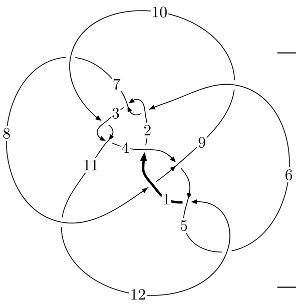
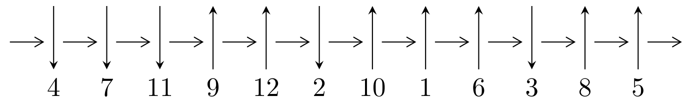
$12a_{1100}$ ($K12a_{1100}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 5.72959 \times 10^{14} u^{38} + 1.09041 \times 10^{16} u^{37} + \cdots + 2.39027 \times 10^{15} b + 2.06660 \times 10^{16}, \\
& -1.43733 \times 10^{15} u^{38} - 1.83777 \times 10^{16} u^{37} + \cdots + 4.78054 \times 10^{15} a - 3.39110 \times 10^{16}, \\
& u^{39} + 16u^{38} + \cdots + 384u + 16 \rangle \\
I_2^u = \langle & 2.68281 \times 10^{59} au^{64} + 6.81399 \times 10^{65} u^{64} + \cdots - 1.07313 \times 10^{60} a + 1.71010 \times 10^{66}, \\
& -9.81930 \times 10^{61} au^{64} - 2.55544 \times 10^{62} u^{64} + \cdots + 6.76295 \times 10^{62} a - 1.80547 \times 10^{63}, \\
& u^{65} - 6u^{64} + \cdots - 36u + 4 \rangle \\
I_3^u = \langle & 4u^{19} + 19u^{18} + \cdots + 3b - 84,\ 40u^{19} + 265u^{18} + \cdots + 9a - 252,\ u^{20} + 7u^{19} + \cdots + 42u + 9 \rangle \\
I_4^u = \langle & -u^6 a + 3u^5 a + 3u^6 - 4u^4 a - 17u^5 + 7u^3 a + 37u^4 - 2u^2 a - 50u^3 + 8au + 49u^2 + 7b - 3a - 27u + 20, \\
& 105u^6 a + 64u^6 + \cdots - 84a - 80,\ u^7 - 4u^6 + 7u^5 - 11u^4 + 9u^3 - 10u^2 + 4u - 3 \rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ b+1,\ v^2 - v + 1 \rangle \\
I_2^v &= \langle a,\ b+v-1,\ v^2 - v + 1 \rangle \\
I_3^v &= \langle a,\ b+1,\ v+1 \rangle
\end{aligned}$$

* 7 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 208 representations.

