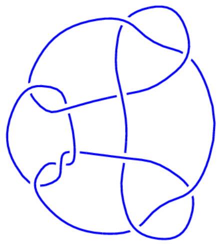
$11a_{44}$ ($K11a_{44}$)



1

Arc Sequences

$\longrightarrow \underset{4}{\downarrow} \longrightarrow \underset{1}{\downarrow} \longrightarrow \underset{8}{\uparrow} \longrightarrow \underset{2}{\downarrow} \longrightarrow \underset{11}{\downarrow} \longrightarrow \underset{9}{\uparrow} \longrightarrow \underset{3}{\uparrow} \longrightarrow \underset{6}{\uparrow} \longrightarrow \underset{7}{\uparrow} \longrightarrow \underset{5}{\downarrow} \longrightarrow \underset{10}{\downarrow} \longrightarrow$

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{8} I_i^u \bigcap I_1^v$$

[1]The knot diagram image is adapter from "C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, http://www.indiana.edu/ knotinfo"

$$
\begin{aligned}
I^u_1 &= \langle a,\ u-1,\ d+1,\ cb+1\rangle \\
I^u_2 &= \langle a,\ c,\ u-1,\ d+1,\ b+1\rangle \\
I^u_3 &= \langle a,\ d,\ b-1,\ c-1,\ u-1\rangle \\
I^u_4 &= \langle a+u,\ u^2+d,\ u^3+b-u,\ -2u^4-2u^3+c+2u+1,\ u^6+u^5-u^4-2u^3+u+1\rangle \\
I^u_5 &= \langle d^{12}+9d^{11}+34d^{10}+68d^9+73d^8+33d^7-5d^6+d^5+25d^4+23d^3+2d^2-4d+1, \\
&\quad -22d^{11}-148d^{10}+\cdots+69a+40,\ 56d^{11}+452d^{10}+\cdots+69b-14, \\
&\quad -10d^{11}-61d^{10}+\cdots+69c-101, \\
&\quad 22d^{11}+148d^{10}+374d^9+370d^8-88d^7-523d^6-408d^5+46d^4+182d^3-77d^2-126d+69u-40\rangle \\
I^u_6 &= \langle u^2+d,\ u^{17}+u^{16}+\cdots+2b+1,\ -u^{18}-2u^{17}+\cdots+4c-4,\ u^{19}+2u^{18}+\cdots+3u+1, \\
&\quad u^{18}+2u^{17}+\cdots+2a+3\rangle \\
I^u_7 &= \langle u^{10}-3u^8-2u^7+2u^6+4u^5+3u^4-3u^2+a-3u-1,\ -u^{10}+2u^8+2u^7-u^6-2u^5-2u^4-u^3+u^2+b \\
&\quad u^{11}-3u^9-2u^8+2u^7+4u^6+3u^5-3u^3-3u^2+d-u, \\
&\quad u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1, \\
&\quad u^{11}-4u^9-2u^8+6u^7+6u^6-2u^5-6u^4-3u^3+2u^2+c+2u-1\rangle \\
I^u_8 &= \langle u^{16}+u^{15}-3u^{14}-5u^{13}+3u^{12}+9u^{11}+2u^{10}-8u^9-6u^8+2u^7+5u^6+u^5-u^4+2u^3+3u^2-4u-4, \\
&\quad 221u^{15}-273u^{14}+\cdots+2360a-470,\ 727u^{15}+393u^{14}+\cdots+1180b-2866, \\
&\quad -593u^{15}-31u^{14}+\cdots+2360c+850,\ -85u^{15}-13u^{14}+\cdots+590d+1152\rangle
\end{aligned}
$$

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

There are 9 irreducible components with 68 representations.
There are 1 irreducible components of $dim_{\mathbb{C}} = 1$ for $11a_{44}$

I. $I_1^u = \langle a,\ u-1,\ d+1,\ cb+1 \rangle$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	-1.64493	$-2.82963 - 0.26612I$

II. $I_2^u = \langle a,\ c,\ u-1,\ d+1,\ b+1 \rangle$

(i) Arc colorings

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

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

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

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

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

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

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

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

$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$		
$a = 0$		
$b = -1.00000$	-3.28987	-12.0000
$c = 0$		
$d = -1.00000$		

III. $I_3^u = \langle a,\ d,\ b-1,\ c-1,\ u-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

	Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	0		
$b =$	1.00000	0	0
$c =$	1.00000		
$d =$	0		

