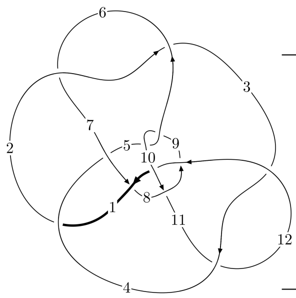
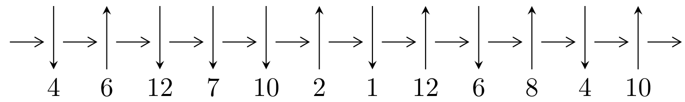
$12n_{0815}$ $(K12n_{0815})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 5655077u^{11} + 18192667u^{10} + \cdots + 57645040b + 32704792, \\
& 4782676u^{11} + 14870711u^{10} + \cdots + 28822520a + 7681096, \\
& u^{12} + 4u^{11} + 22u^{10} + 49u^9 + 124u^8 + 152u^7 + 187u^6 + 152u^5 + 154u^4 + 123u^3 + 84u^2 + 36u + 8\rangle \\
I_2^u = \langle & -u^8 + u^6a + u^5a - 2u^6 + 2u^4a - 3u^5 + 4u^3a - u^4 + 3u^2a - 3u^3 + 3au - 2u^2 + b + a, \\
& -u^9a - 2u^8a + \cdots - 2a - 2,\ u^{10} + u^9 + 3u^8 + 6u^7 + 7u^6 + 9u^5 + 10u^4 + 8u^3 + 5u^2 + 2u + 1\rangle \\
I_3^u = \langle & -5028u^7a - 3060u^7 + \cdots + 87875a + 61205, \\
& -60170u^7a - 58983u^7 + \cdots + 1299250a + 839905, \\
& u^8 - 6u^7 + 24u^6 - 50u^5 + 73u^4 - 72u^3 + 61u^2 - 55u + 25\rangle \\
I_4^u = \langle & b - u - 1,\ a,\ u^2 + u + 1\rangle \\
I_5^u = \langle & u^2 + 4b + 2u + 5,\ -2u^2 + 2a + 3u - 15,\ u^3 - u^2 + 7u + 1\rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 53 representations.

[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`).

