098I$
$u = 0.827224 - 1.062250I$ $a = -1.083450 - 0.383784I$ $b = -0.616765 + 0.580357I$	$2.18727 - 7.89459I$	$4.23219 + 13.00098I$
$u = 0.620396 + 0.188443I$ $a = 0.437050 + 0.791090I$ $b = -0.17488 + 1.44407I$	$-3.21831 + 0.69024I$	$2.68334 - 10.61298I$
$u = 0.620396 - 0.188443I$ $a = 0.437050 - 0.791090I$ $b = -0.17488 - 1.44407I$	$-3.21831 - 0.69024I$	$2.68334 + 10.61298I$
$u = 0.122069 + 0.573149I$ $a = 0.535052 - 0.968480I$ $b = -0.17488 + 1.44407I$	$-3.21831 + 0.69024I$	$2.68334 - 10.61298I$
$u = 0.122069 - 0.573149I$ $a = 0.535052 + 0.968480I$ $b = -0.17488 - 1.44407I$	$-3.21831 - 0.69024I$	$2.68334 + 10.61298I$
$u = -1.30393 + 0.83343I$ $a = -0.820076 + 0.290489I$ $b = -0.616765 + 0.580357I$	$2.18727 - 7.89459I$	$4.23219 + 13.00098I$
$u = -1.30393 - 0.83343I$ $a = -0.820076 - 0.290489I$ $b = -0.616765 - 0.580357I$	$2.18727 + 7.89459I$	$4.23219 - 13.00098I$

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.26214 + 1.01347I$ $a = -0.012932 - 0.481939I$ $b = 0.291649 - 0.757555I$	$-3.90376 - 2.86500I$	$-8.91554 + 9.10702I$
$u = 1.26214 - 1.01347I$ $a = -0.012932 + 0.481939I$ $b = 0.291649 + 0.757555I$	$-3.90376 + 2.86500I$	$-8.91554 - 9.10702I$

IX. $I^u_9 =$
$\langle 7u^{11}-23u^{10}+\cdots+2b-6,\ 14u^{11}-48u^{10}+\cdots+2a-23,\ u^{12}-4u^{11}+\cdots-6u+1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-7u^{11}+24u^{10}+\cdots-\frac{115}{2}u+\frac{23}{2}\\ -\frac{7}{2}u^{11}+\frac{23}{2}u^{10}+\cdots-18u+3\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-6u^{11}+21u^{10}+\cdots-\frac{113}{2}u+\frac{25}{2}\\ -\frac{7}{2}u^{11}+\frac{21}{2}u^{10}+\cdots-13u+2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-3u^{11}+11u^{10}+\cdots-\frac{63}{2}u+10\\ -\frac{5}{2}u^{11}+\frac{19}{2}u^{10}+\cdots-\frac{41}{2}u+5\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-5u^{11}+\frac{37}{2}u^{10}+\cdots-\frac{105}{2}u+\frac{31}{2}\\ -u^{11}+\frac{9}{2}u^{10}+\cdots-\frac{33}{2}u+5\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-\frac{7}{2}u^{11}+\frac{25}{2}u^{10}+\cdots-\frac{79}{2}u+\frac{17}{2}\\ -\frac{7}{2}u^{11}+\frac{23}{2}u^{10}+\cdots-18u+3\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-\frac{3}{2}u^{11}+4u^{10}+\cdots-4u+\frac{5}{2}\\ u^{11}-\frac{5}{2}u^{10}+\cdots-5u+\frac{5}{2}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}\frac{7}{2}u^{11}-\frac{29}{2}u^{10}+\cdots+\frac{97}{2}u-12\\ 2u^{11}-7u^{10}+\cdots+\frac{23}{2}u-\frac{5}{2}\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-4u^{11}+\frac{23}{2}u^{10}+\cdots-15u+4\\ -\frac{3}{2}u^{11}+7u^{10}+\cdots-23u+5\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-\frac{7}{2}u^{11}+14u^{10}+\cdots-40u+12\\ \frac{1}{2}u^{11}-\frac{1}{2}u^{10}+\cdots-9u+\frac{7}{2}\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -42u^{11}+148u^{10}-218u^9+46u^8+84u^7+300u^6-1216u^5+1720u^4-1468u^3+822u^2-320u+70$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.472106 + 0.621380I$ $a = -0.999050 - 0.289692I$ $b = -1.26214 + 1.01347I$	$-3.90376 + 2.86500I$	$-8.91554 - 9.10702I$
$u = 0.472106 - 0.621380I$ $a = -0.999050 + 0.289692I$ $b = -1.26214 - 1.01347I$	$-3.90376 - 2.86500I$	$-8.91554 + 9.10702I$
$u = 0.827224 + 1.062250I$ $a = 0.621560 - 0.096583I$ $b = 1.30393 + 0.83343I$	$2.18727 + 7.89459I$	$4.23219 - 13.00098I$
$u = 0.827224 - 1.062250I$ $a = 0.621560 + 0.096583I$ $b = 1.30393 - 0.83343I$	$2.18727 - 7.89459I$	$4.23219 + 13.00098I$
$u = 0.620396 + 0.188443I$ $a = -0.38922 - 2.20943I$ $b = -0.122069 - 0.573149I$	$-3.21831 + 0.69024I$	$2.68334 - 10.61298I$
$u = 0.620396 - 0.188443I$ $a = -0.38922 + 2.20943I$ $b = -0.122069 + 0.573149I$	$-3.21831 - 0.69024I$	$2.68334 + 10.61298I$
$u = 0.122069 + 0.573149I$ $a = -2.34804 - 0.80521I$ $b = -0.620396 - 0.188443I$	$-3.21831 + 0.69024I$	$2.68334 - 10.61298I$
$u = 0.122069 - 0.573149I$ $a = -2.34804 + 0.80521I$ $b = -0.620396 + 0.188443I$	$-3.21831 - 0.69024I$	$2.68334 + 10.61298I$
$u = -1.30393 + 0.83343I$ $a = -0.537783 + 0.101351I$ $b = -0.827224 + 1.062250I$	$2.18727 - 7.89459I$	$4.23219 + 13.00098I$
$u = -1.30393 - 0.83343I$ $a = -0.537783 - 0.101351I$ $b = -0.827224 - 1.062250I$	$2.18727 + 7.89459I$	$4.23219 - 13.00098I$