IV.

$$\boldsymbol{I^u_4 = \langle a+u,\ u^2+d,\ u^3+b-u,\ -2u^4-2u^3+c+2u+1,\ u^6+u^5-u^4-2u^3+u+1\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.073950 - 0.558752I$ $a = 1.073950 + 0.558752I$ $b = -0.84116 + 1.20014I$ $c = -0.78324 + 1.63778I$ $d = -0.84116 - 1.20014I$	$-5.69302I$	$5.51057I$
$u = -1.073950 + 0.558752I$ $a = 1.073950 - 0.558752I$ $b = -0.84116 - 1.20014I$ $c = -0.78324 - 1.63778I$ $d = -0.84116 + 1.20014I$	$5.69302I$	$-5.51057I$
$u = -0.428243 - 0.664531I$ $a = 0.428243 + 0.664531I$ $b = -0.917045 - 0.592379I$ $c = 0.319544 + 0.596907I$ $d = 0.258209 - 0.569162I$	$1.89061 + 0.92430I$	$3.71672 - 0.79423I$
$u = -0.428243 + 0.664531I$ $a = 0.428243 - 0.664531I$ $b = -0.917045 + 0.592379I$ $c = 0.319544 - 0.596907I$ $d = 0.258209 + 0.569162I$	$1.89061 - 0.92430I$	$3.71672 + 0.79423I$
$u = 1.002193 - 0.295542I$ $a = -1.002193 + 0.295542I$ $b = 0.258209 + 0.569162I$ $c = -0.53630 - 3.31128I$ $d = -0.917045 + 0.592379I$	$-1.89061 + 0.92430I$	$-3.71672 - 0.79423I$
$u = 1.002193 + 0.295542I$ $a = -1.002193 - 0.295542I$ $b = 0.258209 - 0.569162I$ $c = -0.53630 + 3.31128I$ $d = -0.917045 - 0.592379I$	$-1.89061 - 0.92430I$	$-3.71672 + 0.79423I$

V.

$\boldsymbol{I^u_5 = \langle d^{12}+9d^{11}+\cdots-4d+1,\ -22d^{11}-148d^{10}+\cdots+69a+40,\ 56d^{11}+452d^{10}+\cdots+69b-14,\ -10d^{11}-61d^{10}+\cdots+69c-101,\ 22d^{11}+69u+\cdots-126d-40\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\-0.318841d^{11}-2.14493d^{10}+\cdots+1.82609d+0.579710\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\0.275362d^{11}+2.57971d^{10}+\cdots+0.695652d+0.681159\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-0.275362d^{11}-2.57971d^{10}+\cdots-0.695652d+0.318841\\0.275362d^{11}+2.57971d^{10}+\cdots+0.695652d+0.681159\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0.318841d^{11}+2.14493d^{10}+\cdots-1.82609d-0.579710\\-0.811594d^{11}-6.55072d^{10}+\cdots+0.739130d+0.202899\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.318841d^{11}+2.14493d^{10}+\cdots-1.82609d-0.579710\\-0.811594d^{11}-6.55072d^{10}+\cdots+0.739130d+0.202899\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.376812d^{11}-2.89855d^{10}+\cdots-0.478261d-0.405797\\d^3+2d^2+d\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0.144928d^{11}+0.884058d^{10}+\cdots-1.73913d+1.46377\\d\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0.420290d^{11}+3.46377d^{10}+\cdots-2.04348d+1.14493\\-d^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.188406d^{11}-1.44928d^{10}+\cdots+0.260870d-1.20290\\1.39130d^{11}+10.0870d^{10}+\cdots-5.69565d+1.65217\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.420290d^{11}+3.46377d^{10}+\cdots-2.04348d+1.14493\\-d^2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.420290d^{11}+3.46377d^{10}+\cdots-2.04348d+1.14493\\-d^2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.073950 + 0.558752I$ $a = 1.073950 - 0.558752I$ $b = -0.84116 - 1.20014I$ $c = 0.109214 - 0.714907I$ $d = -1.76612 - 0.73243I$	$5.69302I$	$-5.51057I$
$u = -1.073950 - 0.558752I$ $a = 1.073950 + 0.558752I$ $b = -0.84116 + 1.20014I$ $c = 0.109214 + 0.714907I$ $d = -1.76612 + 0.73243I$	$-5.69302I$	$5.51057I$
$u = -0.428243 - 0.664531I$ $a = 0.428243 + 0.664531I$ $b = -0.917045 - 0.592379I$ $c = -0.055560 + 1.311364I$ $d = -1.73203 - 0.37023I$	$1.89061 + 0.92430I$	$3.71672 - 0.79423I$
$u = -0.428243 + 0.664531I$ $a = 0.428243 - 0.664531I$ $b = -0.917045 + 0.592379I$ $c = -0.055560 - 1.311364I$ $d = -1.73203 + 0.37023I$	$1.89061 - 0.92430I$	$3.71672 + 0.79423I$
$u = 1.002193 - 0.295542I$ $a = -1.002193 + 0.295542I$ $b = 0.258209 + 0.569162I$ $c = -0.008329 - 0.488867I$ $d = -1.297233 - 0.443379I$	$-1.89061 + 0.92430I$	$-3.71672 - 0.79423I$
$u = 1.002193 + 0.295542I$ $a = -1.002193 - 0.295542I$ $b = 0.258209 - 0.569162I$ $c = -0.008329 + 0.488867I$ $d = -1.297233 + 0.443379I$	$-1.89061 - 0.92430I$	$-3.71672 + 0.79423I$