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

I. $\boldsymbol{I_1^u = \langle 5.66 \times 10^6 u^{11} + 1.82 \times 10^7 u^{10} + \cdots + 5.76 \times 10^7 b + 3.27 \times 10^7,\ 4.78 \times 10^6 u^{11} + 1.49 \times 10^7 u^{10} + \cdots + 2.88 \times 10^7 a + 7.68 \times 10^6,\ u^{12} + 4u^{11} + \cdots + 36u + 8 \rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.165935u^{11} - 0.515941u^{10} + \cdots - 3.42377u - 0.266496 \\ -0.0981017u^{11} - 0.315598u^{10} + \cdots - 1.84222u - 0.567348 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0555299u^{11} + 0.197961u^{10} + \cdots + 1.67411u + 1.16096 \\ -0.0124138u^{11} - 0.0591623u^{10} + \cdots - 0.874760u - 0.426335 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.0532919u^{11} + 0.200754u^{10} + \cdots + 1.69020u + 1.04375 \\ -0.0146517u^{11} - 0.0563689u^{10} + \cdots - 0.858673u - 0.543549 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0196973u^{11} + 0.0508957u^{10} + \cdots + 1.95987u + 1.74708 \\ -0.0164741u^{11} - 0.0773159u^{10} + \cdots - 0.265718u - 0.289371 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.165935u^{11} - 0.515941u^{10} + \cdots - 3.42377u - 0.266496 \\ -0.0311444u^{11} - 0.0537009u^{10} + \cdots + 2.15113u + 0.615059 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0709185u^{11} + 0.185572u^{10} + \cdots + 1.74180u + 0.710849 \\ 0.0709921u^{11} + 0.228068u^{10} + \cdots + 2.74286u + 0.542669 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.0711186u^{11} - 0.224055u^{10} + \cdots + 0.618483u + 0.662628 \\ 0.00749790u^{11} + 0.0714935u^{10} + \cdots + 4.03579u + 0.760724 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.164351u^{11} - 0.516002u^{10} + \cdots - 6.02898u - 1.47273 \\ -0.0364474u^{11} - 0.0811342u^{10} + \cdots + 0.0786132u + 0.481147 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{728881}{5764504}u^{11} + \frac{352229}{5764504}u^{10} + \cdots + \frac{29077369}{1441126}u + \frac{7367045}{720563}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{12} - 4u^{10} + 3u^9 + 13u^8 - 2u^7 - 19u^6 + 13u^4 - 3u^3 - 2u + 1$
c_2, c_6	$u^{12} - 4u^{11} + \cdots - 36u + 8$
c_3, c_5, c_9 c_{11}	$u^{12} + 5u^{11} + \cdots + 16u + 4$
c_7	$u^{12} - 12u^{11} + \cdots - 112u + 16$
c_8	$u^{12} - 13u^{11} + \cdots - 2840u + 472$
c_{10}, c_{12}	$u^{12} - u^{11} + \cdots - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{12} - 8y^{11} + \cdots - 4y + 1$
c_2, c_6	$y^{12} + 28y^{11} + \cdots + 48y + 64$
c_3, c_5, c_9 c_{11}	$y^{12} - 23y^{11} + \cdots + 192y + 16$
c_7	$y^{12} + 2y^{11} + \cdots + 1536y + 256$
c_8	$y^{12} + 45y^{11} + \cdots + 1504672y + 222784$
c_{10}, c_{12}	$y^{12} - y^{11} + \cdots + 31y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.540143 + 0.761627I$ $a = -1.69223 + 0.78856I$ $b = -0.993599 + 0.115131I$	$-2.97909 + 0.17410I$	$-3.65502 - 0.56316I$
$u = 0.540143 - 0.761627I$ $a = -1.69223 - 0.78856I$ $b = -0.993599 - 0.115131I$	$-2.97909 - 0.17410I$	$-3.65502 + 0.56316I$
$u = -0.495932 + 0.959152I$ $a = 0.436587 - 0.071368I$ $b = 0.788354 - 0.737396I$	$-0.33260 - 5.31098I$	$0.92797 + 6.12254I$
$u = -0.495932 - 0.959152I$ $a = 0.436587 + 0.071368I$ $b = 0.788354 + 0.737396I$	$-0.33260 + 5.31098I$	$0.92797 - 6.12254I$
$u = -0.313071 + 0.674527I$ $a = -0.261436 + 0.583661I$ $b = 0.024504 + 0.511749I$	$-0.252110 - 1.156370I$	$-2.57186 + 6.15407I$
$u = -0.313071 - 0.674527I$ $a = -0.261436 - 0.583661I$ $b = 0.024504 - 0.511749I$	$-0.252110 + 1.156370I$	$-2.57186 - 6.15407I$
$u = -0.433831 + 0.256446I$ $a = 0.396072 - 1.201640I$ $b = -0.339334 - 0.183220I$	$1.23387 + 1.55175I$	$4.02015 - 1.83829I$
$u = -0.433831 - 0.256446I$ $a = 0.396072 + 1.201640I$ $b = -0.339334 + 0.183220I$	$1.23387 - 1.55175I$	$4.02015 + 1.83829I$
$u = -0.29653 + 2.66870I$ $a = -0.147885 - 0.838892I$ $b = 0.05531 - 2.12763I$	$-16.8158 - 1.6628I$	$-7.43215 + 4.58115I$
$u = -0.29653 - 2.66870I$ $a = -0.147885 + 0.838892I$ $b = 0.05531 + 2.12763I$	$-16.8158 + 1.6628I$	$-7.43215 - 4.58115I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00078 + 2.60205I$ $a = -0.231108 + 1.220450I$ $b = -0.03524 + 2.20216I$	$18.3232 - 12.8945I$	$-2.78911 + 4.52447I$
$u = -1.00078 - 2.60205I$ $a = -0.231108 - 1.220450I$ $b = -0.03524 - 2.20216I$	$18.3232 + 12.8945I$	$-2.78911 - 4.52447I$

II.