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

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

I. $\boldsymbol{I_1^u = \langle 5.73 \times 10^{14} u^{38} + 1.09 \times 10^{16} u^{37} + \cdots + 2.39 \times 10^{15} b + 2.07 \times 10^{16},\ -1.44 \times 10^{15} u^{38} - 1.84 \times 10^{16} u^{37} + \cdots + 4.78 \times 10^{15} a - 3.39 \times 10^{16},\ u^{39} + 16u^{38} + \cdots + 384u + 16 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.300662u^{38} + 3.84428u^{37} + \cdots - 77.7458u + 7.09355 \\ -0.239704u^{38} - 4.56188u^{37} + \cdots - 191.761u - 8.64586 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.428147u^{38} + 6.52414u^{37} + \cdots + 96.7473u + 13.9087 \\ 0.905515u^{38} + 13.2597u^{37} + \cdots + 56.0756u + 1.59569 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.239436u^{38} + 4.06041u^{37} + \cdots + 114.171u - 2.79844 \\ 0.0678388u^{38} + 1.24701u^{37} + \cdots - 66.9463u - 2.74556 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.730365u^{38} - 9.31593u^{37} + \cdots + 536.715u + 28.7964 \\ 1.69641u^{38} + 27.9777u^{37} + \cdots + 895.140u + 37.7430 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.368631u^{38} - 6.47910u^{37} + \cdots - 578.385u - 26.6962 \\ -1.09599u^{38} - 18.3459u^{37} + \cdots - 583.090u - 24.3794 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.536809u^{38} - 8.88416u^{37} + \cdots - 128.853u - 1.15988 \\ -1.23413u^{38} - 19.3337u^{37} + \cdots - 191.781u - 7.92257 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.425949u^{38} - 6.68769u^{37} + \cdots + 5.65478u + 10.9288 \\ -0.966315u^{38} - 15.0939u^{37} + \cdots - 108.361u - 4.81059 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.152023u^{38} - 2.64110u^{37} + \cdots - 41.2325u + 6.25229 \\ 0.249003u^{38} + 3.45982u^{37} + \cdots + 45.1427u + 1.36843 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{557863339166132}{27162180570893}u^{38} + \frac{844053926444108}{27162180570893}u^{37} + \cdots + \frac{4041570281227700}{27162180570893}u + \frac{344262331286382}{27162180570893}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39} - 30u^{38} + \cdots - 270336u + 16384$
c_2, c_3, c_6 c_{10}	$u^{39} - 17u^{37} + \cdots + 3u - 1$
c_4, c_8	$u^{39} + 7u^{37} + \cdots - 10u - 1$
c_5, c_{12}	$u^{39} - 16u^{38} + \cdots + 384u - 16$
c_7	$u^{39} + 28u^{38} + \cdots - 39904u - 2512$
c_9, c_{11}	$u^{39} + 2u^{38} + \cdots - 20u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} + 48y^{37} + \cdots + 1677721600y - 268435456$
c_2, c_3, c_6 c_{10}	$y^{39} - 34y^{38} + \cdots - 13y - 1$
c_4, c_8	$y^{39} + 14y^{38} + \cdots + 28y - 1$
c_5, c_{12}	$y^{39} + 24y^{38} + \cdots + 30592y - 256$
c_7	$y^{39} - 10y^{38} + \cdots - 133816704y - 6310144$
c_9, c_{11}	$y^{39} - 10y^{38} + \cdots + 120y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.036584 + 1.055630I$ $a = -0.33336 - 2.00119I$ $b = 0.78963 - 1.21425I$	$-8.44685 - 3.59036I$	0
$u = 0.036584 - 1.055630I$ $a = -0.33336 + 2.00119I$ $b = 0.78963 + 1.21425I$	$-8.44685 + 3.59036I$	0
$u = -0.878996 + 0.590569I$ $a = -0.494056 - 0.310732I$ $b = 0.175406 - 1.010140I$	$-7.20717 + 4.28473I$	0
$u = -0.878996 - 0.590569I$ $a = -0.494056 + 0.310732I$ $b = 0.175406 + 1.010140I$	$-7.20717 - 4.28473I$	0
$u = -0.956553 + 0.471077I$ $a = 0.535712 - 0.170609I$ $b = 0.790827 + 0.990127I$	$-1.05743 + 4.09464I$	0
$u = -0.956553 - 0.471077I$ $a = 0.535712 + 0.170609I$ $b = 0.790827 - 0.990127I$	$-1.05743 - 4.09464I$	0
$u = 0.924956 + 0.600813I$ $a = 0.371281 + 0.003907I$ $b = 0.194948 + 0.056914I$	$-1.90733 - 0.89775I$	0
$u = 0.924956 - 0.600813I$ $a = 0.371281 - 0.003907I$ $b = 0.194948 - 0.056914I$	$-1.90733 + 0.89775I$	0
$u = 0.165288 + 0.859735I$ $a = 0.19991 + 1.68117I$ $b = -0.600415 + 0.828931I$	$0.894106 + 0.967260I$	$-3.54690 + 1.12714I$
$u = 0.165288 - 0.859735I$ $a = 0.19991 - 1.68117I$ $b = -0.600415 - 0.828931I$	$0.894106 - 0.967260I$	$-3.54690 - 1.12714I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.147020 + 0.124747I$ $a = 0.171216 + 0.003090I$ $b = 0.837941 + 0.589840I$	$5.13665 + 3.68306I$	0
$u = -1.147020 - 0.124747I$ $a = 0.171216 - 0.003090I$ $b = 0.837941 - 0.589840I$	$5.13665 - 3.68306I$	0
$u = -1.198810 + 0.091688I$ $a = -0.203582 - 0.083707I$ $b = -0.887863 - 0.820311I$	$-2.5570 + 14.4897I$	0
$u = -1.198810 - 0.091688I$ $a = -0.203582 + 0.083707I$ $b = -0.887863 + 0.820311I$	$-2.5570 - 14.4897I$	0
$u = -0.086623 + 1.203880I$ $a = 0.166421 - 0.717215I$ $b = 0.477964 - 0.342610I$	$-1.53805 - 1.55148I$	0
$u = -0.086623 - 1.203880I$ $a = 0.166421 + 0.717215I$ $b = 0.477964 + 0.342610I$	$-1.53805 + 1.55148I$	0
$u = -0.436516 + 1.163100I$ $a = -0.01640 - 1.55798I$ $b = 1.07400 - 1.04381I$	$-1.26442 - 4.12128I$	0
$u = -0.436516 - 1.163100I$ $a = -0.01640 + 1.55798I$ $b = 1.07400 + 1.04381I$	$-1.26442 + 4.12128I$	0
$u = 0.086287 + 1.258930I$ $a = -0.440278 - 0.963873I$ $b = 0.171571 - 0.785654I$	$-7.91630 + 2.00919I$	0
$u = 0.086287 - 1.258930I$ $a = -0.440278 + 0.963873I$ $b = 0.171571 + 0.785654I$	$-7.91630 - 2.00919I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.270947 + 1.287730I$ $a = 0.34276 + 1.52890I$ $b = -0.670447 + 1.221440I$	$-12.67430 + 1.13506I$	0
$u = -0.270947 - 1.287730I$ $a = 0.34276 - 1.52890I$ $b = -0.670447 - 1.221440I$	$-12.67430 - 1.13506I$	0
$u = -0.640026 + 1.167660I$ $a = 0.30621 + 1.53504I$ $b = -0.96815 + 1.40442I$	$-3.29095 - 9.95463I$	0
$u = -0.640026 - 1.167660I$ $a = 0.30621 - 1.53504I$ $b = -0.96815 - 1.40442I$	$-3.29095 + 9.95463I$	0
$u = -0.107147 + 0.577529I$ $a = -1.68285 - 0.68447I$ $b = -0.004425 - 1.003520I$	$-7.10874 + 3.72846I$	$-6.61899 - 2.67591I$
$u = -0.107147 - 0.577529I$ $a = -1.68285 + 0.68447I$ $b = -0.004425 + 1.003520I$	$-7.10874 - 3.72846I$	$-6.61899 + 2.67591I$
$u = -0.505641 + 0.268154I$ $a = 0.229112 + 0.984301I$ $b = -0.963460 - 0.359880I$	$1.45784 + 0.14435I$	$8.80782 + 0.96026I$
$u = -0.505641 - 0.268154I$ $a = 0.229112 - 0.984301I$ $b = -0.963460 + 0.359880I$	$1.45784 - 0.14435I$	$8.80782 - 0.96026I$
$u = -0.72717 + 1.23001I$ $a = 0.146791 + 0.665989I$ $b = -0.394498 + 0.665266I$	$0.51433 - 3.59139I$	0
$u = -0.72717 - 1.23001I$ $a = 0.146791 - 0.665989I$ $b = -0.394498 - 0.665266I$	$0.51433 + 3.59139I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.58754+1.31220I$ $a=-0.03772+1.45994I$ $b=-1.04205+1.11551I$	$1.41624-9.73414I$	0
$u=-0.58754-1.31220I$ $a=-0.03772-1.45994I$ $b=-1.04205-1.11551I$	$1.41624+9.73414I$	0
$u=-0.72423+1.24628I$ $a=-0.564329-0.961952I$ $b=\ 0.267022-1.230810I$	$-9.2783-10.7010I$	0
$u=-0.72423-1.24628I$ $a=-0.564329+0.961952I$ $b=\ 0.267022+1.230810I$	$-9.2783+10.7010I$	0
$u=-0.59784+1.35155I$ $a=-0.00220-1.60026I$ $b=\ 1.08597-1.27810I$	$-6.5200-20.7521I$	0
$u=-0.59784-1.35155I$ $a=-0.00220+1.60026I$ $b=\ 1.08597+1.27810I$	$-6.5200+20.7521I$	0
$u=-0.30394+1.70133I$ $a=\ 0.362788+0.429884I$ $b=\ 0.071610+0.523994I$	$-8.37466+8.10029I$	0
$u=-0.30394-1.70133I$ $a=\ 0.362788-0.429884I$ $b=\ 0.071610-0.523994I$	$-8.37466-8.10029I$	0
$u=-0.0882066$ $a=\ 8.38515$ $b=-0.811176$	1.27021	8.62500

