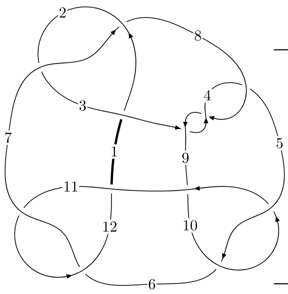
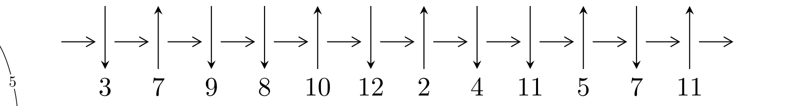
$12n_{0556}$ ($K12n_{0556}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & u^7+u^6+2u^5+3u^4-2u^3+6u^2+4d-u+2,\ -u^7-u^6-4u^5+u^4-2u^3+8u^2+4c-u, \\
& -u^7+u^6-6u^5+5u^4-12u^3+8u^2+4b-5u+2,\ u^7-u^6+4u^5-5u^4+4u^3-6u^2+4a-u, \\
& u^8+5u^6-3u^5+7u^4-8u^3+5u^2-u+2\rangle \\
I^u_2 = \langle & u^5-u^4+u^3-u^2+2d-2u-2,\ u^5+u^4+3u^3+u^2+4c+4u,\ -u^5-u^4-3u^3-3u^2+2b-2u-2, \\
& u^5+u^4-u^3+u^2+4a-4u-4,\ u^6+u^5+3u^4+5u^3+4u^2+4u+4\rangle \\
I^u_3 = \langle & au+d,\ -u^2a+3u^2+2c-a-2u+9,\ -u^2a+u^2+2b-a+3,\ -2u^2a+a^2+au+4u^2-5a-3u+10, \\
& u^3-u^2+3u-1\rangle \\
I^u_4 = \langle & d,\ c-1,\ b-u,\ a,\ u^4+u^3+3u^2+2u+1\rangle \\
I^u_5 = \langle & d,\ c-1,\ -u^3-u^2+b-2u-1,\ u^2+a+1,\ u^4+u^3+3u^2+2u+1\rangle \\
I^u_6 = \langle & d,\ c-1,\ u^3+u^2+b+3u+1,\ 3u^3+u^2+a+7u+2,\ u^4+u^3+3u^2+2u+1\rangle \\
I^u_7 = \langle & -u^3+d-u,\ c-u,\ b-u,\ a,\ u^4+u^3+u^2+1\rangle \\
I^u_8 = \langle & -u^3+d-u,\ c-u,\ -u^3-u^2+b-2u-1,\ u^2+a+1,\ u^4+u^3+3u^2+2u+1\rangle \\
I^u_9 = \langle & -u^3+d-u,\ c-u,\ -u^3+u^2+b-u+1,\ u^3-2u^2+2a-u+1,\ u^4-2u^3+3u^2-3u+2\rangle \\
I^u_{10} = \langle & 2u^3+d+4u-1,\ -2u^3-2u^2+c-5u-3,\ -u^3-u^2+b-2u-1,\ u^2+a+1,\ u^4+u^3+3u^2+2u+1\rangle
\end{aligned}$$

[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`).

$$
\begin{aligned}
I^u_{11} &= \langle 2u^3 - 2u^2 + d + 2u - 1,\ u^3 + 2c + u + 1,\ b - u,\ a,\ u^4 - 2u^3 + 3u^2 - 3u + 2\rangle \\
I^u_{12} &= \langle d - 1,\ c - u,\ b,\ a - u,\ u^2 + 1\rangle \\
I^u_{13} &= \langle d - u,\ c,\ b - u,\ a + 1,\ u^2 + 1\rangle \\
I^u_{14} &= \langle d + 1,\ c - u,\ b - u,\ a - 1,\ u^2 + 1\rangle \\
I^u_{15} &= \langle da + u + 1,\ c - u,\ b - u,\ u^2 + 1\rangle
\end{aligned}
$$

