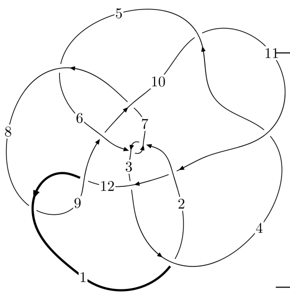
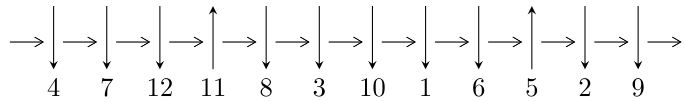
$12a_{1117}$ ($K12a_{1117}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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`).

$$
\begin{aligned}
I^u_1 = \langle &-1774u^{14} + 1315u^{13} + \cdots + 8515b + 4857,\ 421u^{14} - 2705u^{13} + \cdots + 17030a + 2712, \\
& u^{15} - u^{14} + 4u^{13} - 3u^{12} + 9u^{11} - 7u^{10} + 8u^9 - 4u^8 + 2u^7 - 2u^5 + 11u^4 + 7u^3 - 2u^2 + 4u - 2\rangle \\
I^u_2 = \langle &1.02239 \times 10^{93}u^{49} - 2.36989 \times 10^{93}u^{48} + \cdots + 2.27314 \times 10^{94}b - 4.69141 \times 10^{94}, \\
&- 2.13211 \times 10^{95}u^{49} + 7.59053 \times 10^{95}u^{48} + \cdots + 2.84142 \times 10^{96}a + 4.71518 \times 10^{97}, \\
& u^{50} - 3u^{49} + \cdots - 957u + 125\rangle \\
I^u_3 = \langle &-1.28305 \times 10^{63}au^{37} - 2.62014 \times 10^{63}u^{37} + \cdots + 2.14337 \times 10^{64}a + 3.87045 \times 10^{64}, \\
&- 7.13697 \times 10^{65}au^{37} - 1.84375 \times 10^{66}u^{37} + \cdots - 1.34162 \times 10^{67}a - 3.37015 \times 10^{66}, \\
& 2u^{38} - 3u^{37} + \cdots + 21u + 17\rangle \\
I^u_4 = \langle &u^7 + u^6 + 3u^5 + 2u^4 - u^2a + 3u^3 + u^2 + b - a + u + 1, \\
&- 2u^7a - 2u^6a - u^7 - 7u^5a - u^6 - 5u^4a - 2u^5 - 8u^3a - u^4 - 3u^2a + a^2 - 3au + u^2 + u + 1, \\
& u^9 + u^8 + 4u^7 + 3u^6 + 6u^5 + 3u^4 + 4u^3 + u^2 + u - 1\rangle \\
I^u_5 = \langle &-2u^4a + u^5 - 4u^3a - 7u^2a - u^3 - 4au - 4u^2 + b - a - 3u, \\
& 13u^5a + 13u^4a + 30u^5 + 26u^3a + 37u^4 + 13u^2a + 86u^3 + 13a^2 + 13au + 48u^2 + 26a + 65u + 38, \\
& u^6 + 2u^5 + 4u^4 + 4u^3 + 4u^2 + 3u + 1\rangle \\
I^u_6 = \langle &-u^2a + b - 1,\ 2u^5a - u^5 + 4u^3a - 2u^2a - 2u^3 + a^2 + u^2 - a,\ u^6 + u^5 + 3u^4 + 2u^3 + 2u^2 + u + 1\rangle \\
I^u_7 = \langle &2u^5 - 5u^4 - 4u^2a + 3u^3 - 4au - 6u^2 + 8b - 5u - 9,\ -212u^5a + 110u^5 + \cdots + 34a + 133, \\
& 2u^6 + u^5 + 4u^4 + 3u^3 + 5u^2 + 1\rangle \\
I^u_8 = \langle &u^2 + b - u + 1,\ a + u,\ u^3 - u^2 + 2u - 1\rangle \\
I^u_9 = \langle &u^6 - 4u^5 + 8u^4 - 11u^3 + 9u^2 + b - 5u + 3,\ -3u^7 + 10u^6 - 17u^5 + 18u^4 - 7u^3 - u^2 + 2a + u - 4, \\
& u^8 - 4u^7 + 9u^6 - 14u^5 + 15u^4 - 13u^3 + 9u^2 - 4u + 2\rangle
\end{aligned}
$$

* 9 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 206 representations.

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

I. $\boldsymbol{I_1^u = \langle -1774u^{14} + 1315u^{13} + \cdots + 8515b + 4857,\ 421u^{14} - 2705u^{13} + \cdots + 17030a + 2712,\ u^{15} - u^{14} + \cdots + 4u - 2\rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} -0.0247211u^{14} + 0.158837u^{13} + \cdots + 2.48984u - 0.159248 \\ 0.208338u^{14} - 0.154433u^{13} + \cdots - 0.364416u - 0.570405 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.135828u^{14} - 0.284588u^{13} + \cdots - 3.28945u + 1.66278 \\ -0.208338u^{14} + 0.154433u^{13} + \cdots + 0.364416u + 0.570405 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0588961u^{14} + 0.355549u^{13} + \cdots + 2.50757u - 0.858133 \\ 0.0723429u^{14} - 0.142689u^{13} + \cdots - 1.52225u + 0.130006 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.183617u^{14} + 0.00440399u^{13} + \cdots + 2.12543u - 0.729654 \\ 0.208338u^{14} - 0.154433u^{13} + \cdots - 0.364416u - 0.570405 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.251732u^{14} + 0.169407u^{13} + \cdots + 1.00317u + 0.923429 \\ -0.0823253u^{14} + 0.186729u^{13} + \cdots + 1.93036u - 0.503464 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.285203u^{14} - 0.493541u^{13} + \cdots - 1.60681u + 1.50523 \\ -0.188021u^{14} + 0.100998u^{13} + \cdots + 1.46412u - 0.367234 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0650029u^{14} + 0.00733999u^{13} + \cdots + 1.10135u - 1.26224 \\ 0.279859u^{14} - 0.352319u^{13} + \cdots - 0.664827u + 0.387669 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.349442u^{14} + 0.433059u^{13} + \cdots + 2.19507u - 1.38004 \\ 0.350206u^{14} - 0.486201u^{13} + \cdots - 0.505461u + 0.242983 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{1436398}{1439035}u^{14} + \frac{520186}{287807}u^{13} + \cdots + \frac{10729646}{1439035}u - \frac{16780726}{1439035}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$u^{15} + 3u^{12} + \cdots + 40u + 13$
c_2, c_6, c_8 c_{12}	$u^{15} + u^{14} + \cdots + 4u + 2$
c_3, c_9	$13(13u^{15} + 127u^{14} + \cdots + 224u + 64)$
c_4, c_{10}	$13(13u^{15} + 127u^{14} + \cdots + 672u + 64)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$y^{15} + 18y^{13} + \cdots + 768y - 169$
c_2, c_6, c_8 c_{12}	$y^{15} + 7y^{14} + \cdots + 8y - 4$
c_3, c_9	$169(169y^{15} - 425y^{14} + \cdots + 13312y - 4096)$
c_4, c_{10}	$169(169y^{15} + 1265y^{14} + \cdots + 35840y - 4096)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.038030 + 0.415186I$ $a = -0.107387 + 0.237703I$ $b = -1.18691 + 0.94003I$	$-6.76596 + 8.23973I$	$-12.44890 - 5.51988I$
$u = 1.038030 - 0.415186I$ $a = -0.107387 - 0.237703I$ $b = -1.18691 - 0.94003I$	$-6.76596 - 8.23973I$	$-12.44890 + 5.51988I$
$u = -0.818246 + 0.256414I$ $a = 0.119221 + 0.079347I$ $b = -0.746763 - 0.703405I$	$-1.27634 - 4.00007I$	$-9.95322 + 5.67504I$
$u = -0.818246 - 0.256414I$ $a = 0.119221 - 0.079347I$ $b = -0.746763 + 0.703405I$	$-1.27634 + 4.00007I$	$-9.95322 - 5.67504I$
$u = -0.582500 + 1.172270I$ $a = -0.726702 - 0.702424I$ $b = 0.232232 + 1.055820I$	$5.94870 + 3.89270I$	$1.63186 - 3.82155I$
$u = -0.582500 - 1.172270I$ $a = -0.726702 + 0.702424I$ $b = 0.232232 - 1.055820I$	$5.94870 - 3.89270I$	$1.63186 + 3.82155I$
$u = -0.630803 + 1.198390I$ $a = 0.37453 + 1.69980I$ $b = 0.879361 - 0.931227I$	$4.1064 + 14.7431I$	$-5.12518 - 11.18062I$
$u = -0.630803 - 1.198390I$ $a = 0.37453 - 1.69980I$ $b = 0.879361 + 0.931227I$	$4.1064 - 14.7431I$	$-5.12518 + 11.18062I$
$u = 0.053320 + 0.620675I$ $a = -1.04030 + 1.99312I$ $b = -0.984982 - 0.608770I$	$-3.34242 - 5.61099I$	$-7.68675 + 5.73270I$
$u = 0.053320 - 0.620675I$ $a = -1.04030 - 1.99312I$ $b = -0.984982 + 0.608770I$	$-3.34242 + 5.61099I$	$-7.68675 - 5.73270I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.501612 + 1.316920I$ $a = -0.603038 + 0.494954I$ $b = 0.696809 - 1.108770I$	$3.12015 - 0.43357I$	$-3.52219 - 1.71416I$
$u = 0.501612 - 1.316920I$ $a = -0.603038 - 0.494954I$ $b = 0.696809 + 1.108770I$	$3.12015 + 0.43357I$	$-3.52219 + 1.71416I$
$u = 0.73808 + 1.30226I$ $a = 0.33381 - 1.50205I$ $b = 1.32262 + 1.06232I$	$-1.3169 - 21.4322I$	$-8.08580 + 10.72948I$
$u = 0.73808 - 1.30226I$ $a = 0.33381 + 1.50205I$ $b = 1.32262 - 1.06232I$	$-1.3169 + 21.4322I$	$-8.08580 - 10.72948I$
$u = 0.401015$ $a = 1.22281$ $b = -0.424742$	-0.947362	-10.6110