Solution to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.428243 + 0.664531I$ $a = 0.428243 - 0.664531I$ $b = -0.917045 + 0.592379I$ $c = 1.05556 + 1.31136I$ $d = -0.526177 - 0.939391I$	$1.89061 - 0.92430I$	$3.71672 + 0.79423I$
$u = -0.428243 - 0.664531I$ $a = 0.428243 + 0.664531I$ $b = -0.917045 - 0.592379I$ $c = 1.05556 - 1.31136I$ $d = -0.526177 + 0.939391I$	$1.89061 + 0.92430I$	$3.71672 - 0.79423I$
$u = 1.002193 - 0.295542I$ $a = -1.002193 + 0.295542I$ $b = 0.258209 + 0.569162I$ $c = 1.008329 + 0.488867I$ $d = 0.214278 - 0.149000I$	$-1.89061 + 0.92430I$	$-3.71672 - 0.79423I$
$u = 1.002193 + 0.295542I$ $a = -1.002193 - 0.295542I$ $b = 0.258209 - 0.569162I$ $c = 1.008329 - 0.488867I$ $d = 0.214278 + 0.149000I$	$-1.89061 - 0.92430I$	$-3.71672 + 0.79423I$
$u = -1.073950 + 0.558752I$ $a = 1.073950 - 0.558752I$ $b = -0.84116 - 1.20014I$ $c = 0.890786 + 0.714907I$ $d = 0.607288 - 0.467717I$	$5.69302I$	$-5.51057I$
$u = -1.073950 - 0.558752I$ $a = 1.073950 + 0.558752I$ $b = -0.84116 + 1.20014I$ $c = 0.890786 - 0.714907I$ $d = 0.607288 + 0.467717I$	$-5.69302I$	$5.51057I$

VI. $\boldsymbol{I^u_6 = \langle u^2+d,\ u^{17}+u^{16}+\cdots+2b+1,\ -u^{18}-2u^{17}+\cdots+4c-4,\ u^{19}+2u^{18}+\cdots+3u+1,\ u^{18}+2u^{17}+\cdots+2a+3\rangle}$

(i) Arc colorings

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

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

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

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

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

$$a_7 = \begin{pmatrix}-\frac{1}{2}u^{18}-u^{17}+\cdots+\frac{1}{2}u-\frac{3}{2}\\-\frac{1}{2}u^{17}-\frac{1}{2}u^{16}+\cdots+u-\frac{1}{2}\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-u^{18}-\frac{3}{2}u^{17}+\cdots+\frac{1}{2}u-2\\-\frac{1}{2}u^{17}+2u^{15}+\cdots+\frac{9}{2}u^2-1\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}\frac{1}{4}u^{18}+\frac{1}{2}u^{17}+\cdots-\frac{1}{4}u+1\\-u^2\end{pmatrix}$$

$$a_9 = \begin{pmatrix}\frac{1}{2}u^{18}+\frac{3}{4}u^{17}+\cdots-\frac{3}{4}u+\frac{9}{4}\\\frac{1}{2}u^{18}+\frac{3}{4}u^{17}+\cdots+\frac{1}{4}u+\frac{3}{4}\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-\frac{1}{4}u^{17}-\frac{1}{2}u^{16}+\cdots-\frac{5}{4}u+\frac{1}{4}\\u^5-u^3+u\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}\frac{1}{4}u^{18}+\frac{1}{2}u^{17}+\cdots-\frac{1}{4}u+1\\-u^4\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}\frac{1}{4}u^{18}+\frac{1}{2}u^{17}+\cdots-\frac{1}{4}u+1\\-u^4\end{pmatrix}$$