$\boldsymbol{I_2^u = \langle -u^8+u^6a+\cdots+b+a,\ -u^9a-2u^8a+\cdots-2a-2,\ u^{10}+u^9+\cdots+2u+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2u^9 + u^8 + 9u^7 + 17u^6 + 17u^5 + 31u^4 + 34u^3 + 19u^2 + 15u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{20} - 7u^{19} + \cdots - 7u + 1$
c_2	$(u^{10} + u^9 + 3u^8 + 6u^7 + 7u^6 + 9u^5 + 10u^4 + 8u^3 + 5u^2 + 2u + 1)^2$
c_3, c_9	$u^{20} + 4u^{19} + \cdots + 24u + 4$
c_5, c_{11}	$u^{20} - 4u^{19} + \cdots - 24u + 4$
c_6	$(u^{10} - u^9 + 3u^8 - 6u^7 + 7u^6 - 9u^5 + 10u^4 - 8u^3 + 5u^2 - 2u + 1)^2$
c_7	$(u^{10} - 4u^8 + 10u^6 - 2u^5 - 9u^4 - 12u^3 + 15u^2 + 2u + 4)^2$
c_8	$(u^{10} + 2u^9 - 4u^8 - 4u^7 + 14u^6 + 6u^5 - 14u^4 - 4u^3 + 12u^2 + 6u + 1)^2$
c_{10}, c_{12}	$u^{20} - 7u^{19} + \cdots - 6u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{20} - y^{19} + \cdots - 9y + 1$
c_2, c_6	$(y^{10} + 5y^9 + 11y^8 + 8y^7 - 5y^6 - 9y^5 + 8y^4 + 14y^3 + 13y^2 + 6y + 1)^2$
c_3, c_5, c_9 c_{11}	$y^{20} + 2y^{19} + \cdots + 64y + 16$
c_7	$(y^{10} - 8y^9 + \cdots + 116y + 16)^2$
c_8	$(y^{10} - 12y^9 + \cdots - 12y + 1)^2$
c_{10}, c_{12}	$y^{20} - 9y^{19} + \cdots - 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.014310 + 0.256691I$ $a = 0.964180 - 0.567184I$ $b = -0.172201 - 1.125270I$	$-2.82507 - 0.01586I$	$-5.03096 + 0.40672I$
$u = -1.014310 + 0.256691I$ $a = 0.842936 + 0.896392I$ $b = -0.089370 + 1.110650I$	$-2.82507 - 0.01586I$	$-5.03096 + 0.40672I$
$u = -1.014310 - 0.256691I$ $a = 0.964180 + 0.567184I$ $b = -0.172201 + 1.125270I$	$-2.82507 + 0.01586I$	$-5.03096 - 0.40672I$
$u = -1.014310 - 0.256691I$ $a = 0.842936 - 0.896392I$ $b = -0.089370 - 1.110650I$	$-2.82507 + 0.01586I$	$-5.03096 - 0.40672I$
$u = -0.494190 + 0.650032I$ $a = 0.701854 - 0.119057I$ $b = 0.93649 - 2.03449I$	$-1.80674 - 6.46947I$	$-1.01128 + 9.30231I$
$u = -0.494190 + 0.650032I$ $a = -0.366624 - 1.277610I$ $b = 0.159063 - 0.249786I$	$-1.80674 - 6.46947I$	$-1.01128 + 9.30231I$
$u = -0.494190 - 0.650032I$ $a = 0.701854 + 0.119057I$ $b = 0.93649 + 2.03449I$	$-1.80674 + 6.46947I$	$-1.01128 - 9.30231I$
$u = -0.494190 - 0.650032I$ $a = -0.366624 + 1.277610I$ $b = 0.159063 + 0.249786I$	$-1.80674 + 6.46947I$	$-1.01128 - 9.30231I$
$u = 0.382212 + 1.255980I$ $a = 0.293033 - 1.100270I$ $b = 0.11581 - 2.62267I$	$-3.73684 + 4.80030I$	$-9.38054 - 3.15587I$
$u = 0.382212 + 1.255980I$ $a = -0.519971 + 0.035643I$ $b = -0.588255 + 0.303305I$	$-3.73684 + 4.80030I$	$-9.38054 - 3.15587I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.382212 - 1.255980I$ $a = 0.293033 + 1.100270I$ $b = 0.11581 + 2.62267I$	$-3.73684 - 4.80030I$	$-9.38054 + 3.15587I$
$u = 0.382212 - 1.255980I$ $a = -0.519971 - 0.035643I$ $b = -0.588255 - 0.303305I$	$-3.73684 - 4.80030I$	$-9.38054 + 3.15587I$
$u = 0.068366 + 0.610240I$ $a = -0.187485 + 1.399550I$ $b = 0.909534 - 0.136013I$	$-0.72327 - 2.84641I$	$-2.67521 + 3.01300I$
$u = 0.068366 + 0.610240I$ $a = -1.41876 + 0.52381I$ $b = -0.061464 + 1.381430I$	$-0.72327 - 2.84641I$	$-2.67521 + 3.01300I$
$u = 0.068366 - 0.610240I$ $a = -0.187485 - 1.399550I$ $b = 0.909534 + 0.136013I$	$-0.72327 + 2.84641I$	$-2.67521 - 3.01300I$
$u = 0.068366 - 0.610240I$ $a = -1.41876 - 0.52381I$ $b = -0.061464 - 1.381430I$	$-0.72327 + 2.84641I$	$-2.67521 - 3.01300I$
$u = 0.55792 + 1.34043I$ $a = 0.830798 + 0.641959I$ $b = -0.21457 + 2.05660I$	$5.80206 + 1.85988I$	$11.59799 + 1.32723I$
$u = 0.55792 + 1.34043I$ $a = -1.139960 - 0.180068I$ $b = -0.495038 - 0.305606I$	$5.80206 + 1.85988I$	$11.59799 + 1.32723I$
$u = 0.55792 - 1.34043I$ $a = 0.830798 - 0.641959I$ $b = -0.21457 - 2.05660I$	$5.80206 - 1.85988I$	$11.59799 - 1.32723I$
$u = 0.55792 - 1.34043I$ $a = -1.139960 + 0.180068I$ $b = -0.495038 + 0.305606I$	$5.80206 - 1.85988I$	$11.59799 - 1.32723I$