II. $\boldsymbol{I^u_2 = \langle 1.02 \times 10^{93}u^{49} - 2.37 \times 10^{93}u^{48} + \cdots + 2.27 \times 10^{94}b - 4.69 \times 10^{94},\ -2.13 \times 10^{95}u^{49} + 7.59 \times 10^{95}u^{48} + \cdots + 2.84 \times 10^{96}a + 4.72 \times 10^{97},\ u^{50} - 3u^{49} + \cdots - 957u + 125\rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} 0.0750367u^{49} - 0.267139u^{48} + \cdots + 114.350u - 16.5944 \\ -0.0449772u^{49} + 0.104256u^{48} + \cdots - 10.0854u + 2.06385 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.105135u^{49} + 0.507258u^{48} + \cdots - 294.562u + 45.6110 \\ -0.00353631u^{49} + 0.0153181u^{48} + \cdots - 2.87629u + 0.356571 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0323039u^{49} + 0.0449478u^{48} + \cdots + 25.2923u - 1.57484 \\ 0.00276577u^{49} - 0.00285242u^{48} + \cdots + 1.62853u - 0.570441 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.0300595u^{49} - 0.162882u^{48} + \cdots + 104.264u - 14.5306 \\ -0.0449772u^{49} + 0.104256u^{48} + \cdots - 10.0854u + 2.06385 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0372083u^{49} + 0.116277u^{48} + \cdots - 56.4918u + 7.97128 \\ 0.00465181u^{49} + 0.0233411u^{48} + \cdots - 27.6371u + 4.65104 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0165108u^{49} - 0.00455519u^{48} + \cdots + 10.6297u - 5.71548 \\ 0.0727039u^{49} - 0.145011u^{48} + \cdots - 14.2364u + 3.75744 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0355511u^{49} + 0.0403247u^{48} + \cdots + 33.8998u - 5.13149 \\ -0.0608665u^{49} + 0.155509u^{48} + \cdots - 32.2651u + 3.01319 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.0112339u^{49} + 0.0339683u^{48} + \cdots - 48.1295u + 11.0302 \\ -0.0250331u^{49} + 0.0529219u^{48} + \cdots + 19.3755u - 4.09822 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3.05039u^{49} - 8.14878u^{48} + \cdots + 2125.58u - 268.153$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$u^{50} - u^{49} + \cdots + 20u + 4$
c_2, c_6, c_8 c_{12}	$u^{50} + 3u^{49} + \cdots + 957u + 125$
c_3, c_9	$(u^{25} - 7u^{23} + \cdots + u + 1)^2$
c_4, c_{10}	$(u^{25} + u^{24} + \cdots - 8u + 8)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$y^{50} - 11y^{49} + \cdots + 448y + 16$
c_2, c_6, c_8 c_{12}	$y^{50} + 19y^{49} + \cdots - 73349y + 15625$
c_3, c_9	$(y^{25} - 14y^{24} + \cdots - 13y - 1)^2$
c_4, c_{10}	$(y^{25} - 7y^{24} + \cdots - 1312y - 64)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.962281 + 0.315271I$ $a = 0.039372 - 0.397643I$ $b = 0.810487 + 0.733899I$	$1.42815 - 8.97153I$	$-6.72568 + 8.57221I$
$u = -0.962281 - 0.315271I$ $a = 0.039372 + 0.397643I$ $b = 0.810487 - 0.733899I$	$1.42815 + 8.97153I$	$-6.72568 - 8.57221I$
$u = 0.493412 + 0.847894I$ $a = -2.46208 - 4.61887I$ $b = -0.114573 + 0.136054I$	0.0113486	$-289.859 + 0.I$
$u = 0.493412 - 0.847894I$ $a = -2.46208 + 4.61887I$ $b = -0.114573 - 0.136054I$	0.0113486	$-289.859 + 0.I$
$u = 0.946964 + 0.384547I$ $a = 0.712275 - 0.392895I$ $b = 0.985125 + 0.661648I$	$-0.15061 - 5.36191I$	$-7.12834 + 6.24088I$
$u = 0.946964 - 0.384547I$ $a = 0.712275 + 0.392895I$ $b = 0.985125 - 0.661648I$	$-0.15061 + 5.36191I$	$-7.12834 - 6.24088I$
$u = 0.601348 + 0.838260I$ $a = 0.208165 + 1.190200I$ $b = -1.55792 + 0.01038I$	$-5.63520 - 2.36394I$	$-15.9843 + 4.4825I$
$u = 0.601348 - 0.838260I$ $a = 0.208165 - 1.190200I$ $b = -1.55792 - 0.01038I$	$-5.63520 + 2.36394I$	$-15.9843 - 4.4825I$
$u = 0.313305 + 0.881758I$ $a = 0.70859 + 2.12070I$ $b = -1.95477 - 0.19516I$	$-3.73498 - 1.36050I$	$-1.10822 - 1.97856I$
$u = 0.313305 - 0.881758I$ $a = 0.70859 - 2.12070I$ $b = -1.95477 + 0.19516I$	$-3.73498 + 1.36050I$	$-1.10822 + 1.97856I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.249090 + 1.047960I$ $a = -0.63091 + 1.48019I$ $b = \ \ 0.739655 - 0.926973I$	$1.45153 - 5.02987I$	$-7.30473 + 4.45843I$
$u = \ \ 0.249090 - 1.047960I$ $a = -0.63091 - 1.48019I$ $b = \ \ 0.739655 + 0.926973I$	$1.45153 + 5.02987I$	$-7.30473 - 4.45843I$
$u = -0.242281 + 1.086980I$ $a = \ \ 0.759622 + 0.980906I$ $b = -0.117932 - 0.819072I$	$3.28228 - 1.03639I$	$-2.01858 + 2.13545I$
$u = -0.242281 - 1.086980I$ $a = \ \ 0.759622 - 0.980906I$ $b = -0.117932 + 0.819072I$	$3.28228 + 1.03639I$	$-2.01858 - 2.13545I$
$u = -0.170002 + 0.849577I$ $a = \ \ 0.47091 - 1.81641I$ $b = -1.269920 + 0.483777I$	$-0.954576 + 1.006090I$	$-21.6904 - 0.7850I$
$u = -0.170002 - 0.849577I$ $a = \ \ 0.47091 + 1.81641I$ $b = -1.269920 - 0.483777I$	$-0.954576 - 1.006090I$	$-21.6904 + 0.7850I$
$u = \ \ 0.706085 + 0.894642I$ $a = \ \ 0.713820 - 0.553959I$ $b = \ \ 0.571998 + 0.140311I$	$-1.32757 - 2.72807I$	$-8.00000 + 0.I$
$u = \ \ 0.706085 - 0.894642I$ $a = \ \ 0.713820 + 0.553959I$ $b = \ \ 0.571998 - 0.140311I$	$-1.32757 + 2.72807I$	$-8.00000 + 0.I$
$u = -1.180310 + 0.078417I$ $a = \ \ 0.213834 - 0.613152I$ $b = -0.103922 - 0.683562I$	$-5.63520 - 2.36394I$	$-15.9843 + 4.4825I$
$u = -1.180310 - 0.078417I$ $a = \ \ 0.213834 + 0.613152I$ $b = -0.103922 + 0.683562I$	$-5.63520 + 2.36394I$	$-15.9843 - 4.4825I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.074692 + 1.200860I$ $a = 0.686373 - 1.101630I$ $b = -0.622763 + 1.268480I$	$-0.15061 + 5.36191I$	$-8.00000 + 0.I$
$u = 0.074692 - 1.200860I$ $a = 0.686373 + 1.101630I$ $b = -0.622763 - 1.268480I$	$-0.15061 - 5.36191I$	$-8.00000 + 0.I$
$u = 0.390389 + 1.160270I$ $a = -0.14604 - 1.82543I$ $b = 1.58187 + 0.79235I$	$4.19376 - 8.71277I$	0
$u = 0.390389 - 1.160270I$ $a = -0.14604 + 1.82543I$ $b = 1.58187 - 0.79235I$	$4.19376 + 8.71277I$	0
$u = -0.743476 + 0.164819I$ $a = 0.655758 + 0.108650I$ $b = 0.589628 - 0.786025I$	$3.28228 + 1.03639I$	$-2.01858 - 2.13545I$
$u = -0.743476 - 0.164819I$ $a = 0.655758 - 0.108650I$ $b = 0.589628 + 0.786025I$	$3.28228 - 1.03639I$	$-2.01858 + 2.13545I$
$u = 1.223420 + 0.291121I$ $a = 0.061981 - 0.257278I$ $b = -0.148168 + 0.319622I$	$-0.954576 - 1.006090I$	0
$u = 1.223420 - 0.291121I$ $a = 0.061981 + 0.257278I$ $b = -0.148168 - 0.319622I$	$-0.954576 + 1.006090I$	0
$u = -0.535150 + 1.155570I$ $a = -0.24384 - 1.72241I$ $b = -0.855287 + 1.021820I$	$1.42815 + 8.97153I$	0
$u = -0.535150 - 1.155570I$ $a = -0.24384 + 1.72241I$ $b = -0.855287 - 1.021820I$	$1.42815 - 8.97153I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.372106 + 1.237480I$ $a = 0.11902 + 1.61329I$ $b = 1.05126 - 1.02792I$	$7.40741 + 4.94924I$	0
$u = -0.372106 - 1.237480I$ $a = 0.11902 - 1.61329I$ $b = 1.05126 + 1.02792I$	$7.40741 - 4.94924I$	0
$u = 1.291650 + 0.403695I$ $a = 0.1203380 + 0.0039571I$ $b = 1.09552 - 0.98588I$	$-4.2488 + 14.3474I$	0
$u = 1.291650 - 0.403695I$ $a = 0.1203380 - 0.0039571I$ $b = 1.09552 + 0.98588I$	$-4.2488 - 14.3474I$	0
$u = 0.755348 + 1.140700I$ $a = -0.389887 + 0.934449I$ $b = -0.466731 - 0.418496I$	$1.45153 - 5.02987I$	0
$u = 0.755348 - 1.140700I$ $a = -0.389887 - 0.934449I$ $b = -0.466731 + 0.418496I$	$1.45153 + 5.02987I$	0
$u = 0.659409 + 1.203940I$ $a = -0.32021 + 1.67118I$ $b = -1.41005 - 1.08673I$	$-4.2488 - 14.3474I$	0
$u = 0.659409 - 1.203940I$ $a = -0.32021 - 1.67118I$ $b = -1.41005 + 1.08673I$	$-4.2488 + 14.3474I$	0
$u = 0.072477 + 0.606484I$ $a = -1.03463 - 2.22816I$ $b = 1.400570 - 0.171399I$	$1.57283 + 6.25459I$	$-7.09425 - 6.20570I$
$u = 0.072477 - 0.606484I$ $a = -1.03463 + 2.22816I$ $b = 1.400570 + 0.171399I$	$1.57283 - 6.25459I$	$-7.09425 + 6.20570I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.14698 + 1.41040I$ $a = -0.494719 - 0.953376I$ $b = 0.309442 + 0.752193I$	$7.40741 - 4.94924I$	0
$u = -0.14698 - 1.41040I$ $a = -0.494719 + 0.953376I$ $b = 0.309442 - 0.752193I$	$7.40741 + 4.94924I$	0
$u = -0.49243 + 1.50322I$ $a = -0.041335 - 1.053700I$ $b = -0.64704 + 1.29841I$	$1.57283 + 6.25459I$	0
$u = -0.49243 - 1.50322I$ $a = -0.041335 + 1.053700I$ $b = -0.64704 - 1.29841I$	$1.57283 - 6.25459I$	0
$u = 0.334545 + 0.056281I$ $a = 0.80170 + 1.41679I$ $b = 0.121420 - 0.744450I$	$-1.32757 - 2.72807I$	$-5.71643 + 1.76366I$
$u = 0.334545 - 0.056281I$ $a = 0.80170 - 1.41679I$ $b = 0.121420 + 0.744450I$	$-1.32757 + 2.72807I$	$-5.71643 - 1.76366I$
$u = -1.69246 + 0.17139I$ $a = 0.0901819 - 0.0534982I$ $b = -0.077041 - 1.057990I$	$-3.73498 + 1.36050I$	0
$u = -1.69246 - 0.17139I$ $a = 0.0901819 + 0.0534982I$ $b = -0.077041 + 1.057990I$	$-3.73498 - 1.36050I$	0
$u = -0.07465 + 1.74368I$ $a = -0.202288 + 0.850448I$ $b = 0.589151 - 1.273730I$	$4.19376 + 8.71277I$	0
$u = -0.07465 - 1.74368I$ $a = -0.202288 - 0.850448I$ $b = 0.589151 + 1.273730I$	$4.19376 - 8.71277I$	0