(ii) Obstruction class $=-1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.219915-0.612443I$ $a=\ \ 1.84038+0.77324I$ $b=-1.97753+1.24306I$ $c=-1.10074+1.33083I$ $d=-1.11311-1.49426I$	$2.5538-15.5977I$	$0.09598+9.40344I$
$u=-1.219915+0.612443I$ $a=\ \ 1.84038-0.77324I$ $b=-1.97753-1.24306I$ $c=-1.10074-1.33083I$ $d=-1.11311+1.49426I$	$2.5538+15.5977I$	$0.09598-9.40344I$
$u=-1.163712-0.575900I$ $a=-1.49922-0.61081I$ $b=\ \ 1.46155-1.34018I$ $c=-1.02511+1.49171I$ $d=-1.02256-1.34036I$	$-2.61225-10.89709I$	$-3.23641+8.50579I$
$u=-1.163712+0.575900I$ $a=-1.49922+0.61081I$ $b=\ \ 1.46155+1.34018I$ $c=-1.02511-1.49171I$ $d=-1.02256+1.34036I$	$-2.61225+10.89709I$	$-3.23641-8.50579I$
$u=-0.892218-0.798617I$ $a=\ \ 0.118380-1.254991I$ $b=\ \ 0.031342+0.273386I$ $c=-0.385453+1.040442I$ $d=-0.15826-1.42508I$	$9.74824-5.99256I$	$5.35093+5.49640I$
$u=-0.892218+0.798617I$ $a=\ \ 0.118380+1.254991I$ $b=\ \ 0.031342-0.273386I$ $c=-0.385453-1.040442I$ $d=-0.15826+1.42508I$	$9.74824+5.99256I$	$5.35093-5.49640I$

Solution to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.713652 - 0.621261I$ $a = -0.078489 + 0.212487I$ $b = 0.548223 + 0.458686I$ $c = 0.127668 + 1.140610I$ $d = -0.123333 - 0.886728I$	$2.40223 - 3.63220I$	$3.52732 + 6.81616I$
$u = -0.713652 + 0.621261I$ $a = -0.078489 - 0.212487I$ $b = 0.548223 - 0.458686I$ $c = 0.127668 - 1.140610I$ $d = -0.123333 + 0.886728I$	$2.40223 + 3.63220I$	$3.52732 - 6.81616I$
$u = -0.379493 - 0.913957I$ $a = -1.49556 - 0.97073I$ $b = 1.46152 + 0.68811I$ $c = 0.012242 + 0.415167I$ $d = 0.691302 - 0.693681I$	$7.80660 + 4.21764I$	$6.24313 - 1.77538I$
$u = -0.379493 + 0.913957I$ $a = -1.49556 + 0.97073I$ $b = 1.46152 - 0.68811I$ $c = 0.012242 - 0.415167I$ $d = 0.691302 + 0.693681I$	$7.80660 - 4.21764I$	$6.24313 + 1.77538I$
$u = -0.266152$ $a = -1.40639$ $b = -0.642422$ $c = 1.15247$ $d = -0.0708367$	1.20822	9.19790
$u = 0.587370 - 0.660248I$ $a = 1.52616 - 2.19030I$ $b = -1.002697 + 0.800999I$ $c = 0.217752 - 0.865792I$ $d = 0.090924 + 0.775620I$	$4.14406 + 1.22871I$	$4.10945 - 3.37998I$