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.26214 + 1.01347I$ $a = 0.152534 + 0.477734I$ $b = -0.472106 + 0.621380I$	$-3.90376 - 2.86500I$	$-8.91554 + 9.10702I$
$u = 1.26214 - 1.01347I$ $a = 0.152534 - 0.477734I$ $b = -0.472106 - 0.621380I$	$-3.90376 + 2.86500I$	$-8.91554 - 9.10702I$

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

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix} 2 \\ 2u \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -4u \\ -3u + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 4u - 5 \\ -3u - \frac{1}{2} \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 2u - 2 \\ -u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 4u \\ 3u - \frac{5}{2} \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -9u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9 c_{10}	$(y-1)^2$
c_2, c_5	$4(4y^2+16y+25)$
c_3, c_4	$4(4y^2+1)$
c_7, c_8, c_{11} 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
$u =$	$0.500000 + 0.500000I$		
$a =$	2.00000	$1.64493 + 7.32772I$	$-4.50000 - 4.50000I$
$b =$	$1.00000 + 1.00000I$		
$u =$	$0.500000 - 0.500000I$		
$a =$	2.00000	$1.64493 - 7.32772I$	$-4.50000 + 4.50000I$
$b =$	$1.00000 - 1.00000I$		

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

(i) Arc colorings

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

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

$$a_1 = \begin{pmatrix} 0.5 \\ -u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -0.5 \\ u + 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{4}u \\ -1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{4}u + 1 \\ 1 \end{pmatrix}$$

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

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

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

$$a_3 = \begin{pmatrix} u \\ 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{5}{4}u - 1 \\ u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{9}{2}u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_{10}	$(y-1)^2$
c_3, c_4, c_{11} c_{12}	y^2+4
c_6, c_9	$4(4y^2+16y+25)$
c_7, c_8	$4(4y^2+1)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{11}^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000 + 1.00000I$ $a = \quad 0.500000$ $b = \quad 1.00000 - 1.00000I$	$1.64493 - 7.32772I$	$-4.50000 + 4.50000I$
$u = -1.00000 - 1.00000I$ $a = \quad 0.500000$ $b = \quad 1.00000 + 1.00000I$	$1.64493 + 7.32772I$	$-4.50000 - 4.50000I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{9}{2}u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$4(4y^2 + 16y + 25)$
c_2, c_5, c_6 c_9	$(y-1)^2$
c_3, c_4, c_7 c_8	$y^2 + 4$
c_{11}, c_{12}	$4(4y^2 + 1)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{12}^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000 + 1.00000I$ $a = -1.00000$ $b = -0.500000 + 0.500000I$	$1.64493 - 7.32772I$	$-4.50000 + 4.50000I$
$u = -1.00000 - 1.00000I$ $a = -1.00000$ $b = -0.500000 - 0.500000I$	$1.64493 + 7.32772I$	$-4.50000 - 4.50000I$

