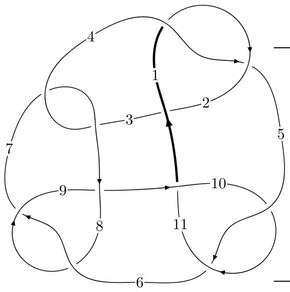
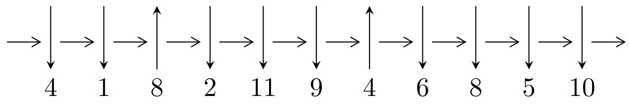
$11n_{72}$ $(K11n_{72})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

[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`).

$$
\begin{aligned}
I_1^u = \langle & u^2+d,\ -u^6-u^5+u^3-2u^2+2c-2u-1,\ -u^6-u^5+u^3-2u^2+2b-2u+1,\ a-1,\\
& u^8+u^7-u^6-2u^5+2u^4+3u^3+u^2-2u+1\rangle\\
I_2^u = \langle & u^2+d,\ -u^{10}-2u^9-u^8+2u^7+u^6-2u^5-4u^4+u^2+c+u-1,\ b-1,\\
& u^{10}+2u^9-u^8-5u^7-u^6+6u^5+4u^4-4u^3-5u^2+a+u+4,\\
& u^{11}+2u^{10}-4u^8-2u^7+4u^6+5u^5-2u^4-5u^3-u^2+3u+1\rangle\\
I_3^u = \langle & -u^{10}-u^9+u^8+2u^7-u^6-2u^5+2u^3+d-u+1,\\
& u^{10}+2u^9-u^8-5u^7-u^6+6u^5+4u^4-4u^3-5u^2+c+u+3,\\
& -u^{10}-2u^9-u^8+2u^7+u^6-2u^5-4u^4+u^2+b+u,\ a-1,\\
& u^{11}+2u^{10}-4u^8-2u^7+4u^6+5u^5-2u^4-5u^3-u^2+3u+1\rangle\\
I_4^u = \langle & -17u^{10}+8u^9+27u^8-4u^7-39u^6+6u^5+68u^4+2u^3-75u^2+86d-41u+80,\\
& -41u^{10}-6u^9+55u^8+132u^7-3u^6-198u^5-180u^4+106u^3+325u^2+344c-109u-318,\ b-1,\\
& -41u^{10}-6u^9+55u^8+132u^7-3u^6-198u^5-180u^4+106u^3+325u^2+344a-109u+26,\\
& u^{11}-3u^9-2u^8+3u^7+4u^6-2u^4-u^3+3u^2-4\rangle\\
I_5^u = \langle & d,\ c-1,\ b-1,\ a+1,\ u+1\rangle\\
I_6^u = \langle & d+1,\ c,\ b-1,\ a,\ u-1\rangle\\
I_7^u = \langle & u^2a+d+1,\ c+a,\ b-1,\ a^2+u^2+a-u,\ u^3-u-1\rangle\\
I_8^u = \langle & d+1,\ cb-c-1,\ a+1,\ u+1\rangle
\end{aligned}
$$