II. $\boldsymbol{I_2^u = \langle 2.68 \times 10^{59} au^{64} + 6.81 \times 10^{65} u^{64} + \cdots - 1.07 \times 10^{60} a + 1.71 \times 10^{66},\ -9.82 \times 10^{61} au^{64} - 2.56 \times 10^{62} u^{64} + \cdots + 6.76 \times 10^{62} a - 1.81 \times 10^{63},\ u^{65} - 6u^{64} + \cdots - 36u + 4\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ -0.0000218403au^{64} - 55.4714u^{64} + \cdots + 0.0000873610a - 139.216 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0000218403au^{64} - 55.4714u^{64} + \cdots + 1.00009a - 139.216 \\ -64.8523u^{64} + 284.498u^{63} + \cdots + 2663.86u - 366.008 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 56.6979au^{64} - 192.867u^{64} + \cdots - 221.886a + 1724.99 \\ 56.6979au^{64} - 145.418u^{64} + \cdots - 221.886a + 1221.26 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -108.979au^{64} - 13.2505u^{64} + \cdots + 462.409a - 733.686 \\ -108.979au^{64} - 27.1699u^{64} + \cdots + 462.409a - 810.279 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1.31934au^{64} + 84.7625u^{64} + \cdots - 112.851a + 91.0139 \\ 15.9696au^{64} + 48.2854u^{64} + \cdots - 77.0154a + 364.848 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -98.5806au^{64} + 104.912u^{64} + \cdots + 119.466a - 1082.90 \\ -89.2888au^{64} + 3.51127u^{64} + \cdots + 286.401a - 884.916 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0000218403au^{64} - 9.38086u^{64} + \cdots + 0.999913a - 226.791 \\ -64.8523u^{64} + 284.498u^{63} + \cdots + 2663.86u - 366.008 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 26.9885au^{64} - 138.933u^{64} + \cdots + 104.097a - 385.846 \\ -19.1021au^{64} - 165.186u^{64} + \cdots + 191.672a - 947.582 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 408.688u^{64} - 2253.95u^{63} + \cdots + 4418.85u - 264.380$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{65}+9u^{64}+\cdots-21u-1)^2$
c_2, c_3	$u^{130}-4u^{129}+\cdots+172541u-40873$
c_4	$u^{130}+2u^{129}+\cdots+6u+1$
c_5	$(u^{65}+6u^{64}+\cdots-36u-4)^2$
c_6, c_{10}	$-u^{130}-4u^{129}+\cdots+172541u+40873$
c_7	$(u^{65}-19u^{64}+\cdots+1083u-127)^2$
c_8	$u^{130}-2u^{129}+\cdots-6u+1$
c_9, c_{11}	$-u^{130}-u^{129}+\cdots-169602u+2381$
c_{12}	$(u^{65}-6u^{64}+\cdots-36u+4)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{65} + 15y^{64} + \cdots + 11y - 1)^2$
c_2, c_3, c_6 c_{10}	$y^{130} - 96y^{129} + \cdots - 76191742939y + 1670602129$
c_4, c_8	$y^{130} + 90y^{128} + \cdots + 136y + 1$
c_5, c_{12}	$(y^{65} + 34y^{64} + \cdots - 88y - 16)^2$
c_7	$(y^{65} + 25y^{64} + \cdots - 23197y - 16129)^2$
c_9, c_{11}	$y^{130} - 45y^{129} + \cdots - 27142067854y + 5669161$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.135273 + 0.982877I$ $a = -0.025609 - 0.204215I$ $b = -1.42958 - 0.25538I$	$-1.50370 - 0.71239I$	0
$u = -0.135273 + 0.982877I$ $a = -0.29876 + 2.83555I$ $b = -0.240212 + 1.373010I$	$-1.50370 - 0.71239I$	0
$u = -0.135273 - 0.982877I$ $a = -0.025609 + 0.204215I$ $b = -1.42958 + 0.25538I$	$-1.50370 + 0.71239I$	0
$u = -0.135273 - 0.982877I$ $a = -0.29876 - 2.83555I$ $b = -0.240212 - 1.373010I$	$-1.50370 + 0.71239I$	0
$u = 0.873657 + 0.506517I$ $a = 0.536307 - 0.042237I$ $b = 0.209134 - 0.330256I$	$-1.89142 - 0.85095I$	0
$u = 0.873657 + 0.506517I$ $a = 0.155081 + 0.030561I$ $b = 0.139950 + 0.417349I$	$-1.89142 - 0.85095I$	0
$u = 0.873657 - 0.506517I$ $a = 0.536307 + 0.042237I$ $b = 0.209134 + 0.330256I$	$-1.89142 + 0.85095I$	0
$u = 0.873657 - 0.506517I$ $a = 0.155081 - 0.030561I$ $b = 0.139950 - 0.417349I$	$-1.89142 + 0.85095I$	0
$u = 0.265755 + 0.978715I$ $a = 1.71172 - 0.88637I$ $b = 2.08366 - 1.09709I$	$-5.11006 + 11.01450I$	0
$u = 0.265755 + 0.978715I$ $a = -0.81065 - 2.57429I$ $b = -0.305076 - 0.308030I$	$-5.11006 + 11.01450I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.265755 - 0.978715I$ $a = 1.71172 + 0.88637I$ $b = 2.08366 + 1.09709I$	$-5.11006 - 11.01450I$	0
$u = 0.265755 - 0.978715I$ $a = -0.81065 + 2.57429I$ $b = -0.305076 + 0.308030I$	$-5.11006 - 11.01450I$	0
$u = -0.742829 + 0.638369I$ $a = -0.41941 - 1.37103I$ $b = 0.589065 - 1.223740I$	$-4.14188 - 7.28968I$	0
$u = -0.742829 + 0.638369I$ $a = -0.427327 + 0.021229I$ $b = 0.843142 - 0.534369I$	$-4.14188 - 7.28968I$	0
$u = -0.742829 - 0.638369I$ $a = -0.41941 + 1.37103I$ $b = 0.589065 + 1.223740I$	$-4.14188 + 7.28968I$	0
$u = -0.742829 - 0.638369I$ $a = -0.427327 - 0.021229I$ $b = 0.843142 + 0.534369I$	$-4.14188 + 7.28968I$	0
$u = 1.005090 + 0.203751I$ $a = 0.390055 + 0.569052I$ $b = 0.992721 + 0.453947I$	$-1.89869 - 1.35541I$	0
$u = 1.005090 + 0.203751I$ $a = 0.407466 + 0.234397I$ $b = -0.629185 - 0.007103I$	$-1.89869 - 1.35541I$	0
$u = 1.005090 - 0.203751I$ $a = 0.390055 - 0.569052I$ $b = 0.992721 - 0.453947I$	$-1.89869 + 1.35541I$	0
$u = 1.005090 - 0.203751I$ $a = 0.407466 - 0.234397I$ $b = -0.629185 + 0.007103I$	$-1.89869 + 1.35541I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.186491 + 1.039210I$ $a = -1.00664 - 1.61801I$ $b = -1.36270 - 1.66152I$	$-2.09496 - 5.20115I$	0
$u = -0.186491 + 1.039210I$ $a = -1.43259 + 1.91024I$ $b = -0.111619 + 0.361911I$	$-2.09496 - 5.20115I$	0
$u = -0.186491 - 1.039210I$ $a = -1.00664 + 1.61801I$ $b = -1.36270 + 1.66152I$	$-2.09496 + 5.20115I$	0
$u = -0.186491 - 1.039210I$ $a = -1.43259 - 1.91024I$ $b = -0.111619 - 0.361911I$	$-2.09496 + 5.20115I$	0
$u = -0.314803 + 1.029530I$ $a = -0.305597 - 0.888428I$ $b = 1.038740 - 0.353898I$	$-0.79992 - 3.22325I$	0
$u = -0.314803 + 1.029530I$ $a = 0.37703 - 2.04231I$ $b = 0.97352 - 1.21576I$	$-0.79992 - 3.22325I$	0
$u = -0.314803 - 1.029530I$ $a = -0.305597 + 0.888428I$ $b = 1.038740 + 0.353898I$	$-0.79992 + 3.22325I$	0