XIII. $I^u_{13} = \langle b + u,\ a - 1,\ u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3u^5 + 6u^4 + 6u^3 + 3u^2 + 3u + 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{13}	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.917045 + 0.592379I$ $a = \quad 1.00000$ $b = \quad 0.917045 - 0.592379I$	$2.21137 - 1.58317I$	$4.72185 + 1.10697I$
$u = -0.917045 - 0.592379I$ $a = \quad 1.00000$ $b = \quad 0.917045 + 0.592379I$	$2.21137 + 1.58317I$	$4.72185 - 1.10697I$
$u = \quad 0.258209 + 0.569162I$ $a = \quad 1.00000$ $b = -0.258209 - 0.569162I$	$2.21137 - 1.58317I$	$4.72185 + 1.10697I$
$u = \quad 0.258209 - 0.569162I$ $a = \quad 1.00000$ $b = -0.258209 + 0.569162I$	$2.21137 + 1.58317I$	$4.72185 - 1.10697I$
$u = -0.84116 + 1.20014I$ $a = \quad 1.00000$ $b = \quad 0.84116 - 1.20014I$	-7.71260	$-3.44370 + 0.I$
$u = -0.84116 - 1.20014I$ $a = \quad 1.00000$ $b = \quad 0.84116 + 1.20014I$	-7.71260	$-3.44370 + 0.I$

XIV. $\boldsymbol{I^u_{14} = \langle -u^4 + 3u^3 - au - 4u^2 + b + u,\ -u^5 + 2u^4 + \cdots - a - 4,\ u^6 - 3u^5 + 5u^4 - 4u^3 + 4u^2 - u + 1 \rangle}$

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} -u^4 + u^2a + 3u^3 - au - 4u^2 + a + u \\ u^4a - u^3a + 2u^4 - 6u^3 + au + 8u^2 - 2u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^4a - u^5 - 3u^3a + 4u^4 + 4u^2a - 8u^3 - au + 8u^2 - 5u + 1 \\ u^5 - 3u^4 + 4u^3 - u^2 + u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2u^5a - 3u^5 + \cdots - 2a + 1 \\ 2u^2 - u + 2 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 2u^4a - 6u^3a + 2u^4 + 8u^2a - 6u^3 - 2au + 8u^2 + a - 2u \\ -u^4a - 2u^5 + 3u^3a + 5u^4 - 4u^2a - 6u^3 + au + u^2 - a - 2u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^5a - 2u^4a + 2u^5 + u^3a - 4u^4 + 3u^2a + 3u^3 - au + 4u^2 + 2a - u + 3 \\ -u^5a + 2u^4a - 2u^5 - u^3a + 6u^4 - u^2a - 8u^3 + 3u^2 - a - 3u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^5a - 3u^4a + 2u^5 + 4u^3a - 6u^4 - u^2a + 8u^3 + au - 3u^2 - a + 2u - 1 \\ -u^5a + 3u^4a - 2u^5 - 3u^3a + 7u^4 - 11u^3 - au + 7u^2 - 3u + 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^5a - 2u^5 + \cdots - a - 1 \\ -u^4a + u^3a - 2u^2a + u^2 - a - 2u + 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6, c_9, c_{10}	$(y^6 - 7y^5 + 45y^4 - 112y^3 + 130y^2 - 57y + 9)^2$
c_3, c_4, c_7 c_8, c_{11}, c_{12}	$(y^6 + y^5 + 9y^4 + 20y^3 + 18y^2 + 7y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{14}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.211259 + 0.877801I$ $a = -0.689616 - 0.078152I$ $b = -1.36583 + 1.12197I$	-4.93480	-18.0000
$u = 0.211259 + 0.877801I$ $a = -0.85421 - 1.76155I$ $b = 0.077086 + 0.621856I$	-4.93480	-18.0000
$u = 0.211259 - 0.877801I$ $a = -0.689616 + 0.078152I$ $b = -1.36583 - 1.12197I$	-4.93480	-18.0000
$u = 0.211259 - 0.877801I$ $a = -0.85421 + 1.76155I$ $b = 0.077086 - 0.621856I$	-4.93480	-18.0000
$u = -0.077086 + 0.621856I$ $a = -1.43169 - 0.16225I$ $b = -1.36583 - 1.12197I$	-4.93480	-18.0000
$u = -0.077086 + 0.621856I$ $a = 1.50878 - 2.38340I$ $b = -0.211259 + 0.877801I$	-4.93480	-18.0000
$u = -0.077086 - 0.621856I$ $a = -1.43169 + 0.16225I$ $b = -1.36583 + 1.12197I$	-4.93480	-18.0000
$u = -0.077086 - 0.621856I$ $a = 1.50878 + 2.38340I$ $b = -0.211259 - 0.877801I$	-4.93480	-18.0000
$u = 1.36583 + 1.12197I$ $a = -0.222873 - 0.459607I$ $b = 0.077086 - 0.621856I$	-4.93480	-18.0000
$u = 1.36583 + 1.12197I$ $a = 0.189616 + 0.299534I$ $b = -0.211259 + 0.877801I$	-4.93480	-18.0000