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

* 8 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 50 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. $I_1^u =$
$\langle u^2+d,\ -u^6-u^5+\cdots+2c-1,\ -u^6-u^5+\cdots+2b+1,\ a-1,\ u^8+u^7+\cdots-2u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3u^7 + 6u^6 - u^5 - 7u^4 + 3u^3 + 16u^2 + 7u - 9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_6, c_8, c_{10}	$u^8 - u^7 - u^6 + 2u^5 + 2u^4 - 3u^3 + u^2 + 2u + 1$
c_2, c_9, c_{11}	$u^8 + 3u^7 + 9u^6 + 12u^5 + 20u^4 + 15u^3 + 17u^2 + 2u + 1$
c_3, c_7	$u^8 - u^7 - u^6 + 5u^5 - 4u^4 + 8u^2 - 4u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_6, c_8, c_{10}	$y^8 - 3y^7 + 9y^6 - 12y^5 + 20y^4 - 15y^3 + 17y^2 - 2y + 1$
c_2, c_9, c_{11}	$y^8 + 9y^7 + 49y^6 + 160y^5 + 336y^4 + 425y^3 + 269y^2 + 30y + 1$
c_3, c_7	$y^8 - 3y^7 + 3y^6 - y^5 - 32y^3 + 32y^2 + 48y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.725725+0.895340I$ $a=\ \ 1.00000$ $b=-1.23064-0.78420I$ $c=-0.230638-0.784197I$ $d=\ \ 0.274957+1.299540I$	$6.13361+3.53925I$	$-3.48597-4.52491I$
$u=-0.725725-0.895340I$ $a=\ \ 1.00000$ $b=-1.23064+0.78420I$ $c=-0.230638+0.784197I$ $d=\ \ 0.274957-1.299540I$	$6.13361-3.53925I$	$-3.48597+4.52491I$
$u=\ \ 1.052770+0.635427I$ $a=\ \ 1.00000$ $b=-1.68524+1.42536I$ $c=-0.68524+1.42536I$ $d=-0.70455-1.33791I$	$-1.61416-7.63502I$	$-9.74769+6.83193I$
$u=\ \ 1.052770-0.635427I$ $a=\ \ 1.00000$ $b=-1.68524-1.42536I$ $c=-0.68524-1.42536I$ $d=-0.70455+1.33791I$	$-1.61416+7.63502I$	$-9.74769-6.83193I$
$u=-1.213440+0.663590I$ $a=\ \ 1.00000$ $b=-2.02473-1.24139I$ $c=-1.02473-1.24139I$ $d=-1.03209+1.61046I$	$0.8567+14.6934I$	$-9.31845-9.04054I$
$u=-1.213440-0.663590I$ $a=\ \ 1.00000$ $b=-2.02473+1.24139I$ $c=-1.02473+1.24139I$ $d=-1.03209-1.61046I$	$0.8567-14.6934I$	$-9.31845+9.04054I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.386400 + 0.333144I$ $a = 1.00000$ $b = -0.059390 + 0.519525I$ $c = 0.940610 + 0.519525I$ $d = -0.038320 - 0.257454I$	$-0.441338 - 1.103720I$	$-5.44788 + 6.54224I$
$u = 0.386400 - 0.333144I$ $a = 1.00000$ $b = -0.059390 - 0.519525I$ $c = 0.940610 - 0.519525I$ $d = -0.038320 + 0.257454I$	$-0.441338 + 1.103720I$	$-5.44788 - 6.54224I$

II. $I_2^u = \langle u^2 + d,\ -u^{10} - 2u^9 + \cdots + c - 1,\ b - 1,\ u^{10} + 2u^9 + \cdots + a + 4,\ u^{11} + 2u^{10} + \cdots + 3u + 1\rangle$