Solution to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.587370 + 0.660248I$ $a = 1.52616 + 2.19030I$ $b = -1.002697 - 0.800999I$ $c = 0.217752 + 0.865792I$ $d = 0.090924 - 0.775620I$	$4.14406 - 1.22871I$	$4.10945 + 3.37998I$
$u = 0.710407 - 0.203370I$ $a = -0.573689 + 1.178553I$ $b = 0.246691 - 0.049771I$ $c = 1.88912 - 1.55551I$ $d = -0.463319 + 0.288950I$	$-1.32552 + 1.22673I$	$-3.58366 - 5.47914I$
$u = 0.710407 + 0.203370I$ $a = -0.573689 - 1.178553I$ $b = 0.246691 + 0.049771I$ $c = 1.88912 + 1.55551I$ $d = -0.463319 - 0.288950I$	$-1.32552 - 1.22673I$	$-3.58366 + 5.47914I$
$u = 1.085303 - 0.470880I$ $a = 1.74507 + 0.02900I$ $b = -0.757420 - 1.122886I$ $c = -0.91621 - 1.95317I$ $d = -0.956154 + 1.022095I$	$-4.29720 + 4.85510I$	$-5.63265 - 5.33490I$
$u = 1.085303 + 0.470880I$ $a = 1.74507 - 0.02900I$ $b = -0.757420 + 1.122886I$ $c = -0.91621 + 1.95317I$ $d = -0.956154 - 1.022095I$	$-4.29720 - 4.85510I$	$-5.63265 + 5.33490I$
$u = 1.118985 - 0.584861I$ $a = -2.37984 - 0.16413I$ $b = 1.30952 + 1.42851I$ $c = -0.89551 - 1.52082I$ $d = -0.91007 + 1.30890I$	$0.71510 + 8.68076I$	$-0.47305 - 6.48182I$

Solution to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.118985 + 0.584861I$ $a = -2.37984 + 0.16413I$ $b = 1.30952 - 1.42851I$ $c = -0.89551 + 1.52082I$ $d = -0.91007 - 1.30890I$	$0.71510 - 8.68076I$	$-0.47305 + 6.48182I$

VII. $\boldsymbol{I^u_7 = \langle u^{10} - 3u^8 + \cdots + a - 1,\ -u^{10} + 2u^8 + \cdots + b + u,\ u^{11} - 3u^9 + \cdots + d - u,\ u^{12} - u^{11} + \cdots + 2u^2 + 1,\ u^{11} - 4u^9 + \cdots + c - 1\rangle}$

(i) Arc colorings

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

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

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

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

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

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

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

$$a_{10} = \begin{pmatrix} -u^{11} + 4u^9 + 2u^8 - 6u^7 - 6u^6 + 2u^5 + 6u^4 + 3u^3 - 2u^2 - 2u + 1 \\ -u^{11} + 3u^9 + 2u^8 - 2u^7 - 4u^6 - 3u^5 + 3u^3 + 3u^2 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2u^{11} + 7u^9 + 4u^8 - 8u^7 - 10u^6 - u^5 + 6u^4 + 6u^3 + u^2 - u + 1 \\ u^9 - u^7 - 2u^6 - u^5 + u^4 + 2u^3 + 2u^2 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2u^{11} - 8u^9 - 3u^8 + 10u^7 + 9u^6 - 7u^4 - 7u^3 + 2u - 1 \\ -u^8 + 2u^6 + u^5 - u^3 - 2u^2 - u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^9 - 4u^7 - 2u^6 + 5u^5 + 6u^4 - 4u^2 - 3u \\ -u^9 + 3u^7 + 2u^6 - 3u^5 - 4u^4 + 2u^2 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^9 - 4u^7 - 2u^6 + 5u^5 + 6u^4 - 4u^2 - 3u \\ -u^9 + 3u^7 + 2u^6 - 3u^5 - 4u^4 + 2u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_7^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.155020 - 0.191936I$ $a = 0.689693 - 0.627483I$ $b = 0.15460 + 3.71488I$ $c = 0.197010 + 0.389313I$ $d = -0.917045 + 0.592379I$	$-1.89061 + 0.92430I$	$-3.71672 - 0.79423I$
$u = -1.155020 + 0.191936I$ $a = 0.689693 + 0.627483I$ $b = 0.15460 - 3.71488I$ $c = 0.197010 - 0.389313I$ $d = -0.917045 - 0.592379I$	$-1.89061 - 0.92430I$	$-3.71672 + 0.79423I$
$u = -0.895235 - 0.524661I$ $a = -0.492029 - 0.347410I$ $b = -0.103539 - 0.942817I$ $c = 1.032251 - 0.761198I$ $d = 0.258209 + 0.569162I$	$1.89061 - 0.92430I$	$3.71672 + 0.79423I$
$u = -0.895235 + 0.524661I$ $a = -0.492029 + 0.347410I$ $b = -0.103539 + 0.942817I$ $c = 1.032251 + 0.761198I$ $d = 0.258209 - 0.569162I$	$1.89061 + 0.92430I$	$3.71672 - 0.79423I$
$u = -0.282166 - 0.828798I$ $a = -0.98800 - 1.35129I$ $b = 1.16959 + 0.91104I$ $c = 0.79119 - 1.36688I$ $d = -0.84116 + 1.20014I$	$5.69302I$	$-5.51057I$
$u = -0.282166 + 0.828798I$ $a = -0.98800 + 1.35129I$ $b = 1.16959 - 0.91104I$ $c = 0.79119 + 1.36688I$ $d = -0.84116 - 1.20014I$	$-5.69302I$	$5.51057I$