$u = -0.314803 - 1.029530I$ $a = 0.37703 + 2.04231I$ $b = 0.97352 + 1.21576I$	$-0.79992 + 3.22325I$	0
$u = 0.266219 + 1.061790I$ $a = -0.542806 + 1.038340I$ $b = 1.097150 + 0.519899I$	$-2.44218 + 7.00189I$	0
$u = 0.266219 + 1.061790I$ $a = -0.28263 - 2.45996I$ $b = -0.98707 - 1.60327I$	$-2.44218 + 7.00189I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.266219 - 1.061790I$ $a = -0.542806 - 1.038340I$ $b = 1.097150 - 0.519899I$	$-2.44218 - 7.00189I$	0
$u = 0.266219 - 1.061790I$ $a = -0.28263 + 2.45996I$ $b = -0.98707 + 1.60327I$	$-2.44218 - 7.00189I$	0
$u = -1.084880 + 0.199306I$ $a = -0.692212 - 0.049681I$ $b = -0.826317 - 0.566134I$	$-3.26895 + 0.49541I$	0
$u = -1.084880 + 0.199306I$ $a = 0.395640 + 0.106601I$ $b = -0.248420 - 0.533561I$	$-3.26895 + 0.49541I$	0
$u = -1.084880 - 0.199306I$ $a = -0.692212 + 0.049681I$ $b = -0.826317 + 0.566134I$	$-3.26895 - 0.49541I$	0
$u = -1.084880 - 0.199306I$ $a = 0.395640 - 0.106601I$ $b = -0.248420 + 0.533561I$	$-3.26895 - 0.49541I$	0
$u = -0.294216 + 0.815936I$ $a = 1.77206 + 0.07629I$ $b = 1.90194 + 0.33372I$	$0.39000 - 5.04655I$	0
$u = -0.294216 + 0.815936I$ $a = -0.13362 - 2.22352I$ $b = 0.248256 - 0.030235I$	$0.39000 - 5.04655I$	0
$u = -0.294216 - 0.815936I$ $a = 1.77206 - 0.07629I$ $b = 1.90194 - 0.33372I$	$0.39000 + 5.04655I$	0
$u = -0.294216 - 0.815936I$ $a = -0.13362 + 2.22352I$ $b = 0.248256 + 0.030235I$	$0.39000 + 5.04655I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.712127 + 0.485206I$ $a = -0.455027 - 0.805112I$ $b = -0.827312 + 0.723163I$	$0.09123 - 3.78957I$	0
$u = 0.712127 + 0.485206I$ $a = 0.685764 + 0.326436I$ $b = 1.006640 - 0.907692I$	$0.09123 - 3.78957I$	0
$u = 0.712127 - 0.485206I$ $a = -0.455027 + 0.805112I$ $b = -0.827312 - 0.723163I$	$0.09123 + 3.78957I$	0
$u = 0.712127 - 0.485206I$ $a = 0.685764 - 0.326436I$ $b = 1.006640 + 0.907692I$	$0.09123 + 3.78957I$	0
$u = 0.295334 + 0.803324I$ $a = -0.501851 + 0.068394I$ $b = -1.50597 + 0.47002I$	$-0.37995 + 1.40068I$	0
$u = 0.295334 + 0.803324I$ $a = 0.52748 + 2.52898I$ $b = 0.619190 + 0.688019I$	$-0.37995 + 1.40068I$	0
$u = 0.295334 - 0.803324I$ $a = -0.501851 - 0.068394I$ $b = -1.50597 - 0.47002I$	$-0.37995 - 1.40068I$	0
$u = 0.295334 - 0.803324I$ $a = 0.52748 - 2.52898I$ $b = 0.619190 - 0.688019I$	$-0.37995 - 1.40068I$	0
$u = 0.213974 + 0.827868I$ $a = -1.63285 + 1.00507I$ $b = -1.76177 + 0.98637I$	$2.00006 + 1.07708I$	0
$u = 0.213974 + 0.827868I$ $a = 0.61337 + 2.39422I$ $b = 0.0121104 + 0.1107320I$	$2.00006 + 1.07708I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.213974 - 0.827868I$ $a = -1.63285 - 1.00507I$ $b = -1.76177 - 0.98637I$	$2.00006 - 1.07708I$	0
$u = 0.213974 - 0.827868I$ $a = 0.61337 - 2.39422I$ $b = 0.0121104 - 0.1107320I$	$2.00006 - 1.07708I$	0
$u = 1.149900 + 0.043012I$ $a = -0.215152 + 0.193663I$ $b = -0.934018 + 0.781388I$	$2.26216 - 8.28168I$	0
$u = 1.149900 + 0.043012I$ $a = 0.0661547 + 0.0640179I$ $b = 0.851900 - 0.644902I$	$2.26216 - 8.28168I$	0
$u = 1.149900 - 0.043012I$ $a = -0.215152 - 0.193663I$ $b = -0.934018 - 0.781388I$	$2.26216 + 8.28168I$	0
$u = 1.149900 - 0.043012I$ $a = 0.0661547 - 0.0640179I$ $b = 0.851900 + 0.644902I$	$2.26216 + 8.28168I$	0
$u = 0.229791 + 0.789280I$ $a = 1.54262 + 0.35953I$ $b = -0.765175 - 0.004533I$	$2.08858 + 1.30200I$	0
$u = 0.229791 + 0.789280I$ $a = -0.02253 + 2.79732I$ $b = 0.24296 + 1.90515I$	$2.08858 + 1.30200I$	0
$u = 0.229791 - 0.789280I$ $a = 1.54262 - 0.35953I$ $b = -0.765175 + 0.004533I$	$2.08858 - 1.30200I$	0
$u = 0.229791 - 0.789280I$ $a = -0.02253 - 2.79732I$ $b = 0.24296 - 1.90515I$	$2.08858 - 1.30200I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.036195 + 0.802302I$ $a = -1.54847 + 0.81841I$ $b = 0.800767 + 0.464000I$	$-0.71965 + 4.02232I$	0
$u = 0.036195 + 0.802302I$ $a = 0.25272 - 2.84199I$ $b = -0.36938 - 1.87197I$	$-0.71965 + 4.02232I$	0
$u = 0.036195 - 0.802302I$ $a = -1.54847 - 0.81841I$ $b = 0.800767 - 0.464000I$	$-0.71965 - 4.02232I$	0
$u = 0.036195 - 0.802302I$ $a = 0.25272 + 2.84199I$ $b = -0.36938 + 1.87197I$	$-0.71965 - 4.02232I$	0
$u = -0.500846 + 0.617088I$ $a = 1.139970 - 0.142931I$ $b = -0.880059 + 0.058472I$	$0.85573 + 1.62074I$	0
$u = -0.500846 + 0.617088I$ $a = -0.13250 + 2.16082I$ $b = -0.88744 + 1.34741I$	$0.85573 + 1.62074I$	0
$u = -0.500846 - 0.617088I$ $a = 1.139970 + 0.142931I$ $b = -0.880059 - 0.058472I$	$0.85573 - 1.62074I$	0
$u = -0.500846 - 0.617088I$ $a = -0.13250 - 2.16082I$ $b = -0.88744 - 1.34741I$	$0.85573 - 1.62074I$	0
$u = -0.131700 + 0.774275I$ $a = 0.544011 + 0.271864I$ $b = 1.046830 + 0.778835I$	$-0.957261 - 0.737396I$	0
$u = -0.131700 + 0.774275I$ $a = 1.21286 - 1.80284I$ $b = 0.458757 - 0.322553I$	$-0.957261 - 0.737396I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.131700 - 0.774275I$ $a = 0.544011 - 0.271864I$ $b = 1.046830 - 0.778835I$	$-0.957261 + 0.737396I$	0
$u = -0.131700 - 0.774275I$ $a = 1.21286 + 1.80284I$ $b = 0.458757 + 0.322553I$	$-0.957261 + 0.737396I$	0
$u = 0.655247 + 1.028660I$ $a = 0.590854 - 0.492500I$ $b = 0.198784 - 0.635513I$	$-1.97604 - 1.03573I$	0
$u = 0.655247 + 1.028660I$ $a = -0.242127 + 0.079600I$ $b = 0.109791 + 0.497015I$	$-1.97604 - 1.03573I$	0
$u = 0.655247 - 1.028660I$ $a = 0.590854 + 0.492500I$ $b = 0.198784 + 0.635513I$	$-1.97604 + 1.03573I$	0
$u = 0.655247 - 1.028660I$ $a = -0.242127 - 0.079600I$ $b = 0.109791 - 0.497015I$	$-1.97604 + 1.03573I$	0
$u = 0.513393 + 1.159540I$ $a = -0.30718 + 1.49009I$ $b = 1.03112 + 1.15926I$	$-2.18244 + 8.52370I$	0
$u = 0.513393 + 1.159540I$ $a = 0.09440 - 1.75536I$ $b = -1.07069 - 1.38196I$	$-2.18244 + 8.52370I$	0
$u = 0.513393 - 1.159540I$ $a = -0.30718 - 1.49009I$ $b = 1.03112 - 1.15926I$	$-2.18244 - 8.52370I$	0