III. $\boldsymbol{I^u_3 = \langle -5028u^7a - 3060u^7 + \cdots + 87875a + 61205,\ -6.02\times 10^4au^7 - 5.90\times 10^4u^7 + \cdots + 1.30\times 10^6a + 8.40\times 10^5,\ u^8 - 6u^7 + \cdots - 55u + 25\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}a\\0.208156au^7 + 0.126682u^7 + \cdots - 3.63796a - 2.53384\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0.0470296au^7 + 0.0807038u^7 + \cdots - 2.49100a - 2.44185\\-0.0371352au^7 + 0.0705030u^7 + \cdots + 0.0672739a - 0.0987373\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0.00269095au^7 + 0.0452660u^7 + \cdots - 0.454150a - 2.52258\\-0.0814738au^7 + 0.0350652u^7 + \cdots + 2.10412a - 0.179466\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.0475678au^7 - 0.0396357u^7 + \cdots - 1.21817a + 2.58775\\-0.0475678au^7 - 0.0895467u^7 + \cdots - 1.21817a + 2.46657\end{pmatrix}$$
$$a_9 = \begin{pmatrix}a\\0.208156au^7 + 0.126682u^7 + \cdots - 3.63796a - 2.53384\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-0.145519au^7 - 0.0181660u^7 + \cdots + 2.71290a + 0.0474022\\0.192548au^7 + 0.0841648u^7 + \cdots - 5.20389a - 2.55827\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.128379au^7 + 0.0664376u^7 + \cdots - 1.68185a - 0.471083\\0.128379au^7 + 0.313310u^7 + \cdots - 1.68185a - 5.53860\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.106189au^7 + 0.234602u^7 + \cdots - 3.84455a - 1.23660\\-0.228648au^7 + 0.0835438u^7 + \cdots + 4.32726a + 2.00807\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{2475}{4831}u^7 - \frac{58067}{24155}u^6 + \frac{218393}{24155}u^5 - \frac{326712}{24155}u^4 + \frac{446026}{24155}u^3 - \frac{285694}{24155}u^2 + \frac{252936}{24155}u - \frac{68757}{4831}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{16} - 5u^{15} + \cdots - 137u + 103$
c_2, c_6	$(u^8 + 6u^7 + 24u^6 + 50u^5 + 73u^4 + 72u^3 + 61u^2 + 55u + 25)^2$
c_3, c_5, c_9 c_{11}	$u^{16} - 4u^{15} + \cdots + 8104u + 8557$
c_7	$(u^4 + 2u^3 - 3u - 1)^4$
c_8	$(u^8 + 4u^7 + \cdots + 1636u + 709)^2$
c_{10}, c_{12}	$u^{16} + 5u^{15} + \cdots + 1490u + 631$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{16} - 3y^{15} + \cdots - 68415y + 10609$
c_2, c_6	$(y^8 + 12y^7 + 122y^6 + 262y^5 + 447y^4 - 578y^3 - 549y^2 + 25y + 625)^2$