Solution to I^u_7	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.152828 - 0.487477I$ $a = 0.56945 - 2.05973I$ $b = 0.101098 + 0.828455I$ $c = 1.03484 + 2.04495I$ $d = -0.917045 - 0.592379I$	$-1.89061 - 0.92430I$	$-3.71672 + 0.79423I$
$u = 0.152828 + 0.487477I$ $a = 0.56945 + 2.05973I$ $b = 0.101098 - 0.828455I$ $c = 1.03484 - 2.04495I$ $d = -0.917045 + 0.592379I$	$-1.89061 + 0.92430I$	$-3.71672 - 0.79423I$
$u = 1.323479 - 0.139870I$ $a = 0.147997 + 0.445691I$ $b = 1.18901 - 0.78206I$ $c = 0.627522 + 0.462745I$ $d = 0.258209 + 0.569162I$	$1.89061 - 0.92430I$	$3.71672 + 0.79423I$
$u = 1.323479 + 0.139870I$ $a = 0.147997 - 0.445691I$ $b = 1.18901 + 0.78206I$ $c = 0.627522 - 0.462745I$ $d = 0.258209 - 0.569162I$	$1.89061 + 0.92430I$	$3.71672 - 0.79423I$
$u = 1.356115 - 0.270046I$ $a = -0.427109 - 0.970037I$ $b = -1.01075 + 1.59090I$ $c = 0.317192 - 0.547993I$ $d = -0.84116 - 1.20014I$	$- 5.69302I$	$5.51057I$
$u = 1.356115 + 0.270046I$ $a = -0.427109 + 0.970037I$ $b = -1.01075 - 1.59090I$ $c = 0.317192 + 0.547993I$ $d = -0.84116 + 1.20014I$	$5.69302I$	$- 5.51057I$

VIII. $\boldsymbol{I^u_8 = \langle u^{16} + u^{15} + \cdots - 4u - 4,\ 221u^{15} - 273u^{14} + \cdots + 2360a - 470,\ 727u^{15} + 393u^{14} + \cdots + 1180b - 2866,\ -593u^{15} - 31u^{14} + \cdots + 2360c + 850,\ -85u^{15} - 13u^{14} + \cdots + 590d + 1152\rangle}$