III. $\boldsymbol{I_3^u = \langle -1.28 \times 10^{63} a u^{37} - 2.62 \times 10^{63} u^{37} + \cdots + 2.14 \times 10^{64} a + 3.87 \times 10^{64},\ -7.14 \times 10^{65} a u^{37} - 1.84 \times 10^{66} u^{37} + \cdots - 1.34 \times 10^{67} a - 3.37 \times 10^{66},\ 2u^{38} - 3u^{37} + \cdots + 21u + 17 \rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} a \\ 0.106339au^{37} + 0.217158u^{37} + \cdots - 1.77643a - 3.20783 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0534232au^{37} - 0.392917u^{37} + \cdots + 4.95562a + 7.59732 \\ -0.0962820au^{37} - 0.180215u^{37} + \cdots + 0.906877a + 0.780461 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.216255au^{37} + 1.23930u^{37} + \cdots - 3.28167a - 6.64201 \\ 0.129769au^{37} + 0.552372u^{37} + \cdots - 0.715136a + 1.66440 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.106339au^{37} + 0.217158u^{37} + \cdots - 0.776427a - 3.20783 \\ 0.106339au^{37} + 0.217158u^{37} + \cdots - 1.77643a - 3.20783 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.182671au^{37} - 0.726160u^{37} + \cdots + 2.16849a + 1.45704 \\ -0.201850au^{37} - 0.513458u^{37} + \cdots - 1.55270a - 5.35982 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.208991au^{37} + 0.272662u^{37} + \cdots + 1.92898a + 7.20364 \\ -0.152476au^{37} - 0.486462u^{37} + \cdots - 0.903884a - 0.470790 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0694187au^{37} + 0.849176u^{37} + \cdots + 1.65114a + 15.0369 \\ 0.149109au^{37} + 0.212456u^{37} + \cdots + 2.61168a + 8.33710 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.361467au^{37} - 0.529227u^{37} + \cdots - 2.83287a - 7.65774 \\ 0.0845476au^{37} + 0.366409u^{37} + \cdots + 0.172876a - 0.233667 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.432764u^{37} + 1.23037u^{36} + \cdots + 6.30892u - 4.51753$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$8(8u^{76} - 90u^{75} + \cdots - 4995u + 404)$
c_2, c_6, c_8 c_{12}	$4(2u^{38} + 3u^{37} + \cdots - 21u + 17)^2$
c_3, c_9	$4(2u^{38} - 9u^{37} + \cdots - 13u + 4)^2$
c_4, c_{10}	$(u^{19} - 2u^{18} + \cdots - 2u - 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$64(64y^{76} - 980y^{75} + \cdots + 3.63279 \times 10^7 y + 163216)$
c_2, c_6, c_8 c_{12}	$16(4y^{38} + 79y^{37} + \cdots + 2959y + 289)^2$
c_3, c_9	$16(4y^{38} - 41y^{37} + \cdots + 455y + 16)^2$
c_4, c_{10}	$(y^{19} + 14y^{18} + \cdots - 12y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.933781 + 0.188280I$ $a = 0.105927 - 0.244777I$ $b = 0.996480 + 0.475628I$	$-3.98037 - 6.82755I$	$-13.3540 + 7.7872I$
$u = 0.933781 + 0.188280I$ $a = 1.66297 - 0.60548I$ $b = 1.020730 - 0.881690I$	$-3.98037 - 6.82755I$	$-13.3540 + 7.7872I$
$u = 0.933781 - 0.188280I$ $a = 0.105927 + 0.244777I$ $b = 0.996480 - 0.475628I$	$-3.98037 + 6.82755I$	$-13.3540 - 7.7872I$
$u = 0.933781 - 0.188280I$ $a = 1.66297 + 0.60548I$ $b = 1.020730 + 0.881690I$	$-3.98037 + 6.82755I$	$-13.3540 - 7.7872I$
$u = -0.841472 + 0.653374I$ $a = 0.752367 + 0.071132I$ $b = 0.723212 - 0.165375I$	$-5.48019 - 0.95946I$	$-12.64933 + 6.06203I$
$u = -0.841472 + 0.653374I$ $a = 0.567301 - 0.269566I$ $b = -1.17778 - 1.01022I$	$-5.48019 - 0.95946I$	$-12.64933 + 6.06203I$
$u = -0.841472 - 0.653374I$ $a = 0.752367 - 0.071132I$ $b = 0.723212 + 0.165375I$	$-5.48019 + 0.95946I$	$-12.64933 - 6.06203I$
$u = -0.841472 - 0.653374I$ $a = 0.567301 + 0.269566I$ $b = -1.17778 + 1.01022I$	$-5.48019 + 0.95946I$	$-12.64933 - 6.06203I$
$u = -0.238086 + 1.064410I$ $a = 0.84928 - 1.97193I$ $b = -0.621321 + 0.096741I$	$-0.683516 + 0.134674I$	$-44.7966 + 5.0465I$
$u = -0.238086 + 1.064410I$ $a = 0.75401 + 3.11833I$ $b = 0.67703 - 3.51919I$	$-0.683516 + 0.134674I$	$-44.7966 + 5.0465I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.238086-1.064410I$ $a=\ \ 0.84928+1.97193I$ $b=-0.621321-0.096741I$	$-0.683516-0.134674I$	$-44.7966-5.0465I$
$u=-0.238086-1.064410I$ $a=\ \ 0.75401-3.11833I$ $b=\ \ 0.67703+3.51919I$	$-0.683516-0.134674I$	$-44.7966-5.0465I$
$u=-0.451308+1.024490I$ $a=-0.994335-0.336778I$ $b=\ \ 1.34197+0.76243I$	$3.04788+7.94026I$	$-5.67778-8.73922I$
$u=-0.451308+1.024490I$ $a=\ \ 0.20407+2.17558I$ $b=\ \ 0.849227-0.506240I$	$3.04788+7.94026I$	$-5.67778-8.73922I$
$u=-0.451308-1.024490I$ $a=-0.994335+0.336778I$ $b=\ \ 1.34197-0.76243I$	$3.04788-7.94026I$	$-5.67778+8.73922I$
$u=-0.451308-1.024490I$ $a=\ \ 0.20407-2.17558I$ $b=\ \ 0.849227+0.506240I$	$3.04788-7.94026I$	$-5.67778+8.73922I$
$u=-0.164628+0.845374I$ $a=-0.00863-1.55753I$ $b=-1.182560+0.237229I$	$-0.960450+0.995893I$	$-22.4768+4.8360I$
$u=-0.164628+0.845374I$ $a=\ \ 0.65453-2.29406I$ $b=-1.28491+0.97049I$	$-0.960450+0.995893I$	$-22.4768+4.8360I$
$u=-0.164628-0.845374I$ $a=-0.00863+1.55753I$ $b=-1.182560-0.237229I$	$-0.960450-0.995893I$	$-22.4768-4.8360I$
$u=-0.164628-0.845374I$ $a=\ \ 0.65453+2.29406I$ $b=-1.28491-0.97049I$	$-0.960450-0.995893I$	$-22.4768-4.8360I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.387448 + 0.760260I$ $a = 0.799892 + 1.003770I$ $b = 0.656168 - 0.504400I$	0.870499	$-6 - 0.711363 + 0.10I$
$u = 0.387448 + 0.760260I$ $a = 0.31579 + 3.04596I$ $b = -0.339800 - 0.571117I$	0.870499	$-6 - 0.711363 + 0.10I$
$u = 0.387448 - 0.760260I$ $a = 0.799892 - 1.003770I$ $b = 0.656168 + 0.504400I$	0.870499	$-6 - 0.711363 + 0.10I$
$u = 0.387448 - 0.760260I$ $a = 0.31579 - 3.04596I$ $b = -0.339800 + 0.571117I$	0.870499	$-6 - 0.711363 + 0.10I$
$u = -0.691562 + 0.955412I$ $a = 0.773137 + 0.346408I$ $b = 0.912754 - 0.175817I$	$-5.10643 + 7.48293I$	$-16.6971 + 0.1409I$
$u = -0.691562 + 0.955412I$ $a = -0.59549 - 1.96308I$ $b = -1.14924 + 1.13513I$	$-5.10643 + 7.48293I$	$-16.6971 + 0.1409I$
$u = -0.691562 - 0.955412I$ $a = 0.773137 - 0.346408I$ $b = 0.912754 + 0.175817I$	$-5.10643 - 7.48293I$	$-16.6971 - 0.1409I$
$u = -0.691562 - 0.955412I$ $a = -0.59549 + 1.96308I$ $b = -1.14924 - 1.13513I$	$-5.10643 - 7.48293I$	$-16.6971 - 0.1409I$