c_3, c_5, c_9 c_{11}	$y^{16} - 42y^{15} + \cdots + 743954296y + 73222249$
c_7	$(y^4 - 4y^3 + 10y^2 - 9y + 1)^4$
c_8	$(y^8 + 110y^7 + \cdots + 929478y + 502681)^2$
c_{10}, c_{12}	$y^{16} - 17y^{15} + \cdots + 2691604y + 398161$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.356173 + 0.922051I$ $a = -1.45726 - 0.66205I$ $b = -0.571202 + 0.124651I$	$-2.60769 + 5.61159I$	$-4.01448 - 3.52119I$
$u = -0.356173 + 0.922051I$ $a = 0.58952 - 1.50850I$ $b = -0.46449 - 2.42477I$	$-2.60769 + 5.61159I$	$-4.01448 - 3.52119I$
$u = -0.356173 - 0.922051I$ $a = -1.45726 + 0.66205I$ $b = -0.571202 - 0.124651I$	$-2.60769 - 5.61159I$	$-4.01448 + 3.52119I$
$u = -0.356173 - 0.922051I$ $a = 0.58952 + 1.50850I$ $b = -0.46449 + 2.42477I$	$-2.60769 - 5.61159I$	$-4.01448 + 3.52119I$
$u = 0.976606 + 0.152571I$ $a = -1.248430 - 0.212849I$ $b = 0.444438 - 0.330170I$	$-2.60769 - 1.55182I$	$-4.60507 + 3.15648I$
$u = 0.976606 + 0.152571I$ $a = -0.065632 + 0.390479I$ $b = 0.386763 + 1.198400I$	$-2.60769 - 1.55182I$	$-4.60507 + 3.15648I$
$u = 0.976606 - 0.152571I$ $a = -1.248430 + 0.212849I$ $b = 0.444438 + 0.330170I$	$-2.60769 + 1.55182I$	$-4.60507 - 3.15648I$
$u = 0.976606 - 0.152571I$ $a = -0.065632 - 0.390479I$ $b = 0.386763 - 1.198400I$	$-2.60769 + 1.55182I$	$-4.60507 - 3.15648I$
$u = 0.82072 + 1.42153I$ $a = 0.883685 + 0.700209I$ $b = -0.16909 + 1.79182I$	$5.45104 + 2.02988I$	$-7.20164 - 6.73627I$
$u = 0.82072 + 1.42153I$ $a = 1.150180 + 0.122308I$ $b = 0.512857 + 0.312984I$	$5.45104 + 2.02988I$	$-7.20164 - 6.73627I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.82072 - 1.42153I$ $a = 0.883685 - 0.700209I$ $b = -0.16909 - 1.79182I$	$5.45104 - 2.02988I$	$-7.20164 + 6.73627I$
$u = 0.82072 - 1.42153I$ $a = 1.150180 - 0.122308I$ $b = 0.512857 - 0.312984I$	$5.45104 - 2.02988I$	$-7.20164 + 6.73627I$
$u = 1.55884 + 2.70000I$ $a = 0.40664 - 1.37969I$ $b = 0.37568 - 2.03120I$	$19.5035 + 2.0299I$	$-3.67881 - 0.69325I$
$u = 1.55884 + 2.70000I$ $a = 0.14130 + 1.51086I$ $b = -0.01496 + 2.22431I$	$19.5035 + 2.0299I$	$-3.67881 - 0.69325I$
$u = 1.55884 - 2.70000I$ $a = 0.40664 + 1.37969I$ $b = 0.37568 + 2.03120I$	$19.5035 - 2.0299I$	$-3.67881 + 0.69325I$
$u = 1.55884 - 2.70000I$ $a = 0.14130 - 1.51086I$ $b = -0.01496 - 2.22431I$	$19.5035 - 2.0299I$	$-3.67881 + 0.69325I$