Solutions to I^u_{14}	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.36583 - 1.12197I$ $a = -0.222873 + 0.459607I$ $b = 0.077086 + 0.621856I$	-4.93480	-18.0000
$u = 1.36583 - 1.12197I$ $a = 0.189616 - 0.299534I$ $b = -0.211259 - 0.877801I$	-4.93480	-18.0000

XV. $\boldsymbol{I^u_{15} = \langle b + u,\ -u^3 - u^2 + a - 1,\ u^4 + u^3 + u^2 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{15}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.309017 + 0.951057I$ $a = -0.618034$ $b = -0.309017 - 0.951057I$	-3.94784	$-8.32624 + 0.I$
$u = \ \ 0.309017 - 0.951057I$ $a = -0.618034$ $b = -0.309017 + 0.951057I$	-3.94784	$-8.32624 + 0.I$
$u = -0.809017 + 0.587785I$ $a = \ \ 1.61803$ $b = \ \ 0.809017 - 0.587785I$	3.94784	$7.32624 + 0.I$
$u = -0.809017 - 0.587785I$ $a = \ \ 1.61803$ $b = \ \ 0.809017 + 0.587785I$	3.94784	$7.32624 + 0.I$

XVI. $\boldsymbol{I^u_{16} = \langle u^2 + b + 1,\ a + 1,\ u^4 + u^3 + u^2 + u + 1 \rangle}$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{16}	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.309017 + 0.951057I$ $a = -1.00000$ $b = -0.190983 - 0.587785I$	-3.94784	$-8.32624 + 0.I$
$u = 0.309017 - 0.951057I$ $a = -1.00000$ $b = -0.190983 + 0.587785I$	-3.94784	$-8.32624 + 0.I$
$u = -0.809017 + 0.587785I$ $a = -1.00000$ $b = -1.30902 + 0.95106I$	3.94784	$7.32624 + 0.I$
$u = -0.809017 - 0.587785I$ $a = -1.00000$ $b = -1.30902 - 0.95106I$	3.94784	$7.32624 + 0.I$

XVII.

$$\boldsymbol{I^u_{17} = \langle u^3 - 3u^2 + b + 3u - 1,\ u^3 - 2u^2 + a + u + 1,\ u^4 - 3u^3 + 4u^2 - 2u + 1\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^3 + 14u^2 - 7u - 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{17}	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.190983 + 0.587785I$ $a = -1.61803$ $b = -0.309017 - 0.951057I$	-3.94784	$-8.32624 + 0.I$
$u = 0.190983 - 0.587785I$ $a = -1.61803$ $b = -0.309017 + 0.951057I$	-3.94784	$-8.32624 + 0.I$
$u = 1.30902 + 0.95106I$ $a = 0.618034$ $b = 0.809017 + 0.587785I$	3.94784	$7.32624 + 0.I$
$u = 1.30902 - 0.95106I$ $a = 0.618034$ $b = 0.809017 - 0.587785I$	3.94784	$7.32624 + 0.I$

XVIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_9	$4(u-1)^4(u+1)^4(u^2-u+1)^2(2u^2-2u+5)(u^4-2u^3+\cdots+4u-1)$ $\cdot\,(u^4-u^3+u^2-u+1)^2(u^6-4u^5+7u^4-7u^3+6u^2-3u+1)$ $\cdot\,(u^6-2u^5-u^4+7u^3-2u^2-7u+5)$ $\cdot\,(u^6+3u^5+7u^4+10u^3+10u^2+7u+3)^2$ $\cdot\,((u^6+5u^5+\cdots-3u+3)^2)(u^{12}+4u^{11}+\cdots+4u+1)^2$ $\cdot\,((u^{18}+5u^{17}+\cdots+29u+11)^2)(2u^{18}-42u^{17}+\cdots-32768u+4096)$
c_2, c_6, c_{10}	$4(u-1)^4(u+1)^4(u^2+u+1)^2(2u^2+2u+5)(u^4-2u^3+\cdots+4u-1)$ $\cdot\,(u^4+u^3+u^2+u+1)^2(u^6-4u^5+7u^4-7u^3+6u^2-3u+1)$ $\cdot\,(u^6+2u^5-u^4-7u^3-2u^2+7u+5)$ $\cdot\,(u^6+3u^5+7u^4+10u^3+10u^2+7u+3)^2$ $\cdot\,((u^6+5u^5+\cdots-3u+3)^2)(u^{12}+4u^{11}+\cdots+4u+1)^2$ $\cdot\,((u^{18}+5u^{17}+\cdots+29u+11)^2)(2u^{18}-42u^{17}+\cdots-32768u+4096)$
c_3, c_7, c_{11}	$4(u^2-2u+2)^2(2u^2+2u+1)(u^4-2u^3+2u^2+u-1)$ $\cdot\,((u^4-u^3+u^2-u+1)^2)(u^4+2u^3+2u^2+u+1)(u^4+3u^3+\cdots+2u+1)$ $\cdot\,(u^6-3u^5+5u^4-4u^3+2u^2-u+1)(u^6+u^5+u^4-2u^3-u+1)$ $\cdot\,(u^6+u^5+3u^4+2u^3+2u^2+u+1)^2$ $\cdot\,((u^6+3u^5+5u^4+4u^3+4u^2+u+1)^2)(u^{12}+4u^{11}+\cdots+6u+1)^2$ $\cdot\,((u^{18}+5u^{17}+\cdots+6u+2)^2)(2u^{18}-36u^{17}+\cdots-288u+64)$
c_4, c_8, c_{12}	$4(u^2+2u+2)^2(2u^2-2u+1)(u^4-3u^3+4u^2-2u+1)$ $\cdot\,(u^4-2u^3+2u^2-u+1)(u^4-2u^3+2u^2+u-1)(u^4+u^3+u^2+u+1)^2$ $\cdot\,(u^6-3u^5+5u^4-4u^3+2u^2-u+1)(u^6-u^5+u^4+2u^3+u+1)$ $\cdot\,(u^6+u^5+3u^4+2u^3+2u^2+u+1)^2$ $\cdot\,((u^6+3u^5+5u^4+4u^3+4u^2+u+1)^2)(u^{12}+4u^{11}+\cdots+6u+1)^2$ $\cdot\,((u^{18}+5u^{17}+\cdots+6u+2)^2)(2u^{18}-36u^{17}+\cdots-288u+64)$

XIX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
	$16(y-1)^8(y^2+y+1)^2(4y^2+16y+25)(y^4-2y^3+\cdots-18y+1)$
	$\cdot\,(y^4+y^3+y^2+y+1)^2$
c_1, c_2, c_5	$\cdot\,(y^6-7y^5+45y^4-112y^3+130y^2-57y+9)^2$
c_6, c_9, c_{10}	$\cdot\,(y^6-6y^5+25y^4-63y^3+92y^2-69y+25)$
	$\cdot\,(y^6-2y^5+5y^4+13y^3+8y^2+3y+1)$
	$\cdot\,(y^6+5y^5+9y^4+4y^3+2y^2+11y+9)^2$
	$\cdot\,((y^{12}-10y^{11}+\cdots-14y+1)^2)(y^{18}-7y^{17}+\cdots-1171y+121)^2$
	$\cdot\,(4y^{18}-48y^{17}+\cdots+5242880y^2+16777216)$
	$16(y^2+4)^2(4y^2+1)(y^4+2y^2+3y+1)(y^4+6y^2-5y+1)$
c_3, c_4, c_7	$\cdot\,(y^4-y^3+6y^2+4y+1)(y^4+y^3+y^2+y+1)^2$
c_8, c_{11}, c_{12}	$\cdot\,(y^6+y^5+5y^4-2y^2-y+1)(y^6+y^5+5y^4+6y^2+3y+1)$
	$\cdot\,(y^6+y^5+9y^4+20y^3+18y^2+7y+1)^2$
	$\cdot\,((y^6+5y^5+\cdots+3y+1)^2)(y^{12}-2y^{11}+\cdots+2y+1)^2$
	$\cdot\,((y^{18}+3y^{17}+\cdots+16y+4)^2)(4y^{18}-36y^{17}+\cdots-50176y+4096)$