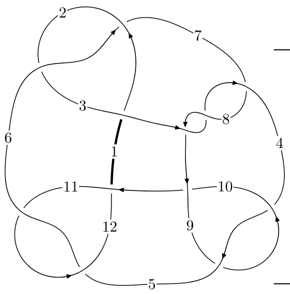
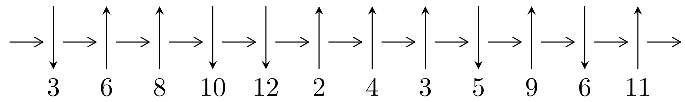
$12n_{0553}$ ($K12n_{0553}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -u^6 - 4u^4 - u^3 - 3u^2 + 2d - u,\ u^7 - u^6 + 4u^5 - 3u^4 + 2u^3 - 4u^2 + 4c - 3u - 4,\ b - u, \\
&\quad - u^6 - 4u^4 - 3u^3 - 3u^2 + 2a - 7u - 2,\ u^8 + 5u^6 + 3u^5 + 7u^4 + 8u^3 + 5u^2 + u + 2\rangle \\
I_2^u &= \langle -u^4 - u^2 + d + u + 1,\ -u^5 - u^4 - u^3 - u^2 + 4c + 2u,\ u^5 - u^4 + 3u^3 - 3u^2 + 2b + 4u - 2, \\
&\quad u^5 - u^4 + 3u^3 - u^2 + 4a + 4u,\ u^6 - u^5 + 3u^4 - 5u^3 + 4u^2 - 4u + 4\rangle \\
I_3^u &= \langle cu + d - 1,\ c^2 + 3u^2 + c + 2u + 9,\ b - u,\ a + 1,\ u^3 + u^2 + 3u + 1\rangle \\
I_4^u &= \langle -u^2 + d,\ c - 1,\ b - u,\ -u^3 + a - 2u - 1,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle \\
I_5^u &= \langle -u^2 + d,\ c - 1,\ u^2 + b,\ -u^3 + 2u^2 + a - u,\ u^4 - u^3 + u^2 + 1\rangle \\
I_6^u &= \langle -u^2 + d,\ c - 1,\ u^3 + u^2 + b + 2u + 1,\ u^3 + 2a + u - 1,\ u^4 + 2u^3 + 3u^2 + 3u + 2\rangle \\
I_7^u &= \langle -u^3 + u^2 + d - 2u + 1,\ -u^3 + c - 2u,\ b - u,\ -u^3 + a - 2u - 1,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle \\
I_8^u &= \langle -u^3 + u^2 + d - 2u + 1,\ -u^3 + c - 2u,\ -u^3 + u^2 + b - 2u + 1,\ -2u^3 + 2u^2 + a - 5u + 3, \\
&\quad u^4 - u^3 + 3u^2 - 2u + 1\rangle \\
I_9^u &= \langle -u^3 + u^2 + d - 2u + 1,\ -u^3 + c - 2u,\ u^3 - u^2 + b + 3u - 1,\ a + 1,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle \\
I_{10}^u &= \langle u^3 + d + 1,\ u^3 + 2c + u + 1,\ u^3 + u^2 + b + 2u + 1,\ u^3 + 2a + u - 1,\ u^4 + 2u^3 + 3u^2 + 3u + 2\rangle
\end{aligned}$$

[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`).

$$I^u_{11} = \langle 2u^3 - 2u^2 + d + 5u - 4,\ u^3 + c + 2u + 1,\ u^3 - u^2 + b + 3u - 1,\ a + 1,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle$$
$$I^u_{12} = \langle d - u + 1,\ c - 1,\ b,\ a - u,\ u^2 + 1\rangle$$
$$I^u_{13} = \langle d + 1,\ c,\ b + u,\ a - 1,\ u^2 + 1\rangle$$
$$I^u_{14} = \langle d + u + 1,\ c - 1,\ b + u,\ a - 1,\ u^2 + 1\rangle$$
$$I^u_{15} = \langle da + a + u + 1,\ c - 1,\ b + u,\ u^2 + 1\rangle$$