$u = -0.579481 + 0.522431I$ $a = 0.756320 - 0.086240I$ $b = 1.033740 + 0.466854I$	$1.60053 - 3.89157I$	$-6.73539 + 3.20239I$
$u = -0.579481 + 0.522431I$ $a = 0.326000 + 1.349790I$ $b = 0.670506 - 0.673943I$	$1.60053 - 3.89157I$	$-6.73539 + 3.20239I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.579481 - 0.522431I$ $a = 0.756320 + 0.086240I$ $b = 1.033740 - 0.466854I$	$1.60053 + 3.89157I$	$-6.73539 - 3.20239I$
$u = -0.579481 - 0.522431I$ $a = 0.326000 - 1.349790I$ $b = 0.670506 + 0.673943I$	$1.60053 + 3.89157I$	$-6.73539 - 3.20239I$
$u = 0.464150 + 1.141220I$ $a = 0.377184 - 0.948532I$ $b = 0.427638 + 0.869189I$	$1.60053 - 3.89157I$	$-6.73539 + 3.20239I$
$u = 0.464150 + 1.141220I$ $a = 0.00672 + 1.63598I$ $b = -0.702040 - 0.840906I$	$1.60053 - 3.89157I$	$-6.73539 + 3.20239I$
$u = 0.464150 - 1.141220I$ $a = 0.377184 + 0.948532I$ $b = 0.427638 - 0.869189I$	$1.60053 + 3.89157I$	$-6.73539 - 3.20239I$
$u = 0.464150 - 1.141220I$ $a = 0.00672 - 1.63598I$ $b = -0.702040 + 0.840906I$	$1.60053 + 3.89157I$	$-6.73539 - 3.20239I$
$u = -0.078564 + 0.734152I$ $a = -1.82765 - 0.47145I$ $b = -1.066650 + 0.247416I$	$-2.27547 + 1.37800I$	$-13.7043 + 11.8554I$
$u = -0.078564 + 0.734152I$ $a = -3.31675 + 0.89532I$ $b = 2.28139 + 0.16151I$	$-2.27547 + 1.37800I$	$-13.7043 + 11.8554I$
$u = -0.078564 - 0.734152I$ $a = -1.82765 + 0.47145I$ $b = -1.066650 - 0.247416I$	$-2.27547 - 1.37800I$	$-13.7043 - 11.8554I$
$u = -0.078564 - 0.734152I$ $a = -3.31675 - 0.89532I$ $b = 2.28139 - 0.16151I$	$-2.27547 - 1.37800I$	$-13.7043 - 11.8554I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.217610 + 0.400666I$ $a = 0.061911 - 0.276258I$ $b = -0.403567 + 0.531246I$	$-0.960450 - 0.995893I$	$-22.4768 - 4.8360I$
$u = 1.217610 + 0.400666I$ $a = -0.018240 - 0.249708I$ $b = 0.0231783 + 0.0766993I$	$-0.960450 - 0.995893I$	$-22.4768 - 4.8360I$
$u = 1.217610 - 0.400666I$ $a = 0.061911 + 0.276258I$ $b = -0.403567 - 0.531246I$	$-0.960450 + 0.995893I$	$-22.4768 + 4.8360I$
$u = 1.217610 - 0.400666I$ $a = -0.018240 + 0.249708I$ $b = 0.0231783 - 0.0766993I$	$-0.960450 + 0.995893I$	$-22.4768 + 4.8360I$
$u = -0.684894 + 1.116340I$ $a = 0.244232 + 0.901332I$ $b = 0.605222 - 0.113978I$	$-3.98037 + 6.82755I$	$-13.3540 - 7.7872I$
$u = -0.684894 + 1.116340I$ $a = -0.47970 - 1.66374I$ $b = -1.34951 + 1.38337I$	$-3.98037 + 6.82755I$	$-13.3540 - 7.7872I$
$u = -0.684894 - 1.116340I$ $a = 0.244232 - 0.901332I$ $b = 0.605222 + 0.113978I$	$-3.98037 - 6.82755I$	$-13.3540 + 7.7872I$
$u = -0.684894 - 1.116340I$ $a = -0.47970 + 1.66374I$ $b = -1.34951 - 1.38337I$	$-3.98037 - 6.82755I$	$-13.3540 + 7.7872I$
$u = 0.472980 + 1.273040I$ $a = -1.083340 + 0.850013I$ $b = 1.25572 - 2.03182I$	$0.24331 - 11.58260I$	$-10.0452 + 12.8873I$
$u = 0.472980 + 1.273040I$ $a = -0.14464 - 1.65325I$ $b = 1.111690 + 0.814575I$	$0.24331 - 11.58260I$	$-10.0452 + 12.8873I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.472980 - 1.273040I$ $a = -1.083340 - 0.850013I$ $b = 1.25572 + 2.03182I$	$0.24331 + 11.58260I$	$-10.0452 - 12.8873I$
$u = 0.472980 - 1.273040I$ $a = -0.14464 + 1.65325I$ $b = 1.111690 - 0.814575I$	$0.24331 + 11.58260I$	$-10.0452 - 12.8873I$
$u = 0.415391 + 0.371674I$ $a = -0.077211 + 0.485024I$ $b = -1.193300 - 0.317780I$	$-5.48019 - 0.95946I$	$-12.64933 + 6.06203I$
$u = 0.415391 + 0.371674I$ $a = -0.19604 + 3.65151I$ $b = -0.700809 + 0.707029I$	$-5.48019 - 0.95946I$	$-12.64933 + 6.06203I$
$u = 0.415391 - 0.371674I$ $a = -0.077211 - 0.485024I$ $b = -1.193300 + 0.317780I$	$-5.48019 + 0.95946I$	$-12.64933 - 6.06203I$
$u = 0.415391 - 0.371674I$ $a = -0.19604 - 3.65151I$ $b = -0.700809 - 0.707029I$	$-5.48019 + 0.95946I$	$-12.64933 - 6.06203I$
$u = 0.66811 + 1.30895I$ $a = -0.124125 + 0.886577I$ $b = -0.581113 - 0.898459I$	$3.04788 - 7.94026I$	$0. + 8.73922I$
$u = 0.66811 + 1.30895I$ $a = 0.37947 - 1.36441I$ $b = 0.915693 + 0.869626I$	$3.04788 - 7.94026I$	$0. + 8.73922I$
$u = 0.66811 - 1.30895I$ $a = -0.124125 - 0.886577I$ $b = -0.581113 + 0.898459I$	$3.04788 + 7.94026I$	$0. - 8.73922I$
$u = 0.66811 - 1.30895I$ $a = 0.37947 + 1.36441I$ $b = 0.915693 - 0.869626I$	$3.04788 + 7.94026I$	$0. - 8.73922I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.05019+1.50715I$ $a=\ \ 0.316592-0.369647I$ $b=-0.363340+0.534895I$	$-2.27547-1.37800I$	$-8.0000-11.8554I$
$u=-0.05019+1.50715I$ $a=-0.135074+0.270106I$ $b=-1.63871-0.37783I$	$-2.27547-1.37800I$	$-8.0000-11.8554I$
$u=-0.05019-1.50715I$ $a=\ \ 0.316592+0.369647I$ $b=-0.363340-0.534895I$	$-2.27547+1.37800I$	$-8.0000+11.8554I$
$u=-0.05019-1.50715I$ $a=-0.135074-0.270106I$ $b=-1.63871+0.37783I$	$-2.27547+1.37800I$	$-8.0000+11.8554I$
$u=-0.318640+0.315167I$ $a=-0.497138+0.197173I$ $b=\ \ 1.224620+0.605125I$	$-5.10643-7.48293I$	$-16.6971-0.1409I$
$u=-0.318640+0.315167I$ $a=-2.28528-6.21614I$ $b=-0.462579-0.551068I$	$-5.10643-7.48293I$	$-16.6971-0.1409I$
$u=-0.318640-0.315167I$ $a=-0.497138-0.197173I$ $b=\ \ 1.224620-0.605125I$	$-5.10643+7.48293I$	$-16.6971+0.1409I$
$u=-0.318640-0.315167I$ $a=-2.28528+6.21614I$ $b=-0.462579+0.551068I$	$-5.10643+7.48293I$	$-16.6971+0.1409I$
$u=-0.90740+1.34164I$ $a=\ \ 0.502665+1.271280I$ $b=\ \ 1.52315-1.14474I$	$0.24331+11.58260I$	0
$u=-0.90740+1.34164I$ $a=-0.063019-0.545231I$ $b=-0.499985+0.225728I$	$0.24331+11.58260I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.90740 - 1.34164I$ $a = 0.502665 - 1.271280I$ $b = 1.52315 + 1.14474I$	$0.24331 - 11.58260I$	0
$u = -0.90740 - 1.34164I$ $a = -0.063019 + 0.545231I$ $b = -0.499985 - 0.225728I$	$0.24331 - 11.58260I$	0
$u = 1.19676 + 1.43800I$ $a = 0.254543 - 0.172702I$ $b = 1.72483 - 0.60927I$	$-0.683516 + 0.134674I$	0
$u = 1.19676 + 1.43800I$ $a = -0.0755994 - 0.1194610I$ $b = 0.367275 + 0.034882I$	$-0.683516 + 0.134674I$	0
$u = 1.19676 - 1.43800I$ $a = 0.254543 + 0.172702I$ $b = 1.72483 + 0.60927I$	$-0.683516 - 0.134674I$	0
$u = 1.19676 - 1.43800I$ $a = -0.0755994 + 0.1194610I$ $b = 0.367275 - 0.034882I$	$-0.683516 - 0.134674I$	0