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

(i) Arc colorings

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

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

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

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

$$a_{10} = \begin{pmatrix} 0 \\ u+1 \end{pmatrix}$$

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

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

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

$$a_9 = \begin{pmatrix} 0 \\ u+1 \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$	$1.64493 - 2.02988I$	$0. + 3.46410I$
$u = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$	$1.64493 + 2.02988I$	$0. - 3.46410I$

V. $\boldsymbol{I^u_5 = \langle u^2 + 4b + 2u + 5,\ -2u^2 + 2a + 3u - 15,\ u^3 - u^2 + 7u + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^2 - \frac{3}{2}u + \frac{15}{2} \\ -\frac{1}{4}u^2 - \frac{1}{2}u - \frac{5}{4} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{5}{4}u^2 + \frac{1}{2}u - \frac{33}{4} \\ -u + 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^2 + u - 8 \\ \frac{1}{4}u^2 - \frac{1}{2}u + \frac{5}{4} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{3}{2}u^2 - 2u + \frac{23}{2} \\ -\frac{1}{4}u^2 - \frac{7}{4} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^2 - \frac{3}{2}u + \frac{15}{2} \\ -\frac{1}{4}u^2 - 3u - \frac{7}{4} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{5}{4}u^2 - \frac{3}{2}u + \frac{33}{4} \\ \frac{1}{4}u^2 - \frac{5}{4} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{13}{4}u^2 - 3u + \frac{87}{4} \\ -\frac{1}{4}u^2 + \frac{3}{2}u - \frac{13}{4} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{11}{4}u^2 - \frac{7}{2}u + \frac{67}{4} \\ \frac{1}{4}u^2 - \frac{1}{2}u - \frac{11}{4} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{3}{2}u^2 + 2u - \frac{23}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^3 - u - 1$
c_2	$u^3 - u^2 + 7u + 1$
c_3, c_9	$u^3 - 4u^2 + u + 7$
c_5, c_{11}	$u^3 + 4u^2 + u - 7$
c_6	$u^3 + u^2 + 7u - 1$
c_7	$u^3 - u^2 + 2u - 7$
c_8	$u^3 - 3u^2 + 18u - 27$
c_{10}, c_{12}	$u^3 + 2u^2 + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^3 - 2y^2 + y - 1$
c_2, c_6	$y^3 + 13y^2 + 51y - 1$
c_3, c_5, c_9 c_{11}	$y^3 - 14y^2 + 57y - 49$
c_7	$y^3 + 3y^2 - 10y - 49$
c_8	$y^3 + 27y^2 + 162y - 729$
c_{10}, c_{12}	$y^3 + 2y^2 + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.139681$ $a = 7.72903$ $b = -1.18504$	-4.20933	-11.8090