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

* 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. $I_1^u = \langle -u^6 - 4u^4 + \cdots + 2d - u,\ u^7 - u^6 + \cdots + 4c - 4,\ b - u,\ -u^6 - 4u^4 + \cdots + 2a - 2,\ u^8 + 5u^6 + \cdots + u + 2\rangle$

(i) Arc colorings

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

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.758942 + 0.438317I$ $a = -1.89723 + 0.52453I$ $b = -0.758942 + 0.438317I$ $c = -0.054172 - 1.264670I$ $d = -0.62069 - 1.46361I$	$1.16700 - 5.71173I$	$4.09501 + 8.31811I$
$u = -0.758942 - 0.438317I$ $a = -1.89723 - 0.52453I$ $b = -0.758942 - 0.438317I$ $c = -0.054172 + 1.264670I$ $d = -0.62069 + 1.46361I$	$1.16700 + 5.71173I$	$4.09501 - 8.31811I$
$u = 0.179745 + 0.559373I$ $a = 1.04641 + 1.87221I$ $b = 0.179745 + 0.559373I$ $c = 0.902346 + 0.601652I$ $d = -0.329909 + 0.314903I$	$0.095264 + 1.253510I$	$1.27264 - 6.48719I$
$u = 0.179745 - 0.559373I$ $a = 1.04641 - 1.87221I$ $b = 0.179745 - 0.559373I$ $c = 0.902346 - 0.601652I$ $d = -0.329909 - 0.314903I$	$0.095264 - 1.253510I$	$1.27264 + 6.48719I$
$u = 0.41760 + 1.54917I$ $a = 1.357530 + 0.013373I$ $b = 0.41760 + 1.54917I$ $c = -0.647833 - 0.660328I$ $d = 2.03855 - 1.72671I$	$-11.6096 + 14.8655I$	$-0.93475 - 7.40876I$
$u = 0.41760 - 1.54917I$ $a = 1.357530 - 0.013373I$ $b = 0.41760 - 1.54917I$ $c = -0.647833 + 0.660328I$ $d = 2.03855 + 1.72671I$	$-11.6096 - 14.8655I$	$-0.93475 + 7.40876I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.16160 + 1.70407I$ $a = 0.493297 - 0.013672I$ $b = 0.16160 + 1.70407I$ $c = -0.450341 + 0.645947I$ $d = 0.412046 - 0.311025I$	$-15.9716 + 0.6364I$	$-4.43290 + 0.86524I$
$u = 0.16160 - 1.70407I$ $a = 0.493297 + 0.013672I$ $b = 0.16160 - 1.70407I$ $c = -0.450341 - 0.645947I$ $d = 0.412046 + 0.311025I$	$-15.9716 - 0.6364I$	$-4.43290 - 0.86524I$

II. $\boldsymbol{I^u_2 = \langle -u^4 - u^2 + d + u + 1,\ -u^5 - u^4 + \cdots + 4c + 2u,\ u^5 - u^4 + \cdots + 2b - 2,\ u^5 - u^4 + \cdots + 4a + 4u,\ u^6 - u^5 + \cdots - 4u + 4\rangle}$

(i) Arc colorings

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

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

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

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

$$a_{12} = \begin{pmatrix} \frac{1}{4}u^5 + \frac{1}{4}u^4 + \cdots + \frac{1}{4}u^2 - \frac{1}{2}u \\ u^4 + u^2 - u - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{4}u^5 + \frac{1}{4}u^4 + \cdots + \frac{1}{4}u^2 - u \\ -\frac{1}{2}u^5 - \frac{1}{2}u^4 + \cdots + u - 1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} \frac{1}{4}u^5 - \frac{1}{4}u^4 + \cdots + u - 1 \\ -\frac{1}{2}u^5 + \frac{1}{2}u^4 + \cdots - 2u + 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{1}{4}u^5 - \frac{1}{4}u^4 + \cdots - \frac{1}{4}u^2 + \frac{1}{2}u \\ -u^3 + u^2 - u + 3 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^5 - u^3 + u^2 - \frac{1}{2}u + 1 \\ -\frac{1}{2}u^5 + \frac{1}{2}u^4 + \cdots - u + 2 \end{pmatrix}$$