$$
I^v_1 = \langle a,\ d + v,\ c + a - 1,\ b - v,\ v^2 + 1\rangle
$$

* 15 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 60 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. $\boldsymbol{I_1^u = \langle u^7 + u^6 + \cdots + 4d + 2,\ -u^7 - u^6 + \cdots + 4c - u,\ -u^7 + u^6 + \cdots + 4b + 2,\ u^7 - u^6 + \cdots + 4a - u,\ u^8 + 5u^6 + \cdots - u + 2\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} -\frac{1}{4}u^7 + \frac{1}{4}u^6 + \cdots + \frac{3}{2}u^2 + \frac{1}{4}u \\ \frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots + \frac{5}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^5 + u^3 - \frac{1}{2}u^2 - \frac{1}{2}u + \frac{1}{2} \\ \frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots + \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots - \frac{3}{2}u^2 - \frac{1}{4}u \\ \frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots + \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} \frac{1}{4}u^7 + \frac{1}{4}u^6 + \cdots - 2u^2 + \frac{1}{4}u \\ -\frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots + \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots - u^2 - \frac{1}{4}u \\ -\frac{1}{2}u^6 - 2u^4 + \cdots - \frac{1}{2}u^2 + \frac{3}{2}u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - \frac{1}{2}u^2 + \frac{1}{2} \\ -\frac{1}{2}u^7 - u^5 + \cdots - \frac{3}{2}u^2 - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{4}u^7 - \frac{3}{4}u^6 + \cdots + \frac{5}{4}u - 1 \\ \frac{1}{4}u^7 + \frac{5}{4}u^6 + \cdots - \frac{1}{4}u + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^7 + u^6 - 2u^5 + 9u^4 + 12u^2 - 9u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9	$u^8 + 2u^7 + 7u^6 + 7u^5 + 23u^4 + 28u^3 + 37u^2 + 19u + 4$
c_2, c_5, c_7 c_{10}	$u^8 + u^6 - 3u^5 + 3u^4 + 5u^2 - u + 2$
c_3, c_4, c_6 c_8, c_{11}	$u^8 + 5u^6 - 3u^5 + 7u^4 - 8u^3 + 5u^2 - u + 2$
c_{12}	$u^8 - 10u^7 + 39u^6 - 71u^5 + 55u^4 - 20u^3 + 37u^2 - 19u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9	$y^8 + 10y^7 + 67y^6 + 235y^5 + 587y^4 + 708y^3 + 489y^2 - 65y + 16$
c_2, c_5, c_7 c_{10}	$y^8 + 2y^7 + 7y^6 + 7y^5 + 23y^4 + 28y^3 + 37y^2 + 19y + 4$
c_3, c_4, c_6 c_8, c_{11}	$y^8 + 10y^7 + 39y^6 + 71y^5 + 55y^4 + 20y^3 + 37y^2 + 19y + 4$
c_{12}	$y^8 - 22y^7 + \cdots - 65y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.758942 + 0.438317I$ $a = 0.817358 + 0.864251I$ $b = -0.595440 + 0.936067I$ $c = -1.151560 - 0.803744I$ $d = -0.241512 - 1.014180I$	$-1.16700 - 5.71173I$	$-4.09501 + 8.31811I$
$u = 0.758942 - 0.438317I$ $a = 0.817358 - 0.864251I$ $b = -0.595440 - 0.936067I$ $c = -1.151560 + 0.803744I$ $d = -0.241512 + 1.014180I$	$-1.16700 + 5.71173I$	$-4.09501 - 8.31811I$
$u = -0.179745 + 0.559373I$ $a = -0.512845 + 0.085661I$ $b = 0.174356 + 0.612892I$ $c = 0.526077 + 0.448139I$ $d = -0.044265 + 0.302269I$	$-0.095264 + 1.253510I$	$-1.27264 - 6.48719I$
$u = -0.179745 - 0.559373I$ $a = -0.512845 - 0.085661I$ $b = 0.174356 - 0.612892I$ $c = 0.526077 - 0.448139I$ $d = -0.044265 - 0.302269I$	$-0.095264 - 1.253510I$	$-1.27264 + 6.48719I$
$u = -0.41760 + 1.54917I$ $a = 1.46083 - 0.22749I$ $b = -0.75243 - 1.27936I$ $c = 1.332250 + 0.331963I$ $d = 0.25762 - 2.35809I$	$11.6096 + 14.8655I$	$0.93475 - 7.40876I$
$u = -0.41760 - 1.54917I$ $a = 1.46083 + 0.22749I$ $b = -0.75243 + 1.27936I$ $c = 1.332250 - 0.331963I$ $d = 0.25762 + 2.35809I$	$11.6096 - 14.8655I$	$0.93475 + 7.40876I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.16160 + 1.70407I$ $a = -1.015350 + 0.406227I$ $b = 1.173510 - 0.663027I$ $c = -0.956761 - 0.459439I$ $d = 0.52816 + 1.79586I$	$15.9716 + 0.6364I$	$4.43290 + 0.86524I$
$u = -0.16160 - 1.70407I$ $a = -1.015350 - 0.406227I$ $b = 1.173510 + 0.663027I$ $c = -0.956761 + 0.459439I$ $d = 0.52816 - 1.79586I$	$15.9716 - 0.6364I$	$4.43290 - 0.86524I$