IV.

$\boldsymbol{I^u_4 = \langle u^7 + u^6 + \cdots - a + 1,\ -2u^7a - u^7 + \cdots + a^2 + 1,\ u^9 + u^8 + \cdots + u - 1\rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} a \\ -u^7 - u^6 - 3u^5 - 2u^4 + u^2a - 3u^3 - u^2 + a - u - 1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} u^5 + u^4 + 2u^3 + 2u^2 + u \\ -u^7 - u^6 - 4u^5 - 2u^4 - 5u^3 - u^2 + a - 2u \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} u^6a + 3u^4a - u^4 + 3u^2a - 2u^2 + a - 1 \\ -u^7a - 3u^5a + u^5 - 3u^3a + 3u^3 - au + 2u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^8a - u^7a + \cdots - a + 1 \\ u^5 + 2u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^8a - u^7a + \cdots - a + 1 \\ u^8 + u^7 + 4u^6 + 3u^5 + 5u^4 + 3u^3 - au + 2u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3u^8 - 3u^7 + 5u^6 - 9u^5 + u^4 - 11u^3 - u^2 - 4u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$u^{18} - 2u^{16} + \cdots + 3u + 1$
c_2, c_6, c_8 c_{12}	$(u^9 - u^8 + 4u^7 - 3u^6 + 6u^5 - 3u^4 + 4u^3 - u^2 + u + 1)^2$
c_3, c_9	$u^{18} + 18u^{17} + \cdots + 3245u + 341$
c_4, c_{10}	$(u^9 + 7u^8 + 26u^7 + 65u^6 + 117u^5 + 156u^4 + 153u^3 + 104u^2 + 44u + 8)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$y^{18} - 4y^{17} + \cdots - 13y + 1$
c_2, c_6, c_8 c_{12}	$(y^9 + 7y^8 + 22y^7 + 41y^6 + 50y^5 + 43y^4 + 28y^3 + 13y^2 + 3y - 1)^2$
c_3, c_9	$y^{18} - 8y^{17} + \cdots - 386639y + 116281$
c_4, c_{10}	$(y^9 + 3y^8 - 19y^6 - 3y^5 + 122y^4 + 217y^3 + 152y^2 + 272y - 64)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.398448 + 0.968200I$ $a = -0.745696 - 0.848220I$ $b = -0.854163 + 0.434423I$	$1.60321 - 3.32200I$	$-5.77768 + 4.12286I$
$u = 0.398448 + 0.968200I$ $a = 0.11677 - 2.36965I$ $b = 0.510610 + 0.763099I$	$1.60321 - 3.32200I$	$-5.77768 + 4.12286I$
$u = 0.398448 - 0.968200I$ $a = -0.745696 + 0.848220I$ $b = -0.854163 - 0.434423I$	$1.60321 + 3.32200I$	$-5.77768 - 4.12286I$
$u = 0.398448 - 0.968200I$ $a = 0.11677 + 2.36965I$ $b = 0.510610 - 0.763099I$	$1.60321 + 3.32200I$	$-5.77768 - 4.12286I$
$u = -0.666324 + 0.608477I$ $a = 0.346923 - 0.044949I$ $b = -1.25702 - 0.77747I$	$-5.98602 - 2.30983I$	$-14.3464 - 0.9539I$
$u = -0.666324 + 0.608477I$ $a = 0.99037 + 1.47199I$ $b = 0.663942 + 0.329578I$	$-5.98602 - 2.30983I$	$-14.3464 - 0.9539I$
$u = -0.666324 - 0.608477I$ $a = 0.346923 + 0.044949I$ $b = -1.25702 + 0.77747I$	$-5.98602 + 2.30983I$	$-14.3464 + 0.9539I$
$u = -0.666324 - 0.608477I$ $a = 0.99037 - 1.47199I$ $b = 0.663942 - 0.329578I$	$-5.98602 + 2.30983I$	$-14.3464 + 0.9539I$
$u = -0.476469 + 1.156270I$ $a = -0.940419 - 0.249560I$ $b = -1.081930 + 0.165023I$	$-2.37939 + 11.33830I$	$-9.50041 - 9.03145I$
$u = -0.476469 + 1.156270I$ $a = -0.03837 + 1.88565I$ $b = 1.17159 - 1.06364I$	$-2.37939 + 11.33830I$	$-9.50041 - 9.03145I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.476469 - 1.156270I$ $a = -0.940419 + 0.249560I$ $b = -1.081930 - 0.165023I$	$-2.37939 - 11.33830I$	$-9.50041 + 9.03145I$
$u = -0.476469 - 1.156270I$ $a = -0.03837 - 1.88565I$ $b = 1.17159 + 1.06364I$	$-2.37939 - 11.33830I$	$-9.50041 + 9.03145I$
$u = 0.042040 + 1.329950I$ $a = -0.552978 - 1.253290I$ $b = 0.840916 + 1.085570I$	$8.05824 - 2.68902I$	$-0.59414 + 2.37109I$
$u = 0.042040 + 1.329950I$ $a = -0.40514 + 1.35626I$ $b = 0.435716 - 0.899445I$	$8.05824 - 2.68902I$	$-0.59414 + 2.37109I$
$u = 0.042040 - 1.329950I$ $a = -0.552978 + 1.253290I$ $b = 0.840916 - 1.085570I$	$8.05824 + 2.68902I$	$-0.59414 - 2.37109I$
$u = 0.042040 - 1.329950I$ $a = -0.40514 - 1.35626I$ $b = 0.435716 + 0.899445I$	$8.05824 + 2.68902I$	$-0.59414 - 2.37109I$
$u = 0.404608$ $a = 1.228540 + 0.066002I$ $b = -0.429661 + 0.076807I$	-0.947124	-10.5630
$u = 0.404608$ $a = 1.228540 - 0.066002I$ $b = -0.429661 - 0.076807I$	-0.947124	-10.5630