(i) Arc colorings

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

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

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

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

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

$$a_2 = \begin{pmatrix} -u^{10} - 2u^9 + u^8 + 5u^7 + u^6 - 6u^5 - 4u^4 + 4u^3 + 5u^2 - u - 4 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{10} - 3u^9 - u^8 + 5u^7 + 4u^6 - 5u^5 - 7u^4 + 2u^3 + 7u^2 + u - 4 \\ u^9 + u^8 - u^7 - 2u^6 + u^5 + 2u^4 - 2u^2 + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^{10} + 2u^9 + u^8 - 2u^7 - u^6 + 2u^5 + 4u^4 - u^2 - u + 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{10} - 3u^9 + u^8 + 7u^7 + 3u^6 - 9u^5 - 7u^4 + 5u^3 + 10u^2 - 2u - 6 \\ u^{10} + 2u^9 - u^8 - 4u^7 - u^6 + 5u^5 + 3u^4 - 3u^3 - 5u^2 + 2u + 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^9 + 2u^8 + u^7 - 2u^6 - u^5 + 2u^4 + 3u^3 - u - 1 \\ -u^5 + u^3 - u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{10} + 2u^9 + u^8 - 2u^7 - u^6 + 2u^5 + 4u^4 - 2u^2 - u + 1 \\ -u^4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{10} + 2u^9 + u^8 - 2u^7 - u^6 + 2u^5 + 4u^4 - 2u^2 - u + 1 \\ -u^4 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{10} + 6u^9 - 10u^7 - 4u^6 + 6u^5 + 12u^4 - 4u^3 - 8u^2 - 6u - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{11} - 3u^9 + 2u^8 + 3u^7 - 4u^6 + 2u^4 - u^3 - 3u^2 + 4$
c_2	$u^{11} + 6u^{10} + \cdots + 24u + 16$
c_3, c_7	$u^{11} - 2u^{10} - u^9 + 3u^8 + u^7 - 2u^6 + 4u^5 - 11u^4 + 9u^3 - u^2 - 2u + 2$
c_5, c_6, c_8 c_{10}	$u^{11} - 2u^{10} + 4u^8 - 2u^7 - 4u^6 + 5u^5 + 2u^4 - 5u^3 + u^2 + 3u - 1$
c_9, c_{11}	$u^{11} + 4u^{10} + \cdots + 11u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{11} - 6y^{10} + \cdots + 24y - 16$
c_2	$y^{11} - 6y^{10} + \cdots - 224y - 256$
c_3, c_7	$y^{11} - 6y^{10} + \cdots + 8y - 4$
c_5, c_6, c_8 c_{10}	$y^{11} - 4y^{10} + \cdots + 11y - 1$
c_9, c_{11}	$y^{11} + 8y^{10} + \cdots + 67y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.952018 + 0.226513I$ $a = -1.085970 + 0.401284I$ $b = 1.00000$ $c = 0.40050 + 4.16652I$ $d = -0.855030 - 0.431288I$	$-5.02081 - 0.74196I$	$-15.5393 + 1.1191I$
$u = 0.952018 - 0.226513I$ $a = -1.085970 - 0.401284I$ $b = 1.00000$ $c = 0.40050 - 4.16652I$ $d = -0.855030 + 0.431288I$	$-5.02081 + 0.74196I$	$-15.5393 - 1.1191I$
$u = 0.850023 + 0.614930I$ $a = 0.007368 - 0.850380I$ $b = 1.00000$ $c = -0.138893 + 1.373110I$ $d = -0.344399 - 1.045410I$	$-0.08426 - 2.41892I$	$-7.07184 + 2.88947I$
$u = 0.850023 - 0.614930I$ $a = 0.007368 + 0.850380I$ $b = 1.00000$ $c = -0.138893 - 1.373110I$ $d = -0.344399 + 1.045410I$	$-0.08426 + 2.41892I$	$-7.07184 - 2.88947I$
$u = -0.523691 + 0.948055I$ $a = -0.184008 + 1.141810I$ $b = 1.00000$ $c = -0.103739 - 0.547821I$ $d = 0.624556 + 0.992977I$	$5.32590 - 2.58451I$	$-3.80806 + 1.01660I$
$u = -0.523691 - 0.948055I$ $a = -0.184008 - 1.141810I$ $b = 1.00000$ $c = -0.103739 + 0.547821I$ $d = 0.624556 - 0.992977I$	$5.32590 + 2.58451I$	$-3.80806 - 1.01660I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.978643 + 0.595733I$ $a = -0.939343 - 0.770160I$ $b = 1.00000$ $c = -0.47651 - 1.53693I$ $d = -0.602844 + 1.166020I$	$-2.61864 + 4.69742I$	$-9.08124 - 5.88322I$
$u = -0.978643 - 0.595733I$ $a = -0.939343 + 0.770160I$ $b = 1.00000$ $c = -0.47651 + 1.53693I$ $d = -0.602844 - 1.166020I$	$-2.61864 - 4.69742I$	$-9.08124 + 5.88322I$
$u = -1.126060 + 0.711355I$ $a = -0.175044 + 0.783251I$ $b = 1.00000$ $c = -0.81852 - 1.22144I$ $d = -0.76197 + 1.60205I$	$3.47965 + 8.65115I$	$-6.21430 - 5.57892I$
$u = -1.126060 - 0.711355I$ $a = -0.175044 - 0.783251I$ $b = 1.00000$ $c = -0.81852 + 1.22144I$ $d = -0.76197 - 1.60205I$	$3.47965 - 8.65115I$	$-6.21430 + 5.57892I$
$u = -0.347303$ $a = -3.24600$ $b = 1.00000$ $c = 1.27433$ $d = -0.120619$	-2.16369	-2.57060

III. $I_3^u = \langle -u^{10} - u^9 + \cdots + d + 1,\ u^{10} + 2u^9 + \cdots + c + 3,\ -u^{10} - 2u^9 + \cdots + b + u,\ a - 1,\ u^{11} + 2u^{10} + \cdots + 3u + 1\rangle$