II. $\boldsymbol{I_2^u = \langle u^5 - u^4 + \cdots + 2d - 2,\ u^5 + u^4 + \cdots + 4c + 4u,\ -u^5 - u^4 + \cdots + 2b - 2,\ u^5 + u^4 + \cdots + 4a - 4,\ u^6 + u^5 + \cdots + 4u + 4\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -3u^5 - 3u^4 - 9u^3 - 9u^2 - 6u - 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9	$(u^3 + u^2 + 3u - 1)^2$
c_2, c_5, c_7 c_{10}	$(u^3 - u^2 + u + 1)^2$
c_3, c_4, c_6 c_8, c_{11}	$u^6 + u^5 + 3u^4 + 5u^3 + 4u^2 + 4u + 4$
c_{12}	$u^6 - 5u^5 + 7u^4 + u^3 - 16u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9	$(y^3 + 5y^2 + 11y - 1)^2$
c_2, c_5, c_7 c_{10}	$(y^3 + y^2 + 3y - 1)^2$
c_3, c_4, c_6 c_8, c_{11}	$y^6 + 5y^5 + 7y^4 - y^3 + 16y + 16$
c_{12}	$y^6 - 11y^5 + 59y^4 - 129y^3 + 256y^2 - 256y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.047560 + 0.418092I$ $a = -0.596209 + 0.934931I$ $b = 0.771845 + 1.115140I$ $c = 1.09915 - 1.20459I$ $d = 0.46183 - 2.34381I$	$5.31927 + 9.53188I$	$-0.63107 - 6.69086I$
$u = -1.047560 - 0.418092I$ $a = -0.596209 - 0.934931I$ $b = 0.771845 - 1.115140I$ $c = 1.09915 + 1.20459I$ $d = 0.46183 + 2.34381I$	$5.31927 - 9.53188I$	$-0.63107 + 6.69086I$
$u = 0.271845 + 1.105310I$ $a = 0.629465 + 0.853123I$ $b = -0.543689$ $c = 0.062023 - 0.252181I$ $d = 0.771845 + 0.927668I$	4.16586	$7.26213 + 0.I$
$u = 0.271845 - 1.105310I$ $a = 0.629465 - 0.853123I$ $b = -0.543689$ $c = 0.062023 + 0.252181I$ $d = 0.771845 - 0.927668I$	4.16586	$7.26213 + 0.I$
$u = 0.27572 + 1.53323I$ $a = -1.53326 + 0.02549I$ $b = 0.771845 - 1.115140I$ $c = -1.161170 + 0.213694I$ $d = -0.233679 - 1.228670I$	$5.31927 - 9.53188I$	$-0.63107 + 6.69086I$
$u = 0.27572 - 1.53323I$ $a = -1.53326 - 0.02549I$ $b = 0.771845 + 1.115140I$ $c = -1.161170 - 0.213694I$ $d = -0.233679 + 1.228670I$	$5.31927 + 9.53188I$	$-0.63107 - 6.69086I$