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.047560 + 0.418092I$ $a = -1.09915 - 1.20459I$ $b = -0.27572 - 1.53323I$ $c = -0.269083 + 1.171910I$ $d = -1.04111 + 2.07415I$	$-5.31927 + 9.53188I$	$0.63107 - 6.69086I$
$u = 1.047560 - 0.418092I$ $a = -1.09915 + 1.20459I$ $b = -0.27572 + 1.53323I$ $c = -0.269083 - 1.171910I$ $d = -1.04111 - 2.07415I$	$-5.31927 - 9.53188I$	$0.63107 + 6.69086I$
$u = -0.271845 + 1.105310I$ $a = -0.062023 - 0.252181I$ $b = -0.271845 - 1.105310I$ $c = -0.114078 - 0.463834I$ $d = -0.919643 - 0.326726I$	-4.16586	$-7.26213 + 0.I$
$u = -0.271845 - 1.105310I$ $a = -0.062023 + 0.252181I$ $b = -0.271845 + 1.105310I$ $c = -0.114078 + 0.463834I$ $d = -0.919643 + 0.326726I$	-4.16586	$-7.26213 + 0.I$
$u = -0.27572 + 1.53323I$ $a = 1.161170 + 0.213694I$ $b = 1.047560 - 0.418092I$ $c = -0.616840 + 0.614334I$ $d = 1.46075 + 1.46786I$	$-5.31927 - 9.53188I$	$0.63107 + 6.69086I$
$u = -0.27572 - 1.53323I$ $a = 1.161170 - 0.213694I$ $b = 1.047560 + 0.418092I$ $c = -0.616840 - 0.614334I$ $d = 1.46075 - 1.46786I$	$-5.31927 + 9.53188I$	$0.63107 - 6.69086I$

III. $\boldsymbol{I^u_3 = \langle cu + d - 1,\ c^2 + 3u^2 + c + 2u + 9,\ b - u,\ a + 1,\ u^3 + u^2 + 3u + 1\rangle}$

(i) Arc colorings

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

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.361103$ $a=-1.00000$ $b=-0.361103$ $c=-0.50000+2.90155I$ $d=\ \ 0.819448+1.047760I$	3.88548	12.6160
$u=-0.361103$ $a=-1.00000$ $b=-0.361103$ $c=-0.50000-2.90155I$ $d=\ \ 0.819448-1.047760I$	3.88548	12.6160
$u=-0.31945+1.63317I$ $a=-1.00000$ $b=-0.31945+1.63317I$ $c=-0.604185+0.652966I$ $d=\ \ 1.87340+1.19533I$	$-14.2797-7.9406I$	$-3.30788+3.53846I$
$u=-0.31945+1.63317I$ $a=-1.00000$ $b=-0.31945+1.63317I$ $c=-0.395815-0.652966I$ $d=-0.192847+0.437845I$	$-14.2797-7.9406I$	$-3.30788+3.53846I$
$u=-0.31945-1.63317I$ $a=-1.00000$ $b=-0.31945-1.63317I$ $c=-0.604185-0.652966I$ $d=\ \ 1.87340-1.19533I$	$-14.2797+7.9406I$	$-3.30788-3.53846I$
$u=-0.31945-1.63317I$ $a=-1.00000$ $b=-0.31945-1.63317I$ $c=-0.395815+0.652966I$ $d=-0.192847-0.437845I$	$-14.2797+7.9406I$	$-3.30788-3.53846I$