(i) Arc colorings

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

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

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

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^{10} + 2u^9 + u^8 - 2u^7 - u^6 + 2u^5 + 4u^4 - u^2 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^9 + 2u^8 + u^7 - 2u^6 - u^5 + 2u^4 + 4u^3 - 2u - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{10} - 2u^9 + u^8 + 5u^7 + u^6 - 6u^5 - 4u^4 + 4u^3 + 5u^2 - u - 3 \\ u^{10} + u^9 - u^8 - 2u^7 + u^6 + 2u^5 - 2u^3 + u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^{10} + 2u^9 + u^8 - 2u^7 - u^6 + 2u^5 + 3u^4 - u^2 - u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2u^{10} - 3u^9 + 2u^8 + 7u^7 - 9u^5 - 5u^4 + 7u^3 + 7u^2 - 3u - 4 \\ u^{10} - u^9 - 3u^8 - u^7 + 5u^6 + 2u^5 - 3u^4 - 5u^3 + 3u^2 + 3u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2u^{10} - 3u^9 + 2u^8 + 7u^7 - 8u^5 - 4u^4 + 6u^3 + 6u^2 - 2u - 3 \\ u^{10} - u^8 + 3u^6 - u^5 - 2u^4 - u^3 + 3u^2 - 2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2u^{10} - 3u^9 + 2u^8 + 7u^7 - 8u^5 - 4u^4 + 6u^3 + 6u^2 - 2u - 3 \\ u^{10} - u^8 + 3u^6 - u^5 - 2u^4 - u^3 + 3u^2 - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{10} + 6u^9 - 10u^7 - 4u^6 + 6u^5 + 12u^4 - 4u^3 - 8u^2 - 6u - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$u^{11} - 2u^{10} + 4u^8 - 2u^7 - 4u^6 + 5u^5 + 2u^4 - 5u^3 + u^2 + 3u - 1$
c_2, c_{11}	$u^{11} + 4u^{10} + \cdots + 11u + 1$
c_3, c_7	$u^{11} - 2u^{10} - u^9 + 3u^8 + u^7 - 2u^6 + 4u^5 - 11u^4 + 9u^3 - u^2 - 2u + 2$
c_6, c_8	$u^{11} - 3u^9 + 2u^8 + 3u^7 - 4u^6 + 2u^4 - u^3 - 3u^2 + 4$
c_9	$u^{11} + 6u^{10} + \cdots + 24u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$y^{11} - 4y^{10} + \cdots + 11y - 1$
c_2, c_{11}	$y^{11} + 8y^{10} + \cdots + 67y - 1$
c_3, c_7	$y^{11} - 6y^{10} + \cdots + 8y - 4$
c_6, c_8	$y^{11} - 6y^{10} + \cdots + 24y - 16$
c_9	$y^{11} - 6y^{10} + \cdots - 224y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.952018 + 0.226513I$ $a = 1.00000$ $b = -0.59950 + 4.16652I$ $c = -0.085971 + 0.401284I$ $d = -1.246580 + 0.306031I$	$-5.02081 - 0.74196I$	$-15.5393 + 1.1191I$
$u = 0.952018 - 0.226513I$ $a = 1.00000$ $b = -0.59950 - 4.16652I$ $c = -0.085971 - 0.401284I$ $d = -1.246580 - 0.306031I$	$-5.02081 + 0.74196I$	$-15.5393 - 1.1191I$
$u = 0.850023 + 0.614930I$ $a = 1.00000$ $b = -1.13889 + 1.37311I$ $c = 1.007370 - 0.850380I$ $d = 0.235931 + 0.760242I$	$-0.08426 - 2.41892I$	$-7.07184 + 2.88947I$
$u = 0.850023 - 0.614930I$ $a = 1.00000$ $b = -1.13889 - 1.37311I$ $c = 1.007370 + 0.850380I$ $d = 0.235931 - 0.760242I$	$-0.08426 + 2.41892I$	$-7.07184 - 2.88947I$
$u = -0.523691 + 0.948055I$ $a = 1.00000$ $b = -1.103740 - 0.547821I$ $c = 0.815992 + 1.141810I$ $d = -0.37585 - 1.52338I$	$5.32590 - 2.58451I$	$-3.80806 + 1.01660I$
$u = -0.523691 - 0.948055I$ $a = 1.00000$ $b = -1.103740 + 0.547821I$ $c = 0.815992 - 1.141810I$ $d = -0.37585 + 1.52338I$	$5.32590 + 2.58451I$	$-3.80806 - 1.01660I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.978643 + 0.595733I$ $a = \quad 1.00000$ $b = -1.47651 - 1.53693I$ $c = \quad 0.060657 - 0.770160I$ $d = -1.86145 - 0.53501I$	$-2.61864 + 4.69742I$	$-9.08124 - 5.88322I$
$u = -0.978643 - 0.595733I$ $a = \quad 1.00000$ $b = -1.47651 + 1.53693I$ $c = \quad 0.060657 + 0.770160I$ $d = -1.86145 + 0.53501I$	$-2.61864 - 4.69742I$	$-9.08124 + 5.88322I$
$u = -1.126060 + 0.711355I$ $a = \quad 1.00000$ $b = -1.81852 - 1.22144I$ $c = \quad 0.824956 + 0.783251I$ $d = \quad 0.883402 - 0.724805I$	$3.47965 + 8.65115I$	$-6.21430 - 5.57892I$
$u = -1.126060 - 0.711355I$ $a = \quad 1.00000$ $b = -1.81852 + 1.22144I$ $c = \quad 0.824956 - 0.783251I$ $d = \quad 0.883402 + 0.724805I$	$3.47965 - 8.65115I$	$-6.21430 + 5.57892I$
$u = -0.347303$ $a = \quad 1.00000$ $b = \quad 0.274328$ $c = -2.24600$ $d = -1.27091$	-2.16369	-2.57060