III. $\boldsymbol{I^u_3 = \langle au + d,\ -u^2a + 3u^2 + \cdots - a + 9,\ -u^2a + u^2 + 2b - a + 3,\ -2u^2a + 4u^2 + \cdots - 5a + 10,\ u^3 - u^2 + 3u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6u^2 + 6u - 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9	$u^6 + u^5 + 3u^4 - u^3 + 16u + 16$
c_2, c_5, c_7 c_{10}	$u^6 + u^5 + u^4 + 3u^3 + 4u^2 + 4u + 4$
c_3, c_4, c_6 c_8, c_{11}	$(u^3 - u^2 + 3u - 1)^2$
c_{12}	$(u^3 - 5u^2 + 7u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9	$y^6 + 5y^5 + 11y^4 - y^3 + 128y^2 - 256y + 256$
c_2, c_5, c_7 c_{10}	$y^6 + y^5 + 3y^4 - y^3 + 16y + 16$
c_3, c_4, c_6 c_8, c_{11}	$(y^3 + 5y^2 + 7y - 1)^2$
c_{12}	$(y^3 - 11y^2 + 59y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.361103$ $a = 2.44984 + 1.85379I$ $b = -0.180552 + 1.047760I$ $c = -2.94984 + 1.04776I$ $d = -0.884646 - 0.669409I$	-3.88548	-12.6160
$u = 0.361103$ $a = 2.44984 - 1.85379I$ $b = -0.180552 - 1.047760I$ $c = -2.94984 - 1.04776I$ $d = -0.884646 + 0.669409I$	-3.88548	-12.6160
$u = 0.31945 + 1.63317I$ $a = 0.912386 + 0.501068I$ $b = -1.192850 - 0.437845I$ $c = -1.308200 + 0.151898I$ $d = 0.52687 - 1.65015I$	$14.2797 - 7.9406I$	$3.30788 + 3.53846I$
$u = 0.31945 + 1.63317I$ $a = -1.362230 - 0.047383I$ $b = 0.87340 - 1.19533I$ $c = 0.758045 - 0.605583I$ $d = 0.35778 + 2.23989I$	$14.2797 - 7.9406I$	$3.30788 + 3.53846I$
$u = 0.31945 - 1.63317I$ $a = 0.912386 - 0.501068I$ $b = -1.192850 + 0.437845I$ $c = -1.308200 - 0.151898I$ $d = 0.52687 + 1.65015I$	$14.2797 + 7.9406I$	$3.30788 - 3.53846I$
$u = 0.31945 - 1.63317I$ $a = -1.362230 + 0.047383I$ $b = 0.87340 + 1.19533I$ $c = 0.758045 + 0.605583I$ $d = 0.35778 - 2.23989I$	$14.2797 + 7.9406I$	$3.30788 - 3.53846I$

IV. $I^u_4 = \langle d,\ c-1,\ b-u,\ a,\ u^4+u^3+3u^2+2u+1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

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

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{12}	$y^4 - 11y^3 + 31y^2 + 10y + 1$
c_2, c_3, c_4 c_6, c_7, c_8 c_9, c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_5, c_{10}	$y^4 + y^3 + 3y^2 + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 0$ $b = -0.395123 + 0.506844I$ $c = 1.00000$ $d = 0$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 - 0.506844I$ $a = 0$ $b = -0.395123 - 0.506844I$ $c = 1.00000$ $d = 0$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.10488 + 1.55249I$ $a = 0$ $b = -0.10488 + 1.55249I$ $c = 1.00000$ $d = 0$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 - 1.55249I$ $a = 0$ $b = -0.10488 - 1.55249I$ $c = 1.00000$ $d = 0$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = -0.899232 + 0.400532I$ $b = 0.351808 + 0.720342I$ $c = 1.00000$ $d = 0$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 - 0.506844I$ $a = -0.899232 - 0.400532I$ $b = 0.351808 - 0.720342I$ $c = 1.00000$ $d = 0$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.10488 + 1.55249I$ $a = 1.39923 + 0.32564I$ $b = -0.851808 - 0.911292I$ $c = 1.00000$ $d = 0$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 - 1.55249I$ $a = 1.39923 - 0.32564I$ $b = -0.851808 + 0.911292I$ $c = 1.00000$ $d = 0$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$

VI.
$$\boldsymbol{I_6^u = \langle d,\ c-1,\ u^3+u^2+b+3u+1,\ 3u^3+u^2+a+7u+2,\ u^4+u^3+3u^2+2u+1\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 0.13816 - 3.46893I$ $b = 0.043315 - 1.227190I$ $c = 1.00000$ $d = 0$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 - 0.506844I$ $a = 0.13816 + 3.46893I$ $b = 0.043315 + 1.227190I$ $c = 1.00000$ $d = 0$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.10488 + 1.55249I$ $a = -1.138160 + 0.530104I$ $b = 0.956685 - 0.641200I$ $c = 1.00000$ $d = 0$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 - 1.55249I$ $a = -1.138160 - 0.530104I$ $b = 0.956685 + 0.641200I$ $c = 1.00000$ $d = 0$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$