$u = 0.56984 + 2.61428I$ $a = 0.135484 - 0.941977I$ $b = 0.09252 - 2.05200I$	$-15.9896 + 0.9427I$	$-0.595686 + 0.759395I$
$u = 0.56984 - 2.61428I$ $a = 0.135484 + 0.941977I$ $b = 0.09252 + 2.05200I$	$-15.9896 - 0.9427I$	$-0.595686 - 0.759395I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^2-u+1)(u^3-u-1)$ $\cdot(u^{12}-4u^{10}+3u^9+13u^8-2u^7-19u^6+13u^4-3u^3-2u+1)$ $\cdot(u^{16}-5u^{15}+\cdots-137u+103)(u^{20}-7u^{19}+\cdots-7u+1)$
c_2	$(u^2+u+1)(u^3-u^2+7u+1)$ $\cdot(u^8+6u^7+24u^6+50u^5+73u^4+72u^3+61u^2+55u+25)^2$ $\cdot(u^{10}+u^9+3u^8+6u^7+7u^6+9u^5+10u^4+8u^3+5u^2+2u+1)^2$ $\cdot(u^{12}-4u^{11}+\cdots-36u+8)$
c_3, c_9	$u^2(u^3-4u^2+u+7)(u^{12}+5u^{11}+\cdots+16u+4)$ $\cdot(u^{16}-4u^{15}+\cdots+8104u+8557)(u^{20}+4u^{19}+\cdots+24u+4)$
c_5, c_{11}	$u^2(u^3+4u^2+u-7)(u^{12}+5u^{11}+\cdots+16u+4)$ $\cdot(u^{16}-4u^{15}+\cdots+8104u+8557)(u^{20}-4u^{19}+\cdots-24u+4)$
c_6	$(u^2-u+1)(u^3+u^2+7u-1)$ $\cdot(u^8+6u^7+24u^6+50u^5+73u^4+72u^3+61u^2+55u+25)^2$ $\cdot(u^{10}-u^9+3u^8-6u^7+7u^6-9u^5+10u^4-8u^3+5u^2-2u+1)^2$ $\cdot(u^{12}-4u^{11}+\cdots-36u+8)$
c_7	$u^2(u^3-u^2+2u-7)(u^4+2u^3-3u-1)^4$ $\cdot(u^{10}-4u^8+10u^6-2u^5-9u^4-12u^3+15u^2+2u+4)^2$ $\cdot(u^{12}-12u^{11}+\cdots-112u+16)$
c_8	$((u+1)^2)(u^3-3u^2+18u-27)(u^8+4u^7+\cdots+1636u+709)^2$ $\cdot(u^{10}+2u^9-4u^8-4u^7+14u^6+6u^5-14u^4-4u^3+12u^2+6u+1)^2$ $\cdot(u^{12}-13u^{11}+\cdots-2840u+472)$
c_{10}, c_{12}	$((u-1)^2)(u^3+2u^2+3u+1)(u^{12}-u^{11}+\cdots-u+1)$ $\cdot(u^{16}+5u^{15}+\cdots+1490u+631)(u^{20}-7u^{19}+\cdots-6u+1)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^2+y+1)(y^3-2y^2+y-1)(y^{12}-8y^{11}+\cdots-4y+1)$ $\cdot(y^{16}-3y^{15}+\cdots-68415y+10609)(y^{20}-y^{19}+\cdots-9y+1)$
c_2, c_6	$(y^2+y+1)(y^3+13y^2+51y-1)$ $\cdot(y^8+12y^7+122y^6+262y^5+447y^4-578y^3-549y^2+25y+625)^2$ $\cdot(y^{10}+5y^9+11y^8+8y^7-5y^6-9y^5+8y^4+14y^3+13y^2+6y+1)^2$ $\cdot(y^{12}+28y^{11}+\cdots+48y+64)$
c_3, c_5, c_9 c_{11}	$y^2(y^3-14y^2+57y-49)(y^{12}-23y^{11}+\cdots+192y+16)$ $\cdot(y^{16}-42y^{15}+\cdots+743954296y+73222249)$ $\cdot(y^{20}+2y^{19}+\cdots+64y+16)$
c_7	$y^2(y^3+3y^2-10y-49)(y^4-4y^3+10y^2-9y+1)^4$ $\cdot((y^{10}-8y^9+\cdots+116y+16)^2)(y^{12}+2y^{11}+\cdots+1536y+256)$
c_8	$(y-1)^2(y^3+27y^2+162y-729)$ $\cdot(y^8+110y^7+\cdots+929478y+502681)^2$ $\cdot(y^{10}-12y^9+\cdots-12y+1)^2$ $\cdot(y^{12}+45y^{11}+\cdots+1504672y+222784)$
c_{10}, c_{12}	$((y-1)^2)(y^3+2y^2+5y-1)(y^{12}-y^{11}+\cdots+31y+1)$ $\cdot(y^{16}-17y^{15}+\cdots+2691604y+398161)(y^{20}-9y^{19}+\cdots-8y+1)$