$u = 0.513393 - 1.159540I$ $a = 0.09440 + 1.75536I$ $b = -1.07069 + 1.38196I$	$-2.18244 - 8.52370I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.272051 + 1.299290I$ $a = -0.65792 + 1.66124I$ $b = -1.42240 + 1.38378I$	$-9.76212 - 10.19140I$	0
$u = -0.272051 + 1.299290I$ $a = 0.67141 + 1.75293I$ $b = -0.568486 + 0.917793I$	$-9.76212 - 10.19140I$	0
$u = -0.272051 - 1.299290I$ $a = -0.65792 - 1.66124I$ $b = -1.42240 - 1.38378I$	$-9.76212 + 10.19140I$	0
$u = -0.272051 - 1.299290I$ $a = 0.67141 - 1.75293I$ $b = -0.568486 - 0.917793I$	$-9.76212 + 10.19140I$	0
$u = 0.357802 + 1.288170I$ $a = -0.041853 + 0.572645I$ $b = 0.813564 + 0.482299I$	$-6.90283 + 3.01551I$	0
$u = 0.357802 + 1.288170I$ $a = 0.08800 - 1.55938I$ $b = -0.422451 - 1.069590I$	$-6.90283 + 3.01551I$	0
$u = 0.357802 - 1.288170I$ $a = -0.041853 - 0.572645I$ $b = 0.813564 - 0.482299I$	$-6.90283 - 3.01551I$	0
$u = 0.357802 - 1.288170I$ $a = 0.08800 + 1.55938I$ $b = -0.422451 + 1.069590I$	$-6.90283 - 3.01551I$	0
$u = 0.333862 + 1.327410I$ $a = 0.212267 + 0.954228I$ $b = 1.082160 + 0.784375I$	$-6.98353 + 3.11049I$	0
$u = 0.333862 + 1.327410I$ $a = 0.23271 - 1.72495I$ $b = -0.515887 - 1.097990I$	$-6.98353 + 3.11049I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.333862 - 1.327410I$ $a = 0.212267 - 0.954228I$ $b = 1.082160 - 0.784375I$	$-6.98353 - 3.11049I$	0
$u = 0.333862 - 1.327410I$ $a = 0.23271 + 1.72495I$ $b = -0.515887 + 1.097990I$	$-6.98353 - 3.11049I$	0
$u = 0.292504 + 0.547831I$ $a = -1.40577 - 0.57253I$ $b = 1.007980 - 0.333918I$	$-3.91622 - 8.35714I$	$1.35538 + 4.69267I$
$u = 0.292504 + 0.547831I$ $a = -0.28515 - 3.07714I$ $b = -0.57531 - 1.39212I$	$-3.91622 - 8.35714I$	$1.35538 + 4.69267I$
$u = 0.292504 - 0.547831I$ $a = -1.40577 + 0.57253I$ $b = 1.007980 + 0.333918I$	$-3.91622 + 8.35714I$	$1.35538 - 4.69267I$
$u = 0.292504 - 0.547831I$ $a = -0.28515 + 3.07714I$ $b = -0.57531 + 1.39212I$	$-3.91622 + 8.35714I$	$1.35538 - 4.69267I$
$u = 0.574631 + 1.274680I$ $a = -0.300009 + 1.087250I$ $b = 0.638666 + 0.586332I$	$-5.25277 + 7.06492I$	0
$u = 0.574631 + 1.274680I$ $a = -0.607879 - 1.152740I$ $b = -1.17790 - 0.90866I$	$-5.25277 + 7.06492I$	0
$u = 0.574631 - 1.274680I$ $a = -0.300009 - 1.087250I$ $b = 0.638666 - 0.586332I$	$-5.25277 - 7.06492I$	0
$u = 0.574631 - 1.274680I$ $a = -0.607879 + 1.152740I$ $b = -1.17790 + 0.90866I$	$-5.25277 - 7.06492I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.37185 + 1.38007I$ $a = 0.799555 + 0.256222I$ $b = -0.058801 + 0.351793I$	$-8.50119 - 4.52025I$	0
$u = -0.37185 + 1.38007I$ $a = 0.061072 + 1.195820I$ $b = -0.187287 + 1.220130I$	$-8.50119 - 4.52025I$	0
$u = -0.37185 - 1.38007I$ $a = 0.799555 - 0.256222I$ $b = -0.058801 - 0.351793I$	$-8.50119 + 4.52025I$	0
$u = -0.37185 - 1.38007I$ $a = 0.061072 - 1.195820I$ $b = -0.187287 - 1.220130I$	$-8.50119 + 4.52025I$	0
$u = 0.62626 + 1.29138I$ $a = 0.046418 - 1.102100I$ $b = -0.694372 - 1.072530I$	$-4.75054 + 7.12597I$	0
$u = 0.62626 + 1.29138I$ $a = -0.381384 + 1.047360I$ $b = 0.502119 + 0.938123I$	$-4.75054 + 7.12597I$	0
$u = 0.62626 - 1.29138I$ $a = 0.046418 + 1.102100I$ $b = -0.694372 + 1.072530I$	$-4.75054 - 7.12597I$	0
$u = 0.62626 - 1.29138I$ $a = -0.381384 - 1.047360I$ $b = 0.502119 - 0.938123I$	$-4.75054 - 7.12597I$	0
$u = -0.57994 + 1.33675I$ $a = -0.255760 - 1.045310I$ $b = 0.901436 - 0.780415I$	$-6.95291 - 6.59702I$	0
$u = -0.57994 + 1.33675I$ $a = 0.28765 - 1.74762I$ $b = 1.02520 - 1.39326I$	$-6.95291 - 6.59702I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.57994 - 1.33675I$ $a = -0.255760 + 1.045310I$ $b = 0.901436 + 0.780415I$	$-6.95291 + 6.59702I$	0
$u = -0.57994 - 1.33675I$ $a = 0.28765 + 1.74762I$ $b = 1.02520 + 1.39326I$	$-6.95291 + 6.59702I$	0
$u = 0.57141 + 1.34515I$ $a = -0.04647 - 1.43045I$ $b = -1.12942 - 1.11659I$	$-1.7952 + 14.2981I$	0
$u = 0.57141 + 1.34515I$ $a = 0.03565 + 1.68994I$ $b = 1.04099 + 1.27738I$	$-1.7952 + 14.2981I$	0
$u = 0.57141 - 1.34515I$ $a = -0.04647 + 1.43045I$ $b = -1.12942 + 1.11659I$	$-1.7952 - 14.2981I$	0
$u = 0.57141 - 1.34515I$ $a = 0.03565 - 1.68994I$ $b = 1.04099 - 1.27738I$	$-1.7952 - 14.2981I$	0
$u = 0.04804 + 1.51825I$ $a = 0.482203 - 0.795052I$ $b = 0.100540 - 0.361534I$	$-3.59145 - 1.62787I$	0
$u = 0.04804 + 1.51825I$ $a = 0.440731 + 0.484955I$ $b = 0.676525 + 0.558637I$	$-3.59145 - 1.62787I$	0
$u = 0.04804 - 1.51825I$ $a = 0.482203 + 0.795052I$ $b = 0.100540 + 0.361534I$	$-3.59145 + 1.62787I$	0
$u = 0.04804 - 1.51825I$ $a = 0.440731 - 0.484955I$ $b = 0.676525 - 0.558637I$	$-3.59145 + 1.62787I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.451010 + 0.159443I$ $a = 0.241718 + 1.096620I$ $b = -0.973442 - 0.244762I$	$1.43317 + 0.17568I$	$8.43284 - 0.01950I$
$u = -0.451010 + 0.159443I$ $a = 0.986111 + 0.749441I$ $b = -0.761924 - 0.411230I$	$1.43317 + 0.17568I$	$8.43284 - 0.01950I$
$u = -0.451010 - 0.159443I$ $a = 0.241718 - 1.096620I$ $b = -0.973442 + 0.244762I$	$1.43317 - 0.17568I$	$8.43284 + 0.01950I$
$u = -0.451010 - 0.159443I$ $a = 0.986111 - 0.749441I$ $b = -0.761924 + 0.411230I$	$1.43317 - 0.17568I$	$8.43284 + 0.01950I$
$u = 0.322814 + 0.079473I$ $a = 0.52772 + 1.82244I$ $b = 1.041910 - 0.610442I$	$-0.07886 - 4.39922I$	$2.83973 + 4.40314I$
$u = 0.322814 + 0.079473I$ $a = 2.24485 - 1.78762I$ $b = -0.359334 + 0.744505I$	$-0.07886 - 4.39922I$	$2.83973 + 4.40314I$
$u = 0.322814 - 0.079473I$ $a = 0.52772 - 1.82244I$ $b = 1.041910 + 0.610442I$	$-0.07886 + 4.39922I$	$2.83973 - 4.40314I$
$u = 0.322814 - 0.079473I$ $a = 2.24485 + 1.78762I$ $b = -0.359334 - 0.744505I$	$-0.07886 + 4.39922I$	$2.83973 - 4.40314I$
$u = -2.55622$ $a = -0.440039$ $b = -0.506514$	-3.73596	0
$u = -2.55622$ $a = 0.0282265$ $b = -0.169924$	-3.73596	0