V. $\boldsymbol{I^u_5 = \langle -2u^4a + u^5 + \cdots + b - a,\ 13u^5a + 30u^5 + \cdots + 26a + 38,\ u^6 + 2u^5 + 4u^4 + 4u^3 + 4u^2 + 3u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} a \\ 2u^4a - u^5 + 4u^3a + 7u^2a + u^3 + 4au + 4u^2 + a + 3u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^4a + \frac{12}{13}u^5 + \cdots - 2a - \frac{3}{13} \\ -2u^4a + u^5 - 4u^3a - 7u^2a - u^3 - 4au - 4u^2 - a - 3u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 4u^4a - u^5 + 8u^3a + u^4 + 14u^2a + 4u^3 + 10au + 10u^2 + 4a + 9u + 4 \\ 2u^4a + 2u^3a + 2u^4 + 2u^2a + 3u^3 - 2au + 4u^2 - a - 1 \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} -u^4a - 2u^5 - 5u^4 - u^2a - 8u^3 + 3au - 8u^2 - 4u - 3 \\ u^5a + u^5 + u^3a - 3u^2a + u^3 - 2u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^5a - 2u^4a + u^5 - 6u^3a + u^4 - 6u^2a + u^3 - 6au - u^2 - a - u + 2 \\ -4u^5a - 6u^4a - 3u^5 - 10u^3a - 6u^4 - 4u^2a - 10u^3 - 2au - 6u^2 - 3u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 3u^5a + 4u^5 + \cdots - a + 3 \\ -2u^5a - 4u^4a - u^5 - 8u^3a - 3u^4 - 6u^2a - 6u^3 - 3au - 6u^2 - 4u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u^5 - 11u^4 - 18u^3 - 17u^2 - 14u - 19$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$u^{12} - u^{11} + \cdots - 13u + 13$
c_2, c_8	$(u^6 + 2u^5 + 4u^4 + 4u^3 + 4u^2 + 3u + 1)^2$
c_3, c_9	$13(13u^{12} + 91u^{11} + \cdots + 5u + 1)$
c_4, c_{10}	$13(13u^{12} + 87u^{10} + 256u^8 + 425u^6 + 421u^4 + 238u^2 + 61)$
c_6, c_{12}	$(u^6 - 2u^5 + 4u^4 - 4u^3 + 4u^2 - 3u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$y^{12} - 7y^{11} + \cdots - 481y + 169$
c_2, c_6, c_8 c_{12}	$(y^6 + 4y^5 + 8y^4 + 6y^3 - y + 1)^2$
c_3, c_9	$169(169y^{12} - 1287y^{11} + \cdots + 41y + 1)$
c_4, c_{10}	$169(13y^6 + 87y^5 + 256y^4 + 425y^3 + 421y^2 + 238y + 61)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.223320 + 1.036320I$ $a = -1.054300 + 0.349489I$ $b = 0.906550 - 0.648865I$	$-1.79977 - 1.80437I$	$-6.99003 + 2.02804I$
$u = 0.223320 + 1.036320I$ $a = -0.731524 + 0.362071I$ $b = -1.192890 - 0.194862I$	$-1.79977 - 1.80437I$	$-6.99003 + 2.02804I$
$u = 0.223320 - 1.036320I$ $a = -1.054300 - 0.349489I$ $b = 0.906550 + 0.648865I$	$-1.79977 + 1.80437I$	$-6.99003 - 2.02804I$
$u = 0.223320 - 1.036320I$ $a = -0.731524 - 0.362071I$ $b = -1.192890 + 0.194862I$	$-1.79977 + 1.80437I$	$-6.99003 - 2.02804I$
$u = -0.611193 + 0.252291I$ $a = 0.095072 - 0.963329I$ $b = -1.174740 - 0.641074I$	$-5.52799 + 0.11750I$	$-13.95132 - 1.57219I$
$u = -0.611193 + 0.252291I$ $a = -1.61916 + 0.56017I$ $b = -0.946006 + 0.582992I$	$-5.52799 + 0.11750I$	$-13.95132 - 1.57219I$
$u = -0.611193 - 0.252291I$ $a = 0.095072 + 0.963329I$ $b = -1.174740 + 0.641074I$	$-5.52799 - 0.11750I$	$-13.95132 + 1.57219I$
$u = -0.611193 - 0.252291I$ $a = -1.61916 - 0.56017I$ $b = -0.946006 - 0.582992I$	$-5.52799 - 0.11750I$	$-13.95132 + 1.57219I$
$u = -0.61213 + 1.28861I$ $a = -0.362386 - 0.369516I$ $b = 0.661869 + 0.930238I$	$0.74802 + 10.49240I$	$-6.55865 - 5.60633I$
$u = -0.61213 + 1.28861I$ $a = 0.17229 + 1.54394I$ $b = 1.24522 - 0.96602I$	$0.74802 + 10.49240I$	$-6.55865 - 5.60633I$

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.61213 - 1.28861I$ $a = -0.362386 + 0.369516I$ $b = 0.661869 - 0.930238I$	$0.74802 - 10.49240I$	$-6.55865 + 5.60633I$
$u = -0.61213 - 1.28861I$ $a = 0.17229 - 1.54394I$ $b = 1.24522 + 0.96602I$	$0.74802 - 10.49240I$	$-6.55865 + 5.60633I$

VI. $I^u_6 = \langle -u^2a+b-1,\ 2u^5a-u^5+4u^3a-2u^2a-2u^3+a^2+u^2-a,\ u^6+u^5+3u^4+2u^3+2u^2+u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^5-20u^3+8u^2-6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.616765 + 0.580357I$ $a = 0.544838 - 0.055244I$ $b = 0.984198 - 0.392451I$	$-5.47714 + 7.89459I$	$-16.2322 - 13.0010I$
$u = -0.616765 + 0.580357I$ $a = -1.71430 - 2.72817I$ $b = -1.02778 + 1.10834I$	$-5.47714 + 7.89459I$	$-16.2322 - 13.0010I$
$u = -0.616765 - 0.580357I$ $a = 0.544838 + 0.055244I$ $b = 0.984198 + 0.392451I$	$-5.47714 - 7.89459I$	$-16.2322 + 13.0010I$
$u = -0.616765 - 0.580357I$ $a = -1.71430 + 2.72817I$ $b = -1.02778 - 1.10834I$	$-5.47714 - 7.89459I$	$-16.2322 + 13.0010I$
$u = 0.291649 + 0.757555I$ $a = 0.481815 + 0.128539I$ $b = 0.707675 + 0.150071I$	$0.61390 - 2.86500I$	$-3.08446 + 9.10702I$
$u = 0.291649 + 0.757555I$ $a = 0.76975 + 1.90677I$ $b = -0.218844 - 0.591951I$	$0.61390 - 2.86500I$	$-3.08446 + 9.10702I$
$u = 0.291649 - 0.757555I$ $a = 0.481815 - 0.128539I$ $b = 0.707675 - 0.150071I$	$0.61390 + 2.86500I$	$-3.08446 - 9.10702I$
$u = 0.291649 - 0.757555I$ $a = 0.76975 - 1.90677I$ $b = -0.218844 + 0.591951I$	$0.61390 + 2.86500I$	$-3.08446 - 9.10702I$
$u = -0.17488 + 1.44407I$ $a = -0.773826 - 0.196115I$ $b = 2.49097 + 0.79382I$	$-0.071556 - 0.690245I$	$-14.6833 + 10.6130I$
$u = -0.17488 + 1.44407I$ $a = 0.691715 - 0.029516I$ $b = -0.436212 - 0.288729I$	$-0.071556 - 0.690245I$	$-14.6833 + 10.6130I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.17488-1.44407I$ $a=-0.773826+0.196115I$ $b=\ \ 2.49097-0.79382I$	$-0.071556+0.690245I$	$-14.6833-10.6130I$
$u=-0.17488-1.44407I$ $a=\ \ 0.691715+0.029516I$ $b=-0.436212+0.288729I$	$-0.071556+0.690245I$	$-14.6833-10.6130I$