IV. $\boldsymbol{I_4^u = \langle -17u^{10} + 8u^9 + \cdots + 86d + 80,\ -41u^{10} - 6u^9 + \cdots + 344c - 318,\ b - 1,\ -41u^{10} - 6u^9 + \cdots + 344a + 26,\ u^{11} - 3u^9 + \cdots + 3u^2 - 4\rangle}$

(i) Arc colorings

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

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

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

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

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

$$a_2 = \begin{pmatrix} 0.119186u^{10} + 0.0174419u^9 + \cdots + 0.316860u - 0.0755814 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.232558u^{10} - 0.197674u^9 + \cdots - 0.174419u - 0.476744 \\ 0.0174419u^{10} + 0.197674u^9 + \cdots + 0.924419u + 0.476744 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.119186u^{10} + 0.0174419u^9 + \cdots + 0.316860u + 0.924419 \\ 0.197674u^{10} - 0.0930233u^9 + \cdots + 0.476744u - 0.930233 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.0377907u^{10} - 0.238372u^9 + \cdots + 0.00290698u - 0.633721 \\ 0.279070u^{10} + 0.162791u^9 + \cdots + 0.790698u + 0.627907 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.156977u^{10} + 0.279070u^9 + \cdots - 0.180233u + 0.790698 \\ 0.238372u^{10} + 0.0348837u^9 + \cdots + 0.633721u - 0.151163 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.0784884u^{10} + 0.110465u^9 + \cdots - 0.159884u + 0.854651 \\ 0.116279u^{10} - 0.348837u^9 + \cdots + 0.162791u - 0.488372 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.0784884u^{10} + 0.110465u^9 + \cdots - 0.159884u + 0.854651 \\ 0.116279u^{10} - 0.348837u^9 + \cdots + 0.162791u - 0.488372 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{54}{43}u^{10} + \frac{10}{43}u^9 - \frac{106}{43}u^8 - \frac{134}{43}u^7 - \frac{38}{43}u^6 + \frac{158}{43}u^5 + \frac{128}{43}u^4 + \frac{24}{43}u^3 - \frac{126}{43}u^2 + \frac{196}{43}u - \frac{244}{43}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6 c_8	$u^{11} - 2u^{10} + 4u^8 - 2u^7 - 4u^6 + 5u^5 + 2u^4 - 5u^3 + u^2 + 3u - 1$
c_2, c_9	$u^{11} + 4u^{10} + \cdots + 11u + 1$
c_3, c_7	$u^{11} - 2u^{10} - u^9 + 3u^8 + u^7 - 2u^6 + 4u^5 - 11u^4 + 9u^3 - u^2 - 2u + 2$
c_5, c_{10}	$u^{11} - 3u^9 + 2u^8 + 3u^7 - 4u^6 + 2u^4 - u^3 - 3u^2 + 4$
c_{11}	$u^{11} + 6u^{10} + \cdots + 24u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$y^{11} - 4y^{10} + \cdots + 11y - 1$
c_2, c_9	$y^{11} + 8y^{10} + \cdots + 67y - 1$
c_3, c_7	$y^{11} - 6y^{10} + \cdots + 8y - 4$
c_5, c_{10}	$y^{11} - 6y^{10} + \cdots + 24y - 16$