III. $I_3^u = \langle 4u^{19} + 19u^{18} + \cdots + 3b - 84,\ 40u^{19} + 265u^{18} + \cdots + 9a - 252,\ u^{20} + 7u^{19} + \cdots + 42u + 9\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{40}{9}u^{19} - \frac{265}{9}u^{18} + \cdots + \frac{968}{9}u + 28 \\ -\frac{4}{3}u^{19} - \frac{19}{3}u^{18} + \cdots + \frac{392}{3}u + 28 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{7}{9}u^{19} - \frac{16}{9}u^{18} + \cdots + \frac{1874}{9}u + 41 \\ \frac{2}{3}u^{19} + \frac{29}{3}u^{18} + \cdots + \frac{743}{3}u + 46 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{5}{3}u^{18} + \frac{38}{3}u^{17} + \cdots + \frac{379}{3}u + \frac{74}{3} \\ \frac{2}{3}u^{19} + \frac{17}{3}u^{18} + \cdots + \frac{137}{3}u + 6 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{29}{9}u^{19} + \frac{200}{9}u^{18} + \cdots - \frac{592}{9}u - 17 \\ \frac{8}{3}u^{19} + \frac{50}{3}u^{18} + \cdots - \frac{151}{3}u - 11 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{20}{3}u^{19} - 47u^{18} + \cdots - \frac{40}{3}u + \frac{41}{3} \\ -\frac{13}{3}u^{19} - \frac{88}{3}u^{18} + \cdots + \frac{293}{3}u + 33 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2.55556u^{19} - 22.2222u^{18} + \cdots - 193.889u - 32.6667 \\ -\frac{13}{3}u^{19} - \frac{100}{3}u^{18} + \cdots - \frac{415}{3}u - 19 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{13}{9}u^{19} - \frac{58}{9}u^{18} + \cdots + \frac{1724}{9}u + 40 \\ \frac{5}{3}u^{19} + \frac{50}{3}u^{18} + \cdots + \frac{644}{3}u + 40 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{8}{3}u^{19} - \frac{58}{3}u^{18} + \cdots - u + \frac{19}{3} \\ -\frac{5}{3}u^{19} - \frac{32}{3}u^{18} + \cdots + \frac{313}{3}u + 24 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -13u^{19} - 93u^{18} - 421u^{17} - 1363u^{16} - 3495u^{15} - 7363u^{14} - 13102u^{13} - 20033u^{12} - 26617u^{11} - 30997u^{10} - 31771u^{9} - 28679u^{8} - 22729u^{7} - 15646u^{6} - 9231u^{5} - 4507u^{4} - 1738u^{3} - 439u^{2} - 39u + 30$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{20} - 8u^{19} + \cdots - 8u + 1$
c_2, c_{10}	$u^{20} + u^{19} + \cdots - u + 1$
c_3, c_6	$u^{20} - u^{19} + \cdots + u + 1$
c_4, c_8	$u^{20} - u^{19} + \cdots + 4u + 1$
c_5	$u^{20} + 7u^{19} + \cdots + 42u + 9$
c_7	$u^{20} + 5u^{19} + \cdots + 89u + 7$
c_9, c_{11}	$u^{20} - u^{19} + \cdots + 2u + 1$
c_{12}	$u^{20} - 7u^{19} + \cdots - 42u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{20} + 16y^{19} + \cdots + 16y + 1$
c_2, c_3, c_6 c_{10}	$y^{20} - 15y^{19} + \cdots - 7y + 1$
c_4, c_8	$y^{20} + y^{19} + \cdots + 4y + 1$
c_5, c_{12}	$y^{20} + 15y^{19} + \cdots + 738y + 81$
c_7	$y^{20} + 5y^{19} + \cdots - 95y + 49$
c_9, c_{11}	$y^{20} - 7y^{19} + \cdots - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.132354 + 0.898303I$ $a = 0.15715 + 1.96554I$ $b = -0.773170 + 0.967766I$	$1.44598 + 0.41600I$	$3.49879 + 5.89775I$
$u = 0.132354 - 0.898303I$ $a = 0.15715 - 1.96554I$ $b = -0.773170 - 0.967766I$	$1.44598 - 0.41600I$	$3.49879 - 5.89775I$
$u = 0.196976 + 0.872387I$ $a = 0.53045 - 1.92774I$ $b = 1.007610 - 0.664998I$	$-4.98839 + 9.92530I$	$-1.69942 - 5.27594I$
$u = 0.196976 - 0.872387I$ $a = 0.53045 + 1.92774I$ $b = 1.007610 + 0.664998I$	$-4.98839 - 9.92530I$	$-1.69942 + 5.27594I$
$u = -0.763618 + 0.456574I$ $a = 0.588522 - 0.510428I$ $b = 0.943872 + 0.962545I$	$0.36096 + 4.68512I$	$5.51102 - 11.41474I$
$u = -0.763618 - 0.456574I$ $a = 0.588522 + 0.510428I$ $b = 0.943872 - 0.962545I$	$0.36096 - 4.68512I$	$5.51102 + 11.41474I$
$u = 0.258613 + 0.846747I$ $a = 0.263583 + 1.364150I$ $b = -0.382563 + 0.715000I$	$1.14834 + 1.50481I$	$2.91202 - 9.16284I$
$u = 0.258613 - 0.846747I$ $a = 0.263583 - 1.364150I$ $b = -0.382563 - 0.715000I$	$1.14834 - 1.50481I$	$2.91202 + 9.16284I$
$u = -0.298366 + 0.813116I$ $a = -0.35523 - 1.63918I$ $b = 1.016380 - 0.892498I$	$-1.37181 - 5.75633I$	$1.47939 + 6.24502I$
$u = -0.298366 - 0.813116I$ $a = -0.35523 + 1.63918I$ $b = 1.016380 + 0.892498I$	$-1.37181 + 5.75633I$	$1.47939 - 6.24502I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.181400 + 0.267071I$ $a = -0.059306 + 0.160162I$ $b = -0.572894 + 0.286937I$	$-1.43260 + 0.73706I$	$5.63800 + 6.58777I$
$u = -1.181400 - 0.267071I$ $a = -0.059306 - 0.160162I$ $b = -0.572894 - 0.286937I$	$-1.43260 - 0.73706I$	$5.63800 - 6.58777I$
$u = -0.570897 + 1.173290I$ $a = 0.24797 + 1.62734I$ $b = -1.04356 + 1.36634I$	$-1.96294 - 9.84242I$	$2.62456 + 11.26073I$
$u = -0.570897 - 1.173290I$ $a = 0.24797 - 1.62734I$ $b = -1.04356 - 1.36634I$	$-1.96294 + 9.84242I$	$2.62456 - 11.26073I$
$u = -0.52244 + 1.37539I$ $a = 0.110941 - 1.252670I$ $b = 0.898732 - 0.898470I$	$-6.24410 - 5.00718I$	$-3.03575 + 3.84902I$
$u = -0.52244 - 1.37539I$ $a = 0.110941 + 1.252670I$ $b = 0.898732 + 0.898470I$	$-6.24410 + 5.00718I$	$-3.03575 - 3.84902I$
$u = -0.64850 + 1.37043I$ $a = -0.323700 - 0.338117I$ $b = -0.035363 - 0.500365I$	$-2.34740 + 1.34900I$	$-17.2853 - 3.1865I$
$u = -0.64850 - 1.37043I$ $a = -0.323700 + 0.338117I$ $b = -0.035363 + 0.500365I$	$-2.34740 - 1.34900I$	$-17.2853 + 3.1865I$
$u = -0.10273 + 1.53255I$ $a = -0.327046 + 0.668911I$ $b = -0.559048 + 0.319678I$	$-7.63713 - 8.31054I$	$-1.64333 + 9.35402I$
$u = -0.10273 - 1.53255I$ $a = -0.327046 - 0.668911I$ $b = -0.559048 - 0.319678I$	$-7.63713 + 8.31054I$	$-1.64333 - 9.35402I$