VII. $\boldsymbol{I^u_7 = \langle 2u^5 - 5u^4 + \cdots + 8b - 9,\ -212u^5a + 110u^5 + \cdots + 34a + 133,\ 2u^6 + u^5 + 4u^4 + 3u^3 + 5u^2 + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a \\ -\frac{1}{4}u^5 + \frac{5}{8}u^4 + \cdots + \frac{5}{8}u + \frac{9}{8} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{3}{2}u^5a - \frac{9}{8}u^5 + \cdots - \frac{1}{4}a + \frac{21}{16} \\ \frac{3}{4}u^5 + \frac{9}{8}u^4 + \cdots + \frac{17}{8}u + \frac{13}{8} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{4}u^5a + \frac{5}{16}u^5 + \cdots + \frac{5}{8}a - \frac{65}{32} \\ -\frac{1}{4}u^4a - \frac{19}{8}u^5 + \cdots + \frac{1}{4}a - \frac{9}{16} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{4}u^5 + \frac{5}{8}u^4 + \cdots + a + \frac{9}{8} \\ -\frac{1}{4}u^5 + \frac{5}{8}u^4 + \cdots + \frac{5}{8}u + \frac{9}{8} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}u^5a + \frac{13}{8}u^5 + \cdots - \frac{1}{4}a + \frac{39}{16} \\ -\frac{1}{2}u^5a + 2u^5 + \cdots - \frac{1}{4}a + \frac{1}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{13}{8}u^5 - \frac{1}{16}u^4 + \cdots - \frac{1}{2}a - \frac{25}{16} \\ \frac{3}{4}u^5 - \frac{15}{8}u^4 + \cdots - \frac{15}{8}u - \frac{23}{8} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.375000au^5 + 0.156250u^5 + \cdots + 0.437500a - 2.01563 \\ -0.750000au^5 - 1.43750u^5 + \cdots + 0.375000a - 0.656250 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{17}{8}u^5 + \frac{11}{16}u^4 + \cdots - \frac{1}{2}a - \frac{13}{16} \\ -\frac{1}{2}u^5a + \frac{3}{4}u^5 + \cdots - \frac{15}{8}u - \frac{19}{8} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{1171}{128}u^5 + \frac{2193}{256}u^4 + \frac{4897}{256}u^3 + \frac{3215}{128}u^2 + \frac{5557}{256}u + \frac{905}{256}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$8(8u^{12} + 2u^{11} + \cdots - 108u + 16)$
c_2, c_8	$4(2u^6 + u^5 + 4u^4 + 3u^3 + 5u^2 + 1)^2$
c_3, c_9	$4(2u^6 - 5u^5 + 4u^4 - u^3 + 2u^2 - 5u + 4)^2$
c_4, c_{10}	$(u^6 + 6u^4 + 14u^2 + 11)^2$
c_6, c_{12}	$4(2u^6 - u^5 + 4u^4 - 3u^3 + 5u^2 + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$64(64y^{12} - 532y^{11} + \cdots - 3728y + 256)$
c_2, c_6, c_8 c_{12}	$16(4y^6 + 15y^5 + 30y^4 + 35y^3 + 33y^2 + 10y + 1)^2$
c_3, c_9	$16(4y^6 - 9y^5 + 14y^4 - 19y^3 + 26y^2 - 9y + 16)^2$
c_4, c_{10}	$(y^3 + 6y^2 + 14y + 11)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_7	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.739516 + 0.856903I$ $a = -0.747434 - 0.203635I$ $b = -0.803047 + 0.262836I$	$-4.75564 + 7.70691I$	$-0.35239 - 9.83676I$
$u = -0.739516 + 0.856903I$ $a = -0.85636 - 1.99431I$ $b = -1.12009 + 1.11509I$	$-4.75564 + 7.70691I$	$-0.35239 - 9.83676I$
$u = -0.739516 - 0.856903I$ $a = -0.747434 + 0.203635I$ $b = -0.803047 - 0.262836I$	$-4.75564 - 7.70691I$	$-0.35239 + 9.83676I$
$u = -0.739516 - 0.856903I$ $a = -0.85636 + 1.99431I$ $b = -1.12009 - 1.11509I$	$-4.75564 - 7.70691I$	$-0.35239 + 9.83676I$
$u = 0.414742 + 1.287430I$ $a = 0.020115 - 1.070840I$ $b = 1.80171 + 0.75650I$	-0.358331	$-12.31085 + 0.I$
$u = 0.414742 + 1.287430I$ $a = 0.225465 + 0.706649I$ $b = -0.401509 + 0.046742I$	-0.358331	$-12.31085 + 0.I$
$u = 0.414742 - 1.287430I$ $a = 0.020115 + 1.070840I$ $b = 1.80171 - 0.75650I$	-0.358331	$-12.31085 + 0.I$
$u = 0.414742 - 1.287430I$ $a = 0.225465 - 0.706649I$ $b = -0.401509 - 0.046742I$	-0.358331	$-12.31085 + 0.I$
$u = 0.074774 + 0.455775I$ $a = 0.452454 - 0.660857I$ $b = 1.200570 + 0.508397I$	$-4.75564 - 7.70691I$	$-0.35239 + 9.83676I$
$u = 0.074774 + 0.455775I$ $a = -2.96924 + 6.86343I$ $b = -0.552643 - 0.867145I$	$-4.75564 - 7.70691I$	$-0.35239 + 9.83676I$

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.074774 - 0.455775I$ $a = 0.452454 + 0.660857I$ $b = 1.200570 - 0.508397I$	$-4.75564 + 7.70691I$	$-0.35239 - 9.83676I$
$u = 0.074774 - 0.455775I$ $a = -2.96924 - 6.86343I$ $b = -0.552643 + 0.867145I$	$-4.75564 + 7.70691I$	$-0.35239 - 9.83676I$

VIII. $I_8^u = \langle u^2 + b - u + 1,\ a + u,\ u^3 - u^2 + 2u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u^2 + 8u - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.215080 - 1.307140I$ $b = 0.877439 + 0.744862I$	$6.04826 - 5.65624I$	$-4.98049 + 5.95889I$
$u = 0.215080 - 1.307140I$ $a = -0.215080 + 1.307140I$ $b = 0.877439 - 0.744862I$	$6.04826 + 5.65624I$	$-4.98049 - 5.95889I$
$u = 0.569840$ $a = -0.569840$ $b = -0.754878$	-2.22691	-18.0390

IX. $I_9^u = \langle u^6 - 4u^5 + 8u^4 - 11u^3 + 9u^2 + b - 5u + 3,\ -3u^7 + 10u^6 + \cdots + 2a - 4,\ u^8 - 4u^7 + \cdots - 4u + 2\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{3}{2}u^7 - 5u^6 + \cdots - \frac{1}{2}u + 2 \\ -u^6 + 4u^5 - 8u^4 + 11u^3 - 9u^2 + 5u - 3 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}u^7 + 2u^6 + \cdots - \frac{7}{2}u + 1 \\ u^2 - u + 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{2}u^7 - 2u^6 + \cdots + \frac{3}{2}u + 1 \\ -u^4 + 2u^3 - 3u^2 + 2u - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{2}u^7 - 6u^6 + \cdots + \frac{9}{2}u - 1 \\ -u^6 + 4u^5 - 8u^4 + 11u^3 - 9u^2 + 5u - 3 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}u^7 + 2u^6 + \cdots - \frac{7}{2}u + 1 \\ u^2 - u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{2}u^7 - 6u^6 + \cdots + \frac{9}{2}u - 1 \\ -u^6 + 4u^5 - 8u^4 + 11u^3 - 9u^2 + 5u - 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^7 - 3u^6 + \cdots + \frac{15}{2}u - 4 \\ -u^7 + 3u^6 - 5u^5 + 6u^4 - 4u^3 + 3u^2 - u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{3}{2}u^7 - 6u^6 + \cdots + \frac{3}{2}u + 1 \\ -u^7 + 2u^6 - 2u^5 + 3u^3 - 2u^2 + 2u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^7 + 15u^6 - 46u^5 + 82u^4 - 100u^3 + 84u^2 - 48u + 32$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$u^8 - 2u^7 + 3u^5 - 3u^4 + 3u^2 - u + 1$
c_2, c_8	$u^8 - 4u^7 + 9u^6 - 14u^5 + 15u^4 - 13u^3 + 9u^2 - 4u + 2$
c_3, c_9	$(u^4 - u^3 + u^2 + 1)^2$
c_4, c_{10}	u^8
c_6, c_{12}	$u^8 + 4u^7 + 9u^6 + 14u^5 + 15u^4 + 13u^3 + 9u^2 + 4u + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$y^8 - 4y^7 + 6y^6 - 3y^5 + 7y^4 - 12y^3 + 3y^2 + 5y + 1$
c_2, c_6, c_8 c_{12}	$y^8 + 2y^7 - y^6 - 12y^5 - 5y^4 + 25y^3 + 37y^2 + 20y + 4$
c_3, c_9	$(y^4 + y^3 + 3y^2 + 2y + 1)^2$
c_4, c_{10}	y^8