IV. $I_4^u = \langle -u^2 + d,\ c - 1,\ b - u,\ -u^3 + a - 2u - 1,\ u^4 - u^3 + 3u^2 - 2u + 1 \rangle$

(i) Arc colorings

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

(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_5 c_6, c_7, c_8 c_{10}, c_{11}	$u^4 - u^3 + 3u^2 - 2u + 1$
c_4, c_9	$u^4 - u^3 + u^2 + 1$
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_5 c_6, c_7, c_8 c_{10}, c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_4, c_9	$y^4 + y^3 + 3y^2 + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = 1.54742 + 1.12087I$ $b = 0.395123 + 0.506844I$ $c = 1.00000$ $d = -0.100768 + 0.400532I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = 0.395123 - 0.506844I$ $a = 1.54742 - 1.12087I$ $b = 0.395123 - 0.506844I$ $c = 1.00000$ $d = -0.100768 - 0.400532I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = 0.10488 + 1.55249I$ $a = 0.452576 - 0.585652I$ $b = 0.10488 + 1.55249I$ $c = 1.00000$ $d = -2.39923 + 0.32564I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = 0.10488 - 1.55249I$ $a = 0.452576 + 0.585652I$ $b = 0.10488 - 1.55249I$ $c = 1.00000$ $d = -2.39923 - 0.32564I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$

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

(i) Arc colorings

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

(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	$u^4 + u^3 + 3u^2 + 2u + 1$
c_2, c_4, c_5 c_6, c_9, c_{11}	$u^4 - u^3 + u^2 + 1$
c_3, c_7, c_8 c_{10}, 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_7 c_8, c_{10}, c_{12}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_4, c_5 c_6, c_9, c_{11}	$y^4 + y^3 + 3y^2 + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.351808 + 0.720342I$ $a = 0.94255 + 1.62772I$ $b = 0.395123 + 0.506844I$ $c = 1.00000$ $d = -0.395123 - 0.506844I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = -0.351808 - 0.720342I$ $a = 0.94255 - 1.62772I$ $b = 0.395123 - 0.506844I$ $c = 1.00000$ $d = -0.395123 + 0.506844I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = 0.851808 + 0.911292I$ $a = -0.442547 - 0.966840I$ $b = 0.10488 - 1.55249I$ $c = 1.00000$ $d = -0.10488 + 1.55249I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$
$u = 0.851808 - 0.911292I$ $a = -0.442547 + 0.966840I$ $b = 0.10488 + 1.55249I$ $c = 1.00000$ $d = -0.10488 - 1.55249I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$

VI.

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

(i) Arc colorings

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

(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_5, c_6 c_{11}	$u^4+2u^3+3u^2+3u+2$
c_3, c_7, c_8 c_{10}	$u^4-u^3+3u^2-2u+1$
c_4, c_9	$u^4-u^3+u^2+1$
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_5, c_6 c_{11}	$y^4 + 2y^3 + y^2 + 3y + 4$
c_3, c_7, c_8 c_{10}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_4, c_9	$y^4 + y^3 + 3y^2 + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.956685+0.641200I$ $a=\ \ 0.826150-1.069070I$ $b=\ \ 0.10488-1.55249I$ $c=\ \ 1.00000$ $d=\ \ 0.504108-1.226850I$	$-6.79074-3.16396I$	$-1.82674+2.56480I$
$u=-0.956685-0.641200I$ $a=\ \ 0.826150+1.069070I$ $b=\ \ 0.10488+1.55249I$ $c=\ \ 1.00000$ $d=\ \ 0.504108+1.226850I$	$-6.79074+3.16396I$	$-1.82674-2.56480I$
$u=-0.043315+1.227190I$ $a=\ \ 0.423850+0.307015I$ $b=\ \ 0.395123-0.506844I$ $c=\ \ 1.00000$ $d=-1.50411-0.10631I$	$0.21101-1.41510I$	$1.82674+4.90874I$
$u=-0.043315-1.227190I$ $a=\ \ 0.423850-0.307015I$ $b=\ \ 0.395123+0.506844I$ $c=\ \ 1.00000$ $d=-1.50411+0.10631I$	$0.21101+1.41510I$	$1.82674-4.90874I$