IV. $\boldsymbol{I^u_4 = \langle -u^6a + 3u^6 + \cdots - 3a + 20,\ 105u^6a + 64u^6 + \cdots - 84a - 80,\ u^7 - 4u^6 + 7u^5 - 11u^4 + 9u^3 - 10u^2 + 4u - 3\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ \frac{1}{7}u^6a - \frac{3}{7}u^6 + \cdots + \frac{3}{7}a - \frac{20}{7} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{7}u^6a - \frac{3}{7}u^6 + \cdots + \frac{10}{7}a - \frac{20}{7} \\ -u^6 - u^4a + 5u^5 - 10u^4 - u^2a + 14u^3 - au - 13u^2 + 8u - 5 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -\frac{5}{7}u^6a - \frac{2}{21}u^6 + \cdots + \frac{9}{7}a + \frac{79}{21} \\ -\frac{5}{7}u^6a + \frac{2}{7}u^6 + \cdots + \frac{9}{7}a + \frac{30}{7} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.571429au^6 - 0.333333u^6 + \cdots + 0.619048u + 1.95238 \\ -\frac{4}{7}u^6a - \frac{1}{7}u^6 + \cdots + \frac{2}{7}u + \frac{12}{7} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{4}{7}u^5a - \frac{1}{7}u^6 + \cdots - \frac{16}{7}a + \frac{1}{7} \\ -\frac{2}{7}u^6a + \frac{10}{7}u^5a + \cdots - \frac{15}{7}a - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{4}{7}u^6a - \frac{2}{3}u^6 + \cdots + \frac{4}{7}a + \frac{46}{21} \\ -\frac{4}{7}u^6a - \frac{5}{7}u^6 + \cdots + \frac{6}{7}a + \frac{16}{7} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{7}u^6a - \frac{4}{7}u^6 + \cdots + \frac{4}{7}a - \frac{15}{7} \\ -u^6 + 5u^5 - 10u^4 + 14u^3 - au - 13u^2 + 8u - 5 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{2}{7}u^6a + \frac{4}{21}u^6 + \cdots + \frac{11}{7}a - \frac{17}{21} \\ \frac{3}{7}u^6a - \frac{10}{7}u^5a + \cdots + \frac{6}{7}a - \frac{13}{7} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{48}{7}u^6 - \frac{142}{7}u^5 + \frac{282}{7}u^4 - \frac{278}{7}u^3 + \frac{220}{7}u^2 - 19u + \frac{66}{7}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^7 - 8y^6 + 12y^5 - 13y^4 + 8y^3 - 6y^2 + 4y - 1)^2$
c_2, c_3, c_6 c_{10}	$y^{14} - 22y^{13} + \cdots - 6y + 1$
c_4, c_8	$y^{14} + 2y^{13} + \cdots - 39y + 1$
c_5, c_{12}	$(y^7 - 2y^6 - 21y^5 - 67y^4 - 107y^3 - 94y^2 - 44y - 9)^2$
c_7	$(y^7 - 4y^6 + 6y^5 - 8y^4 + 13y^3 - 12y^2 + 8y - 1)^2$
c_9, c_{11}	$y^{14} - 23y^{13} + \cdots - 253y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.192587 + 0.916625I$ $a = -0.831182 + 0.178282I$ $b = 0.954520 - 0.175020I$	$-1.06765 - 4.78787I$	$0.89921 + 9.02652I$
$u = -0.192587 + 0.916625I$ $a = -0.37235 - 2.66376I$ $b = 0.02006 - 1.70486I$	$-1.06765 - 4.78787I$	$0.89921 + 9.02652I$
$u = -0.192587 - 0.916625I$ $a = -0.831182 - 0.178282I$ $b = 0.954520 + 0.175020I$	$-1.06765 + 4.78787I$	$0.89921 - 9.02652I$
$u = -0.192587 - 0.916625I$ $a = -0.37235 + 2.66376I$ $b = 0.02006 + 1.70486I$	$-1.06765 + 4.78787I$	$0.89921 - 9.02652I$
$u = 0.248771 + 0.802486I$ $a = -0.419648 - 0.132335I$ $b = -1.361380 + 0.281050I$	$0.79884 + 1.27057I$	$4.19539 - 5.04627I$
$u = 0.248771 + 0.802486I$ $a = 0.40574 + 2.29966I$ $b = 0.566012 + 0.652891I$	$0.79884 + 1.27057I$	$4.19539 - 5.04627I$
$u = 0.248771 - 0.802486I$ $a = -0.419648 + 0.132335I$ $b = -1.361380 - 0.281050I$	$0.79884 - 1.27057I$	$4.19539 + 5.04627I$
$u = 0.248771 - 0.802486I$ $a = 0.40574 - 2.29966I$ $b = 0.566012 - 0.652891I$	$0.79884 - 1.27057I$	$4.19539 + 5.04627I$
$u = 0.634150 + 1.203070I$ $a = -0.527419 + 0.961767I$ $b = 0.693861 + 0.745868I$	$-6.08989 + 7.46557I$	$-5.74304 - 10.76826I$
$u = 0.634150 + 1.203070I$ $a = -0.31114 - 1.52798I$ $b = -1.03422 - 1.33238I$	$-6.08989 + 7.46557I$	$-5.74304 - 10.76826I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.634150 - 1.203070I$ $a = -0.527419 - 0.961767I$ $b = 0.693861 - 0.745868I$	$-6.08989 - 7.46557I$	$-5.74304 + 10.76826I$
$u = 0.634150 - 1.203070I$ $a = -0.31114 + 1.52798I$ $b = -1.03422 + 1.33238I$	$-6.08989 - 7.46557I$	$-5.74304 + 10.76826I$
$u = 2.61933$ $a = 0.429320$ $b = 0.495409$	-3.73195	1071.30
$u = 2.61933$ $a = 0.0160275$ $b = -0.173108$	-3.73195	1071.30