VII. $\boldsymbol{I_7^u = \langle -u^3 + d - u,\ c - u,\ b - u,\ a,\ u^4 + u^3 + u^2 + 1 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9 c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_3, c_4 c_5, c_7, c_8 c_{10}	$y^4 + y^3 + 3y^2 + 2y + 1$
c_{12}	$y^4 - 11y^3 + 31y^2 + 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.351808 + 0.720342I$ $a = 0$ $b = 0.351808 + 0.720342I$ $c = 0.351808 + 0.720342I$ $d = -0.152300 + 0.614030I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = 0.351808 - 0.720342I$ $a = 0$ $b = 0.351808 - 0.720342I$ $c = 0.351808 - 0.720342I$ $d = -0.152300 - 0.614030I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.851808 + 0.911292I$ $a = 0$ $b = -0.851808 + 0.911292I$ $c = -0.851808 + 0.911292I$ $d = 0.65230 + 2.13814I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$
$u = -0.851808 - 0.911292I$ $a = 0$ $b = -0.851808 - 0.911292I$ $c = -0.851808 - 0.911292I$ $d = 0.65230 - 2.13814I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$

VIII.

$\boldsymbol{I_8^u = \langle -u^3+d-u,\ c-u,\ -u^3-u^2+b-2u-1,\ u^2+a+1,\ u^4+u^3+3u^2+2u+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_5, c_6, c_8 c_{10}, c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_7	$y^4 + y^3 + 3y^2 + 2y + 1$
c_9, c_{12}	$y^4 - 11y^3 + 31y^2 + 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.395123+0.506844I$		
$a=-0.899232+0.400532I$		
$b=\ \ 0.351808+0.720342I$	$-0.21101+1.41510I$	$-1.82674-4.90874I$
$c=-0.395123+0.506844I$		
$d=-0.152300+0.614030I$		
$u=-0.395123-0.506844I$		
$a=-0.899232-0.400532I$		
$b=\ \ 0.351808-0.720342I$	$-0.21101-1.41510I$	$-1.82674+4.90874I$
$c=-0.395123-0.506844I$		
$d=-0.152300-0.614030I$		
$u=-0.10488+1.55249I$		
$a=\ \ 1.39923+0.32564I$		
$b=-0.851808-0.911292I$	$6.79074+3.16396I$	$1.82674-2.56480I$
$c=-0.10488+1.55249I$		
$d=\ \ 0.65230-2.13814I$		
$u=-0.10488-1.55249I$		
$a=\ \ 1.39923-0.32564I$		
$b=-0.851808+0.911292I$	$6.79074-3.16396I$	$1.82674+2.56480I$
$c=-0.10488-1.55249I$		
$d=\ \ 0.65230+2.13814I$		

IX. $\boldsymbol{I_9^u = \langle -u^3 + d - u,\ c - u,\ -u^3 + u^2 + b - u + 1,\ u^3 - 2u^2 + 2a - u + 1,\ u^4 - 2u^3 + 3u^2 - 3u + 2\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_7	$y^4 + y^3 + 3y^2 + 2y + 1$
c_3, c_4, c_5 c_8, c_{10}	$y^4 + 2y^3 + y^2 + 3y + 4$
c_9	$y^4 - 2y^3 - 3y^2 - y + 16$
c_{12}	$y^4 - 11y^3 + 31y^2 + 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.956685 + 0.641200I$ $a = 0.634643 + 0.798979I$ $b = -0.851808 + 0.911292I$ $c = 0.956685 + 0.641200I$ $d = 0.65230 + 2.13814I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$
$u = 0.956685 - 0.641200I$ $a = 0.634643 - 0.798979I$ $b = -0.851808 - 0.911292I$ $c = 0.956685 - 0.641200I$ $d = 0.65230 - 2.13814I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = 0.043315 + 1.227190I$ $a = -1.88464 + 1.64051I$ $b = 0.351808 - 0.720342I$ $c = 0.043315 + 1.227190I$ $d = -0.152300 - 0.614030I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = 0.043315 - 1.227190I$ $a = -1.88464 - 1.64051I$ $b = 0.351808 + 0.720342I$ $c = 0.043315 - 1.227190I$ $d = -0.152300 + 0.614030I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$