VII. $\boldsymbol{I^u_7 =}$
$\boldsymbol{\langle -u^3+u^2+d-2u+1,\ -u^3+c-2u,\ b-u,\ -u^3+a-2u-1,\ u^4-u^3+3u^2-2u+1\rangle}$

(i) Arc colorings

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

(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_{12}	$u^4 - u^3 + 3u^2 - 2u + 1$
c_5, c_{11}	$u^4 - u^3 + u^2 + 1$
c_{10}	$u^4 - 5u^3 + 7u^2 - 2u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$		
$a = 1.54742 + 1.12087I$		
$b = 0.395123 + 0.506844I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$c = 0.547424 + 1.120870I$		
$d = -0.351808 + 0.720342I$		
$u = 0.395123 - 0.506844I$		
$a = 1.54742 - 1.12087I$		
$b = 0.395123 - 0.506844I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$c = 0.547424 - 1.120870I$		
$d = -0.351808 - 0.720342I$		
$u = 0.10488 + 1.55249I$		
$a = 0.452576 - 0.585652I$		
$b = 0.10488 + 1.55249I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$c = -0.547424 - 0.585652I$		
$d = 0.851808 - 0.911292I$		
$u = 0.10488 - 1.55249I$		
$a = 0.452576 + 0.585652I$		
$b = 0.10488 - 1.55249I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$
$c = -0.547424 + 0.585652I$		
$d = 0.851808 + 0.911292I$		

VIII. $\boldsymbol{I^u_8 = \langle -u^3+u^2+d-2u+1,\ -u^3+c-2u,\ -u^3+u^2+b-2u+1,\ -2u^3+2u^2+a-5u+3,\ u^4-u^3+3u^2-2u+1\rangle}$

(i) Arc colorings

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

(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_6, c_{10} c_{12}	$u^4 - u^3 + 3u^2 - 2u + 1$
c_3, c_4, c_5 c_7, c_8, c_9 c_{11}	$u^4 - u^3 + u^2 + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.395123 + 0.506844I$ $a = -1.30849 + 1.94753I$ $b = -0.351808 + 0.720342I$ $c = \ \ 0.547424 + 1.120870I$ $d = -0.351808 + 0.720342I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = \ \ 0.395123 - 0.506844I$ $a = -1.30849 - 1.94753I$ $b = -0.351808 - 0.720342I$ $c = \ \ 0.547424 - 1.120870I$ $d = -0.351808 - 0.720342I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = \ \ 0.10488 + 1.55249I$ $a = \ \ 0.808493 - 0.270093I$ $b = \ \ 0.851808 - 0.911292I$ $c = -0.547424 - 0.585652I$ $d = \ \ 0.851808 - 0.911292I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = \ \ 0.10488 - 1.55249I$ $a = \ \ 0.808493 + 0.270093I$ $b = \ \ 0.851808 + 0.911292I$ $c = -0.547424 + 0.585652I$ $d = \ \ 0.851808 + 0.911292I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$

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

(i) Arc colorings

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

(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_6, c_{12}	$u^4-u^3+3u^2-2u+1$
c_3, c_4, c_7 c_8, c_9	$u^4+2u^3+3u^2+3u+2$
c_5, c_{11}	$u^4-u^3+u^2+1$
c_{10}	$u^4-2u^3+u^2-3u+4$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = -1.00000$ $b = -0.043315 - 1.227190I$ $c = 0.547424 + 1.120870I$ $d = -0.351808 + 0.720342I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = 0.395123 - 0.506844I$ $a = -1.00000$ $b = -0.043315 + 1.227190I$ $c = 0.547424 - 1.120870I$ $d = -0.351808 - 0.720342I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = 0.10488 + 1.55249I$ $a = -1.00000$ $b = -0.956685 - 0.641200I$ $c = -0.547424 - 0.585652I$ $d = 0.851808 - 0.911292I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = 0.10488 - 1.55249I$ $a = -1.00000$ $b = -0.956685 + 0.641200I$ $c = -0.547424 + 0.585652I$ $d = 0.851808 + 0.911292I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$