c_{11}	$y^{11} - 6y^{10} + \cdots - 224y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.360061 + 1.006500I$ $a = -0.271755 + 1.216000I$ $b = 1.00000$ $c = 0.72825 + 1.21600I$ $d = -0.76197 - 1.60205I$	$3.47965 - 8.65115I$	$-6.21430 + 5.57892I$
$u = -0.360061 - 1.006500I$ $a = -0.271755 - 1.216000I$ $b = 1.00000$ $c = 0.72825 - 1.21600I$ $d = -0.76197 + 1.60205I$	$3.47965 + 8.65115I$	$-6.21430 - 5.57892I$
$u = 0.529187 + 0.718311I$ $a = 0.010188 - 1.175860I$ $b = 1.00000$ $c = 1.01019 - 1.17586I$ $d = -0.344399 + 1.045410I$	$-0.08426 + 2.41892I$	$-7.07184 - 2.88947I$
$u = 0.529187 - 0.718311I$ $a = 0.010188 + 1.175860I$ $b = 1.00000$ $c = 1.01019 + 1.17586I$ $d = -0.344399 - 1.045410I$	$-0.08426 - 2.41892I$	$-7.07184 + 2.88947I$
$u = 1.12735$ $a = -0.308071$ $b = 1.00000$ $c = 0.691929$ $d = -0.120619$	-2.16369	-2.57060
$u = -1.124760 + 0.136043I$ $a = -0.810207 - 0.299385I$ $b = 1.00000$ $c = 0.189793 - 0.299385I$ $d = -0.855030 - 0.431288I$	$-5.02081 - 0.74196I$	$-15.5393 + 1.1191I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.124760-0.136043I$ $a=-0.810207+0.299385I$ $b=\ \ 1.00000$ $c=\ \ 0.189793+0.299385I$ $d=-0.855030+0.431288I$	$-5.02081+0.74196I$	$-15.5393-1.1191I$
$u=-0.986131+0.772404I$ $a=-0.137568+0.853636I$ $b=\ \ 1.00000$ $c=\ \ 0.862432+0.853636I$ $d=\ \ 0.624556-0.992977I$	$5.32590+2.58451I$	$-3.80806-1.01660I$
$u=-0.986131-0.772404I$ $a=-0.137568-0.853636I$ $b=\ \ 1.00000$ $c=\ \ 0.862432-0.853636I$ $d=\ \ 0.624556+0.992977I$	$5.32590-2.58451I$	$-3.80806+1.01660I$
$u=\ \ 1.378090+0.194114I$ $a=-0.636622+0.521961I$ $b=\ \ 1.00000$ $c=\ \ 0.363378+0.521961I$ $d=-0.602844+1.166020I$	$-2.61864+4.69742I$	$-9.08124-5.88322I$
$u=\ \ 1.378090-0.194114I$ $a=-0.636622-0.521961I$ $b=\ \ 1.00000$ $c=\ \ 0.363378-0.521961I$ $d=-0.602844-1.166020I$	$-2.61864-4.69742I$	$-9.08124+5.88322I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = 1.00000$ $c = 1.00000$ $d = 0$	-3.28987	-12.0000

VI. $I_6^u = \langle d+1,\ c,\ b-1,\ a,\ u-1 \rangle$

(i) Arc colorings

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

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

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

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

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

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

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

$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

$a_7 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_6		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	0		
$b =$	1.00000	−3.28987	−12.0000
$c =$	0		
$d =$	−1.00000		