(i) Arc colorings

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

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

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

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

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

$$a_7 = \begin{pmatrix} -0.0936441u^{15} + 0.115678u^{14} + \cdots - 0.674153u + 0.199153 \\ -0.616102u^{15} - 0.333051u^{14} + \cdots - 0.478814u + 2.42881 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.114831u^{15} - 0.0699153u^{14} + \cdots - 0.693644u + 0.0686441 \\ -0.639831u^{15} - 0.0449153u^{14} + \cdots - 0.0686441u + 3.01864 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.251271u^{15} + 0.0131356u^{14} + \cdots + 0.0351695u - 0.360169 \\ 0.144068u^{15} + 0.0220339u^{14} + \cdots + 0.0525424u - 1.95254 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.146610u^{15} + 0.0483051u^{14} + \cdots + 0.622881u - 0.172881 \\ 0.502542u^{15} + 0.0262712u^{14} + \cdots + 0.0703390u - 2.72034 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.127966u^{15} + 0.0110169u^{14} + \cdots + 0.626271u + 0.423729 \\ -0.529661u^{15} - 0.239831u^{14} + \cdots - 0.687288u + 2.13729 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.107203u^{15} - 0.00889831u^{14} + \cdots - 0.0173729u + 0.592373 \\ 0.427119u^{15} + 0.0135593u^{14} + \cdots + 0.0169492u - 2.41695 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.107203u^{15} - 0.00889831u^{14} + \cdots - 0.0173729u + 0.592373 \\ 0.427119u^{15} + 0.0135593u^{14} + \cdots + 0.0169492u - 2.41695 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.157569 - 0.635502I$ $a = -1.48614 - 0.93475I$ $b = 1.57665 - 0.90527I$ $c = 0.826549 - 0.740811I$ $d = 0.863672 + 0.522607I$	$5.44991 - 9.88301I$	$3.28252 + 6.06963I$
$u = -1.157569 + 0.635502I$ $a = -1.48614 + 0.93475I$ $b = 1.57665 + 0.90527I$ $c = 0.826549 + 0.740811I$ $d = 0.863672 - 0.522607I$	$5.44991 + 9.88301I$	$3.28252 - 6.06963I$
$u = -1.076279 - 0.402850I$ $a = -0.985091 - 0.001978I$ $b = 0.32411 - 2.07852I$ $c = 0.081976 + 0.594679I$ $d = -1.43403 + 0.66344I$	$-4.77492 - 2.26376I$	$-6.05872 + 4.53378I$
$u = -1.076279 + 0.402850I$ $a = -0.985091 + 0.001978I$ $b = 0.32411 + 2.07852I$ $c = 0.081976 - 0.594679I$ $d = -1.43403 - 0.66344I$	$-4.77492 + 2.26376I$	$-6.05872 - 4.53378I$
$u = -0.783583$ $a = 0.489574$ $b = 2.20354$ $c = -0.437368$ $d = -1.26855$	-2.57083	2.16015
$u = -0.754559 - 0.841472I$ $a = -0.760920 + 0.848566I$ $b = 0.636148 - 0.242515I$ $c = 0.891409 - 0.994087I$ $d = 0.138717 + 1.269881I$	10.1546	6.33746

Solution to I_8^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.754559 + 0.841472I$ $a = -0.760920 - 0.848566I$ $b = 0.636148 + 0.242515I$ $c = 0.891409 + 0.994087I$ $d = 0.138717 - 1.269881I$	10.1546	6.33746
$u = -0.270006 - 0.967768I$ $a = 1.64151 + 1.62176I$ $b = -1.56027 - 1.09581I$ $c = 0.70037 - 1.27972I$ $d = -0.93610 + 1.47128I$	$5.44991 + 9.88301I$	$3.28252 - 6.06963I$
$u = -0.270006 + 0.967768I$ $a = 1.64151 - 1.62176I$ $b = -1.56027 + 1.09581I$ $c = 0.70037 + 1.27972I$ $d = -0.93610 - 1.47128I$	$5.44991 - 9.88301I$	$3.28252 + 6.06963I$
$u = 0.365525 - 0.776365I$ $a = -0.90049 + 2.82232I$ $b = 0.50994 - 1.48491I$ $c = 0.89340 + 1.33041I$ $d = -0.664034 - 1.131195I$	$2.93531 - 3.55755I$	$2.52739 + 2.62489I$
$u = 0.365525 + 0.776365I$ $a = -0.90049 - 2.82232I$ $b = 0.50994 + 1.48491I$ $c = 0.89340 - 1.33041I$ $d = -0.664034 + 1.131195I$	$2.93531 + 3.55755I$	$2.52739 - 2.62489I$
$u = 0.993914 - 0.569061I$ $a = 2.16175 - 0.50363I$ $b = -1.27697 - 0.76242I$ $c = 0.940155 + 0.746855I$ $d = 0.469134 - 0.567562I$	$2.93531 + 3.55755I$	$2.52739 - 2.62489I$

Solution to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.993914 + 0.569061I$ $a = \ \ 2.16175 + 0.50363I$ $b = -1.27697 + 0.76242I$ $c = \ \ 0.940155 - 0.746855I$ $d = \ \ 0.469134 + 0.567562I$	$2.93531 - 3.55755I$	$2.52739 + 2.62489I$
$u = \ \ 1.12630$ $a = -0.340604$ $b = -0.439006$ $c = \ \ 0.304284$ $d = -0.614002$	-2.57083	2.16015
$u = \ \ 1.227616 - 0.270214I$ $a = \ \ 0.754892 + 0.491159I$ $b = \ \ 0.408126 - 1.151443I$ $c = \ \ 0.232685 - 0.497052I$ $d = -0.996088 - 0.867158I$	$-4.77492 - 2.26376I$	$-6.05872 + 4.53378I$
$u = \ \ 1.227616 + 0.270214I$ $a = \ \ 0.754892 - 0.491159I$ $b = \ \ 0.408126 + 1.151443I$ $c = \ \ 0.232685 + 0.497052I$ $d = -0.996088 + 0.867158I$	$-4.77492 + 2.26376I$	$-6.05872 - 4.53378I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