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

(i) Arc colorings

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

(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_4, c_6 c_9	$u^4 + 2u^3 + 3u^2 + 3u + 2$
c_3, c_7, c_8 c_{12}	$u^4 - u^3 + 3u^2 - 2u + 1$
c_5, c_{11}	$u^4 - u^3 + u^2 + 1$
c_{10}	$u^4 - 2u^3 + u^2 - 3u + 4$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{10}	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.956685 + 0.641200I$ $a = 0.826150 - 1.069070I$ $b = 0.10488 - 1.55249I$ $c = -0.173850 - 1.069070I$ $d = -1.30438 - 1.49694I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$
$u = -0.956685 - 0.641200I$ $a = 0.826150 + 1.069070I$ $b = 0.10488 + 1.55249I$ $c = -0.173850 + 1.069070I$ $d = -1.30438 + 1.49694I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = -0.043315 + 1.227190I$ $a = 0.423850 + 0.307015I$ $b = 0.395123 - 0.506844I$ $c = -0.576150 + 0.307015I$ $d = -1.19562 + 1.84122I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = -0.043315 - 1.227190I$ $a = 0.423850 - 0.307015I$ $b = 0.395123 + 0.506844I$ $c = -0.576150 - 0.307015I$ $d = -1.19562 - 1.84122I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$

XI. $\boldsymbol{I^u_{11} = \langle 2u^3 - 2u^2 + d + 5u - 4,\ u^3 + c + 2u + 1,\ u^3 - u^2 + b + 3u - 1,\ a + 1,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle}$

(i) Arc colorings

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

(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_6, c_{10}	$u^4 - u^3 + 3u^2 - 2u + 1$
c_3, c_5, c_7 c_8, c_{11}	$u^4 + 2u^3 + 3u^2 + 3u + 2$
c_4, c_9	$u^4 - u^3 + u^2 + 1$
c_{12}	$u^4 - 2u^3 + u^2 - 3u + 4$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{11}	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = -1.00000$ $b = -0.043315 - 1.227190I$ $c = -1.54742 - 1.12087I$ $d = 2.30849 - 1.94753I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = 0.395123 - 0.506844I$ $a = -1.00000$ $b = -0.043315 + 1.227190I$ $c = -1.54742 + 1.12087I$ $d = 2.30849 + 1.94753I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = 0.10488 + 1.55249I$ $a = -1.00000$ $b = -0.956685 - 0.641200I$ $c = -0.452576 + 0.585652I$ $d = 0.191507 + 0.270093I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = 0.10488 - 1.55249I$ $a = -1.00000$ $b = -0.956685 + 0.641200I$ $c = -0.452576 - 0.585652I$ $d = 0.191507 - 0.270093I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{12}	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 1.000000I$ $b = 0$ $c = 1.00000$ $d = -1.00000 + 1.00000I$	1.64493	8.00000
$u = -1.000000I$ $a = -1.000000I$ $b = 0$ $c = 1.00000$ $d = -1.00000 - 1.00000I$	1.64493	8.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$(u-1)^2$
c_2, c_3, c_5 c_6, c_7, c_8 c_{11}	u^2+1
c_4, 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_5 c_6, c_7, c_8 c_{11}	$(y+1)^2$
c_4, c_9, c_{10}	y^2

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_{14}	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.000000I$ $a = 1.00000$ $b = \quad -1.000000I$ $c = 1.00000$ $d = -1.00000 - 1.00000I$	-1.64493	-4.00000
$u = \quad -1.000000I$ $a = 1.00000$ $b = \quad 1.000000I$ $c = 1.00000$ $d = -1.00000 + 1.00000I$	-1.64493	-4.00000

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

(i) Arc colorings

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

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

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(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
$c=$	$1.00000+1.00000I$		
$d=$	1.00000		
$v=$	$-1.000000I$		
$a=$	0		
$b=$	$1.000000I$	1.64493	8.00000
$c=$	$1.00000-1.00000I$		
$d=$	1.00000		

XVII. u-Polynomials

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

XVIII. Riley Polynomials

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