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.192965 + 0.870342I$ $a = 0.60432 + 1.87636I$ $b = -1.41733 - 0.42814I$	$-0.732875 - 0.991478I$	$14.6275 - 1.6780I$
$u = 0.192965 - 0.870342I$ $a = 0.60432 - 1.87636I$ $b = -1.41733 + 0.42814I$	$-0.732875 + 0.991478I$	$14.6275 + 1.6780I$
$u = -0.138557 + 0.767522I$ $a = -1.00593 - 1.65642I$ $b = 1.072770 + 0.246639I$	$3.20028 + 5.62938I$	$-2.12750 - 5.21289I$
$u = -0.138557 - 0.767522I$ $a = -1.00593 + 1.65642I$ $b = 1.072770 - 0.246639I$	$3.20028 - 5.62938I$	$-2.12750 + 5.21289I$
$u = 1.354460 + 0.250532I$ $a = 0.095400 - 0.141459I$ $b = -0.086775 + 0.534450I$	$-0.732875 - 0.991478I$	$14.6275 - 1.6780I$
$u = 1.354460 - 0.250532I$ $a = 0.095400 + 0.141459I$ $b = -0.086775 - 0.534450I$	$-0.732875 + 0.991478I$	$14.6275 + 1.6780I$
$u = 0.59113 + 1.35317I$ $a = -0.193794 + 1.067380I$ $b = -0.568666 - 0.980213I$	$3.20028 - 5.62938I$	$-2.12750 + 5.21289I$
$u = 0.59113 - 1.35317I$ $a = -0.193794 - 1.067380I$ $b = -0.568666 + 0.980213I$	$3.20028 + 5.62938I$	$-2.12750 - 5.21289I$

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$64(u^3+u^2-1)(u^8-2u^7+3u^5-3u^4+3u^2-u+1)$ $\cdot(u^{12}-5u^{11}+\cdots-2u^2+1)(u^{12}-u^{11}+\cdots-13u+13)$ $\cdot(8u^{12}+2u^{11}+\cdots-108u+16)(u^{15}+3u^{12}+\cdots+40u+13)$ $\cdot(u^{18}-2u^{16}+\cdots+3u+1)(u^{50}-u^{49}+\cdots+20u+4)$ $\cdot(8u^{76}-90u^{75}+\cdots-4995u+404)$
c_2, c_8	$16(u^3-u^2+2u-1)(u^6-u^5+3u^4-2u^3+2u^2-u+1)^2$ $\cdot(u^6+2u^5+4u^4+4u^3+4u^2+3u+1)^2$ $\cdot(2u^6+u^5+4u^4+3u^3+5u^2+1)^2$ $\cdot(u^8-4u^7+9u^6-14u^5+15u^4-13u^3+9u^2-4u+2)$ $\cdot(u^9-u^8+4u^7-3u^6+6u^5-3u^4+4u^3-u^2+u+1)^2$ $\cdot(u^{15}+u^{14}+\cdots+4u+2)(2u^{38}+3u^{37}+\cdots-21u+17)^2$ $\cdot(u^{50}+3u^{49}+\cdots+957u+125)$
c_3, c_9	$2704(u-1)^{12}(u^3+u^2+2u+1)(u^4-u^3+u^2+1)^2$ $\cdot((2u^6-5u^5+\cdots-5u+4)^2)(13u^{12}+91u^{11}+\cdots+5u+1)$ $\cdot(13u^{15}+127u^{14}+\cdots+224u+64)(u^{18}+18u^{17}+\cdots+3245u+341)$ $\cdot((u^{25}-7u^{23}+\cdots+u+1)^2)(2u^{38}-9u^{37}+\cdots-13u+4)^2$
c_4, c_{10}	$169u^{11}(u^6+6u^4+14u^2+11)^2$ $\cdot(u^6-3u^5+7u^4-10u^3+10u^2-7u+3)^2$ $\cdot(u^9+7u^8+26u^7+65u^6+117u^5+156u^4+153u^3+104u^2+44u+8)^2$ $\cdot(13u^{12}+87u^{10}+256u^8+425u^6+421u^4+238u^2+61)$ $\cdot(13u^{15}+127u^{14}+\cdots+672u+64)(u^{19}-2u^{18}+\cdots-2u-1)^4$ $\cdot(u^{25}+u^{24}+\cdots-8u+8)^2$
c_6, c_{12}	$16(u^3+u^2+2u+1)(u^6-2u^5+4u^4-4u^3+4u^2-3u+1)^2$ $\cdot((u^6-u^5+3u^4-2u^3+2u^2-u+1)^2)(2u^6-u^5+4u^4-3u^3+5u^2+1)^2$ $\cdot(u^8+4u^7+9u^6+14u^5+15u^4+13u^3+9u^2+4u+2)$ $\cdot(u^9-u^8+4u^7-3u^6+6u^5-3u^4+4u^3-u^2+u+1)^2$ $\cdot(u^{15}+u^{14}+\cdots+4u+2)(2u^{38}+3u^{37}+\cdots-21u+17)^2$ $\cdot(u^{50}+3u^{49}+\cdots+957u+125)$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_{11}	$4096(y^3 - y^2 + 2y - 1)$ $\cdot\,(y^8 - 4y^7 + 6y^6 - 3y^5 + 7y^4 - 12y^3 + 3y^2 + 5y + 1)$ $\cdot\,(y^{12} - 13y^{11} + \cdots - 4y + 1)(y^{12} - 7y^{11} + \cdots - 481y + 169)$ $\cdot\,(64y^{12} - 532y^{11} + \cdots - 3728y + 256)$ $\cdot\,(y^{15} + 18y^{13} + \cdots + 768y - 169)(y^{18} - 4y^{17} + \cdots - 13y + 1)$ $\cdot\,(y^{50} - 11y^{49} + \cdots + 448y + 16)$ $\cdot\,(64y^{76} - 980y^{75} + \cdots + 36327887y + 163216)$
c_2, c_6, c_8 c_{12}	$256(y^3 + 3y^2 + 2y - 1)(y^6 + 4y^5 + 8y^4 + 6y^3 - y + 1)^2$ $\cdot\,(y^6 + 5y^5 + 9y^4 + 8y^3 + 6y^2 + 3y + 1)^2$ $\cdot\,(4y^6 + 15y^5 + 30y^4 + 35y^3 + 33y^2 + 10y + 1)^2$ $\cdot\,(y^8 + 2y^7 - y^6 - 12y^5 - 5y^4 + 25y^3 + 37y^2 + 20y + 4)$ $\cdot\,(y^9 + 7y^8 + 22y^7 + 41y^6 + 50y^5 + 43y^4 + 28y^3 + 13y^2 + 3y - 1)^2$ $\cdot\,(y^{15} + 7y^{14} + \cdots + 8y - 4)(4y^{38} + 79y^{37} + \cdots + 2959y + 289)^2$ $\cdot\,(y^{50} + 19y^{49} + \cdots - 73349y + 15625)$
c_3, c_9	$7311616(y - 1)^{12}(y^3 + 3y^2 + 2y - 1)(y^4 + y^3 + 3y^2 + 2y + 1)^2$ $\cdot\,(4y^6 - 9y^5 + 14y^4 - 19y^3 + 26y^2 - 9y + 16)^2$ $\cdot\,(169y^{12} - 1287y^{11} + \cdots + 41y + 1)$ $\cdot\,(169y^{15} - 425y^{14} + \cdots + 13312y - 4096)$ $\cdot\,(y^{18} - 8y^{17} + \cdots - 386639y + 116281)$ $\cdot\,((y^{25} - 14y^{24} + \cdots - 13y - 1)^2)(4y^{38} - 41y^{37} + \cdots + 455y + 16)^2$
c_4, c_{10}	$28561y^{11}(y^3 + 6y^2 + 14y + 11)^4$ $\cdot\,(y^6 + 5y^5 + 9y^4 + 4y^3 + 2y^2 + 11y + 9)^2$ $\cdot\,(13y^6 + 87y^5 + 256y^4 + 425y^3 + 421y^2 + 238y + 61)^2$ $\cdot\,(y^9 + 3y^8 - 19y^6 - 3y^5 + 122y^4 + 217y^3 + 152y^2 + 272y - 64)^2$ $\cdot\,(169y^{15} + 1265y^{14} + \cdots + 35840y - 4096)$ $\cdot\,((y^{19} + 14y^{18} + \cdots - 12y - 1)^4)(y^{25} - 7y^{24} + \cdots - 1312y - 64)^2$