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

X. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$u(u-1)^3(u^6+u^5-u^4-2u^3+u+1)^3$ $(u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1)$ $(u^{16}+u^{15}+\cdots-4u-4)(u^{19}+2u^{18}+\cdots+3u+1)$
c_2, c_{11}	$u(u+1)^3(u^6+3u^5+5u^4+4u^3+2u^2+u+1)^3$ $(u^{12}+9u^{11}+\cdots-4u+1)(u^{16}+7u^{15}+\cdots+40u+16)$ $(u^{19}+8u^{18}+\cdots+19u+1)$
c_3, c_7	$u^4(u^6+u^5-u^4-2u^3+u+1)^5$ $(u^8-3u^7+3u^6+2u^5-8u^4+9u^3-3u^2-2u+2)^2$ $(u^{19}+2u^{18}+\cdots+4u^2-8)$
c_4	$u(u-1)^2(u+1)(u^6+u^5-u^4-2u^3+u+1)^3$ $(u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1)$ $(u^{16}+u^{15}+\cdots-4u-4)(u^{19}+2u^{18}+\cdots+3u+1)$
c_5	$u(u+1)^3(u^6+u^5-u^4-2u^3+u+1)^3$ $(u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1)$ $(u^{16}+u^{15}+\cdots-4u-4)(u^{19}+2u^{18}+\cdots+3u+1)$
c_6	$u(u-1)(u+1)^2(u^6-u^5-u^4+2u^3-u+1)$ $(u^8+u^7-4u^6-3u^5+5u^4+u^3-u^2+3u-1)^2$ $(u^{12}+u^{11}-4u^{10}-2u^9+7u^8-u^7-5u^6+5u^5-u^4-3u^3+2u^2+1)^2$ $(u^{19}+2u^{18}+\cdots-8u-4)$
c_8, c_9	$u(u-1)^3(u^6-u^5-u^4+2u^3-u+1)$ $(u^8+u^7-4u^6-3u^5+5u^4+u^3-u^2+3u-1)^2$ $(u^{12}+u^{11}-4u^{10}-2u^9+7u^8-u^7-5u^6+5u^5-u^4-3u^3+2u^2+1)^2$ $(u^{19}+2u^{18}+\cdots-8u-4)$
c_{10}	$u(u-1)(u+1)^2(u^6+u^5-u^4-2u^3+u+1)^3$ $(u^{12}-u^{11}-4u^{10}+2u^9+7u^8+u^7-5u^6-5u^5-u^4+3u^3+2u^2+1)$ $(u^{16}+u^{15}+\cdots-4u-4)(u^{19}+2u^{18}+\cdots+3u+1)$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4, c_5 c_{10}	$y(y-1)^3(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^3$ $(y^{12}-9y^{11}+\cdots+4y+1)(y^{16}-7y^{15}+\cdots-40y+16)$ $(y^{19}-8y^{18}+\cdots+19y-1)$
c_2, c_{11}	$y(y-1)^3(y^6+y^5+5y^4+6y^2+3y+1)^3$ $(y^{12}-13y^{11}+\cdots-12y+1)(y^{16}+y^{15}+\cdots-544y+256)$ $(y^{19}+12y^{18}+\cdots+195y-1)$
c_3, c_7	$y^4(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^5$ $(y^8-3y^7+5y^6-4y^5+2y^4-13y^3+13y^2-16y+4)^2$ $(y^{19}-6y^{18}+\cdots+64y-64)$
c_6, c_8, c_9	$y(y-1)^3(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $(y^8-9y^7+32y^6-53y^5+31y^4+15y^3-15y^2-7y+1)^2$ $(1+4y+2y^2-23y^3+25y^4-y^5-5y^6-33y^7+73y^8-68y^9+34y^{10}-9y^{11}+y^{12})^2$ $(y^{19}-18y^{18}+\cdots+88y-16)$