X. $\boldsymbol{I^u_{10} = \langle 2u^3 + d + 4u - 1,\ -2u^3 - 2u^2 + c - 5u - 3,\ -u^3 - u^2 + b - 2u - 1,\ u^2 + a + 1,\ u^4 + u^3 + 3u^2 + 2u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{10}	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = -0.899232 + 0.400532I$ $b = 0.351808 + 0.720342I$ $c = 1.30849 + 1.94753I$ $d = 2.09485 - 2.24175I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 - 0.506844I$ $a = -0.899232 - 0.400532I$ $b = 0.351808 - 0.720342I$ $c = 1.30849 - 1.94753I$ $d = 2.09485 + 2.24175I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.10488 + 1.55249I$ $a = 1.39923 + 0.32564I$ $b = -0.851808 - 0.911292I$ $c = -0.808493 - 0.270093I$ $d = -0.094848 + 1.171300I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 - 1.55249I$ $a = 1.39923 - 0.32564I$ $b = -0.851808 + 0.911292I$ $c = -0.808493 + 0.270093I$ $d = -0.094848 - 1.171300I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$

XI.

$$\boldsymbol{I^u_{11} = \langle 2u^3-2u^2+d+2u-1,\ u^3+2c+u+1,\ b-u,\ a,\ u^4-2u^3+3u^2-3u+2\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^4 - 2y^3 - 3y^2 - y + 16$
c_2, c_3, c_4 c_7, c_8	$y^4 + 2y^3 + y^2 + 3y + 4$
c_5, c_{10}	$y^4 + y^3 + 3y^2 + 2y + 1$
c_6, c_9, c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_{12}	$y^4 - 11y^3 + 31y^2 + 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{11}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.956685 + 0.641200I$ $a = 0$ $b = 0.956685 + 0.641200I$ $c = -0.826150 - 1.069070I$ $d = 0.70362 - 1.82258I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$
$u = 0.956685 - 0.641200I$ $a = 0$ $b = 0.956685 - 0.641200I$ $c = -0.826150 + 1.069070I$ $d = 0.70362 + 1.82258I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = 0.043315 + 1.227190I$ $a = 0$ $b = 0.043315 + 1.227190I$ $c = -0.423850 + 0.307015I$ $d = -1.70362 + 1.44068I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = 0.043315 - 1.227190I$ $a = 0$ $b = 0.043315 - 1.227190I$ $c = -0.423850 - 0.307015I$ $d = -1.70362 - 1.44068I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$

XII. $I_{12}^{u} = \langle d-1,\ c-u,\ b,\ a-u,\ u^2+1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{12}^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$1.000000I$		
$a =$	$1.000000I$		
$b =$	0	1.64493	4.00000
$c =$	$1.000000I$		
$d =$	1.00000		
$u =$	$-1.000000I$		
$a =$	$-1.000000I$		
$b =$	0	1.64493	4.00000
$c =$	$-1.000000I$		
$d =$	1.00000		

XIII. $I^u_{13} = \langle d-u,\ c,\ b-u,\ a+1,\ u^2+1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

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

$$a_8 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{13}	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -1.00000$ $b = 1.000000I$ $c = 0$ $d = 1.000000I$	1.64493	4.00000
$u = -1.000000I$ $a = -1.00000$ $b = -1.000000I$ $c = 0$ $d = -1.000000I$	1.64493	4.00000

XIV. $I^u_{14} = \langle d+1,\ c-u,\ b-u,\ a-1,\ u^2+1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

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

$$a_8 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{14}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 1.00000$ $b = 1.000000I$ $c = 1.000000I$ $d = -1.00000$	-1.64493	-8.00000
$u = -1.000000I$ $a = 1.00000$ $b = -1.000000I$ $c = -1.000000I$ $d = -1.00000$	-1.64493	-8.00000