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_7	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.662359+0.562280I$ $a=\ \ 0.162359+0.986732I$ $b=\ \ 1.00000$ $c=-0.162359-0.986732I$ $d=-1.75488$	-1.64493	-6.00000
$u=-0.662359+0.562280I$ $a=-1.16236-0.98673I$ $b=\ \ 1.00000$ $c=\ \ 1.16236+0.98673I$ $d=-0.122561-0.744862I$	-1.64493	-6.00000
$u=-0.662359-0.562280I$ $a=\ \ 0.162359-0.986732I$ $b=\ \ 1.00000$ $c=-0.162359+0.986732I$ $d=-1.75488$	-1.64493	-6.00000
$u=-0.662359-0.562280I$ $a=-1.16236+0.98673I$ $b=\ \ 1.00000$ $c=\ \ 1.16236-0.98673I$ $d=-0.122561+0.744862I$	-1.64493	-6.00000
$u=\ \ 1.32472$ $a=-0.500000+0.424452I$ $b=\ \ 1.00000$ $c=\ \ 0.500000-0.424452I$ $d=-0.122561-0.744862I$	-1.64493	-6.00000
$u=\ \ 1.32472$ $a=-0.500000-0.424452I$ $b=\ \ 1.00000$ $c=\ \ 0.500000+0.424452I$ $d=-0.122561+0.744862I$	-1.64493	-6.00000

VIII. $I_8^u = \langle d+1,\ cb-c-1,\ a+1,\ u+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -c^2 - b^2 + 2b - 17$

(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_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	-4.93480	$-18.1451 - 0.9948I$

IX. $\boldsymbol{I_1^v = \langle a,\ d+1,\ c+a-1,\ b-1,\ v+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$		
$a = \quad 0$		
$b = \quad 1.00000$	-3.28987	-12.0000
$c = \quad 1.00000$		
$d = -1.00000$		

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$u(u-1)^2(u^3-u+1)^2(u^8-u^7+\cdots+2u+1)$ $\cdot(u^{11}-3u^9+2u^8+3u^7-4u^6+2u^4-u^3-3u^2+4)$ $\cdot(u^{11}-2u^{10}+4u^8-2u^7-4u^6+5u^5+2u^4-5u^3+u^2+3u-1)^2$
c_2, c_9, c_{11}	$u(u+1)^2(u^3+2u^2+u+1)^2$ $\cdot(u^8+3u^7+9u^6+12u^5+20u^4+15u^3+17u^2+2u+1)$ $\cdot((u^{11}+4u^{10}+\cdots+11u+1)^2)(u^{11}+6u^{10}+\cdots+24u+16)$
c_3, c_7	$u^3(u+1)^6(u^8-u^7-u^6+5u^5-4u^4+8u^2-4u+4)$ $\cdot(u^{11}-2u^{10}-u^9+3u^8+u^7-2u^6+4u^5-11u^4+9u^3-u^2-2u+2)^3$
c_4, c_8	$u(u+1)^2(u^3-u+1)^2(u^8-u^7+\cdots+2u+1)$ $\cdot(u^{11}-3u^9+2u^8+3u^7-4u^6+2u^4-u^3-3u^2+4)$ $\cdot(u^{11}-2u^{10}+4u^8-2u^7-4u^6+5u^5+2u^4-5u^3+u^2+3u-1)^2$
c_5, c_{10}	$u(u-1)(u+1)(u^3-u+1)^2(u^8-u^7+\cdots+2u+1)$ $\cdot(u^{11}-3u^9+2u^8+3u^7-4u^6+2u^4-u^3-3u^2+4)$ $\cdot(u^{11}-2u^{10}+4u^8-2u^7-4u^6+5u^5+2u^4-5u^3+u^2+3u-1)^2$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_6, c_8, c_{10}	$y(y-1)^2(y^3-2y^2+y-1)^2$ $\cdot(y^8-3y^7+9y^6-12y^5+20y^4-15y^3+17y^2-2y+1)$ $\cdot(y^{11}-6y^{10}+\cdots+24y-16)(y^{11}-4y^{10}+\cdots+11y-1)^2$
c_2, c_9, c_{11}	$y(y-1)^2(y^3-2y^2-3y-1)^2$ $\cdot(y^8+9y^7+49y^6+160y^5+336y^4+425y^3+269y^2+30y+1)$ $\cdot(y^{11}-6y^{10}+\cdots-224y-256)(y^{11}+8y^{10}+\cdots+67y-1)^2$
c_3, c_7	$y^3(y-1)^6(y^8-3y^7+3y^6-y^5-32y^3+32y^2+48y+16)$ $\cdot(y^{11}-6y^{10}+\cdots+8y-4)^3$