V. $I_1^v = \langle a,\ b+1,\ v^2 - v + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = -1.00000$	0	3.00000
$v = 0.500000 - 0.866025I$ $a = 0$ $b = -1.00000$	0	3.00000

VI. $I_2^v = \langle a,\ b + v - 1,\ v^2 - v + 1 \rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

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

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

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

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

$$a_4 = \begin{pmatrix} 1 \\ -v \end{pmatrix}$$

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

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

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

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

$$a_{11} = \begin{pmatrix} 0 \\ -v+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_2^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	$0.500000 + 0.866025I$		
$a =$	0	0	3.00000
$b =$	$0.500000 - 0.866025I$		
$v =$	$0.500000 - 0.866025I$		
$a =$	0	0	3.00000
$b =$	$0.500000 + 0.866025I$		

VII. $\boldsymbol{I_3^v = \langle a,\ b+1,\ v+1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_6, c_8 c_9, c_{10}, c_{11}	$y - 1$
c_5, c_{12}	y
c_7	$y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = \quad 0$ $b = -1.00000$	0	0

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u+1)(u^2-u+1)^2(u^7+2u^6-2u^5-u^4+2u^3-2u+1)^2$ $\cdot(u^{20}-8u^{19}+\cdots-8u+1)(u^{39}-30u^{38}+\cdots-270336u+16384)$
c_2, c_{10}	$((u-1)^3)(u^2+u+1)(u^{14}+2u^{13}+\cdots-2u-1)(u^{20}+u^{19}+\cdots-u+1)$ $\cdot(u^{39}-17u^{37}+\cdots+3u-1)$
c_3, c_6	$((u+1)^3)(u^2-u+1)(u^{14}-2u^{13}+\cdots+2u-1)(u^{20}-u^{19}+\cdots+u+1)$ $\cdot(u^{39}-17u^{37}+\cdots+3u-1)$
c_4, c_8	$((u+1)^3)(u^2-u+1)(u^{14}+u^{12}+\cdots-u-1)(u^{20}-u^{19}+\cdots+4u+1)$ $\cdot(u^{39}+7u^{37}+\cdots-10u-1)$
c_5	$u^5(u^7-4u^6+7u^5-11u^4+9u^3-10u^2+4u-3)^2$ $\cdot(u^{20}+7u^{19}+\cdots+42u+9)(u^{39}-16u^{38}+\cdots+384u-16)$
c_7	$(u+2)(u^2+u+1)^2(u^7+2u^6-2u^4-u^3+2u^2+2u-1)^2$ $\cdot(u^{20}+5u^{19}+\cdots+89u+7)(u^{39}+28u^{38}+\cdots-39904u-2512)$
c_9, c_{11}	$((u-1)^3)(u^2+u+1)(u^{14}+5u^{13}+\cdots+19u-1)$ $\cdot(u^{20}-u^{19}+\cdots+2u+1)(u^{39}+2u^{38}+\cdots-20u-7)$
c_{12}	$u^5(u^7+4u^6+7u^5+11u^4+9u^3+10u^2+4u+3)^2$ $\cdot(u^{20}-7u^{19}+\cdots-42u+9)(u^{39}-16u^{38}+\cdots+384u-16)$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)(y^2+y+1)^2(y^7-8y^6+\cdots+4y-1)^2$ $\cdot(y^{20}+16y^{19}+\cdots+16y+1)$ $\cdot(y^{39}+48y^{37}+\cdots+1677721600y-268435456)$
c_2, c_3, c_6 c_{10}	$((y-1)^3)(y^2+y+1)(y^{14}-22y^{13}+\cdots-6y+1)$ $\cdot(y^{20}-15y^{19}+\cdots-7y+1)(y^{39}-34y^{38}+\cdots-13y-1)$
c_4, c_8	$((y-1)^3)(y^2+y+1)(y^{14}+2y^{13}+\cdots-39y+1)$ $\cdot(y^{20}+y^{19}+\cdots+4y+1)(y^{39}+14y^{38}+\cdots+28y-1)$
c_5, c_{12}	$y^5(y^7-2y^6-21y^5-67y^4-107y^3-94y^2-44y-9)^2$ $\cdot(y^{20}+15y^{19}+\cdots+738y+81)(y^{39}+24y^{38}+\cdots+30592y-256)$
c_7	$(y-4)(y^2+y+1)^2(y^7-4y^6+\cdots+8y-1)^2$ $\cdot(y^{20}+5y^{19}+\cdots-95y+49)$ $\cdot(y^{39}-10y^{38}+\cdots-133816704y-6310144)$
c_9, c_{11}	$((y-1)^3)(y^2+y+1)(y^{14}-23y^{13}+\cdots-253y+1)$ $\cdot(y^{20}-7y^{19}+\cdots-4y+1)(y^{39}-10y^{38}+\cdots+120y-49)$