XV. $I_{15}^{u} = \langle da + u + 1,\ c - u,\ b - u,\ u^2 + 1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} a \\ u \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} u \\ d \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ d + u \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2$

(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_{15}	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	0	-2.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	$1.000000I$		
$a =$	0		
$b =$	$1.000000I$	-1.64493	-8.00000
$c =$	1.00000		
$d =$	$-1.000000I$		
$v =$	$-1.000000I$		
$a =$	0		
$b =$	$-1.000000I$	-1.64493	-8.00000
$c =$	1.00000		
$d =$	$1.000000I$		

XVII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_9	$u^2(u-1)^6(u^3+u^2+3u-1)^2(u^4+u^3+3u^2+2u+1)^5$ $\cdot(u^4+2u^3+u^2+3u+4)^2(u^4+5u^3+7u^2+2u+1)$ $\cdot(u^6+u^5+3u^4-u^3+16u+16)$ $\cdot(u^8+2u^7+7u^6+7u^5+23u^4+28u^3+37u^2+19u+4)$
c_2, c_5, c_7 c_{10}	$u^2(u^2+1)^3(u^3-u^2+u+1)^2(u^4-2u^3+3u^2-3u+2)^2$ $\cdot(u^4+u^3+u^2+1)^5(u^4+u^3+3u^2+2u+1)$ $\cdot(u^6+u^5+u^4+3u^3+4u^2+4u+4)(u^8+u^6-3u^5+3u^4+5u^2-u+2)$
c_3, c_4, c_6 c_8, c_{11}	$u^2(u^2+1)^3(u^3-u^2+3u-1)^2(u^4-2u^3+3u^2-3u+2)^2$ $\cdot(u^4+u^3+u^2+1)(u^4+u^3+3u^2+2u+1)^5$ $\cdot(u^6+u^5+3u^4+5u^3+4u^2+4u+4)$ $\cdot(u^8+5u^6-3u^5+7u^4-8u^3+5u^2-u+2)$
c_{12}	$u^2(u-1)^6(u^3-5u^2+7u+1)^2(u^4-5u^3+7u^2-2u+1)^5$ $\cdot(u^4-2u^3+u^2-3u+4)^2(u^4-u^3+3u^2-2u+1)$ $\cdot(u^6-5u^5+7u^4+u^3-16u+16)$ $\cdot(u^8-10u^7+39u^6-71u^5+55u^4-20u^3+37u^2-19u+4)$

XVIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_9	$y^2(y-1)^6(y^3+5y^2+11y-1)^2(y^4-11y^3+31y^2+10y+1)$ $\cdot(y^4-2y^3-3y^2-y+16)^2(y^4+5y^3+7y^2+2y+1)^5$ $\cdot(y^6+5y^5+11y^4-y^3+128y^2-256y+256)$ $\cdot(y^8+10y^7+67y^6+235y^5+587y^4+708y^3+489y^2-65y+16)$
c_2, c_5, c_7 c_{10}	$y^2(y+1)^6(y^3+y^2+3y-1)^2(y^4+y^3+3y^2+2y+1)^5$ $\cdot(y^4+2y^3+y^2+3y+4)^2(y^4+5y^3+7y^2+2y+1)$ $\cdot(y^6+y^5+3y^4-y^3+16y+16)$ $\cdot(y^8+2y^7+7y^6+7y^5+23y^4+28y^3+37y^2+19y+4)$
c_3, c_4, c_6 c_8, c_{11}	$y^2(y+1)^6(y^3+5y^2+7y-1)^2(y^4+y^3+3y^2+2y+1)$ $\cdot(y^4+2y^3+y^2+3y+4)^2(y^4+5y^3+7y^2+2y+1)^5$ $\cdot(y^6+5y^5+7y^4-y^3+16y+16)$ $\cdot(y^8+10y^7+39y^6+71y^5+55y^4+20y^3+37y^2+19y+4)$
c_{12}	$y^2(y-1)^6(y^3-11y^2+59y-1)^2(y^4-11y^3+31y^2+10y+1)^5$ $\cdot(y^4-2y^3-3y^2-y+16)^2(y^4+5y^3+7y^2+2y+1)$ $\cdot(y^6-11y^5+59y^4-129y^3+256y^2-256y+256)$ $\cdot(y^8-22y^7+\cdots-65y+16)$