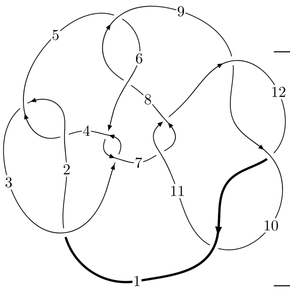
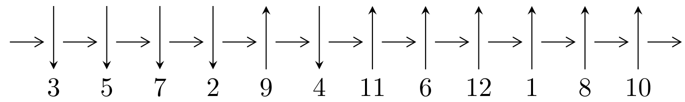
$12a_{0045}$ $(K12a_{0045})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$8,12 \xrightarrow[c_{11}]{} 11 \xrightarrow[c_{7}]{} 4,7 \xrightarrow[c_{3}]{} 3 \xrightarrow[c_{6}]{} 6 \xrightarrow[c_{8}]{} 9 \xrightarrow[c_{9}]{} 10 \xrightarrow[c_{12}]{} 1 \xrightarrow[c_{5}]{} 5 \xrightarrow[c_{2}]{} 2 \twoheadrightarrow c_1, c_4, c_{10}$$

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

$$\begin{aligned}
I_1^u = \langle & -1.73886 \times 10^{473} u^{111} + 7.36133 \times 10^{473} u^{110} + \cdots + 8.44755 \times 10^{472} b + 1.17690 \times 10^{476}, \\
& 1.22830 \times 10^{474} u^{111} - 5.19087 \times 10^{474} u^{110} + \cdots + 3.37902 \times 10^{473} a - 8.06591 \times 10^{476}, \\
& u^{112} - 5u^{111} + \cdots - 5632u + 512 \rangle \\
I_2^u = \langle & -3u^7 + u^6 + 4u^5 - 3u^4 - 6u^3 + 2u^2 + b + 3u - 4,\ 4u^7 - 2u^6 - 5u^5 + 5u^4 + 7u^3 - 4u^2 + a - 3u + 6, \\
& u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1 \rangle \\
I_3^u = \langle & -2a^2 u - 3a^2 + 3au + b + 4a - u - 1,\ a^3 - 2a^2 u - au + a - 2u + 1,\ u^2 + u - 1 \rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v = \langle & a,\ 4v^8 + 372v^7 - 2334v^6 + 5550v^5 - 4357v^4 - 2618v^3 + 3887v^2 + 683b + 3400v - 4863, \\
& v^9 - 7v^8 + 20v^7 - 25v^6 + 5v^5 + 15v^4 - 22v^2 + 13v + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 135 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. $\boldsymbol{I_1^u = \langle -1.74 \times 10^{473} u^{111} + 7.36 \times 10^{473} u^{110} + \cdots + 8.45 \times 10^{472} b + 1.18 \times 10^{476},\ 1.23 \times 10^{474} u^{111} - 5.19 \times 10^{474} u^{110} + \cdots + 3.38 \times 10^{473} a - 8.07 \times 10^{476},\ u^{112} - 5u^{111} + \cdots - 5632u + 512 \rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -3.63508u^{111} + 15.3621u^{110} + \cdots - 23290.3u + 2387.06 \\ 2.05842u^{111} - 8.71416u^{110} + \cdots + 13450.9u - 1393.18 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -3.30996u^{111} + 14.0045u^{110} + \cdots - 21203.9u + 2169.87 \\ 1.97006u^{111} - 8.31889u^{110} + \cdots + 12707.2u - 1313.20 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.332016u^{111} - 1.18364u^{110} + \cdots + 480.594u - 16.2789 \\ 1.32667u^{111} - 5.42552u^{110} + \cdots + 7647.22u - 780.729 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1.36761u^{111} - 5.57410u^{110} + \cdots + 7412.94u - 742.249 \\ 1.52926u^{111} - 6.40481u^{110} + \cdots + 9333.98u - 953.908 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2.89687u^{111} - 11.9789u^{110} + \cdots + 16746.9u - 1696.16 \\ 1.52926u^{111} - 6.40481u^{110} + \cdots + 9333.98u - 953.908 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2.89687u^{111} - 11.9789u^{110} + \cdots + 16746.9u - 1696.16 \\ 0.611834u^{111} - 2.49689u^{110} + \cdots + 3293.45u - 328.877 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1.44617u^{111} + 6.03016u^{110} + \cdots - 9202.34u + 961.399 \\ 0.0147551u^{111} - 0.115461u^{110} + \cdots + 564.279u - 65.6250 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -4.30037u^{111} + 18.0843u^{110} + \cdots - 27250.0u + 2800.12 \\ 1.91947u^{111} - 8.15999u^{110} + \cdots + 12820.5u - 1331.36 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18.1068u^{111} + 78.6391u^{110} + \cdots - 135248.u + 14140.7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{112} + 52u^{111} + \cdots + 6550u + 1$
c_2, c_4	$u^{112} - 12u^{111} + \cdots + 78u + 1$
c_3, c_6	$u^{112} - 4u^{111} + \cdots - 1664u + 256$
c_5, c_8	$u^{112} + 3u^{111} + \cdots - 224u - 64$
c_7, c_{11}	$u^{112} - 5u^{111} + \cdots - 5632u + 512$
c_9, c_{10}, c_{12}	$u^{112} + 14u^{111} + \cdots + 171u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{112} + 28y^{111} + \cdots - 43105022y + 1$
c_2, c_4	$y^{112} - 52y^{111} + \cdots - 6550y + 1$
c_3, c_6	$y^{112} + 60y^{111} + \cdots - 3784704y + 65536$
c_5, c_8	$y^{112} + 47y^{111} + \cdots - 185344y + 4096$
c_7, c_{11}	$y^{112} - 69y^{111} + \cdots - 75235328y + 262144$
c_9, c_{10}, c_{12}	$y^{112} - 110y^{111} + \cdots - 28983y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.987913 + 0.168924I$ $a = -0.918537 + 0.380378I$ $b = -0.882679 + 0.639952I$	$2.30876 + 3.35064I$	0
$u = 0.987913 - 0.168924I$ $a = -0.918537 - 0.380378I$ $b = -0.882679 - 0.639952I$	$2.30876 - 3.35064I$	0
$u = 0.112659 + 0.958754I$ $a = 0.550334 - 0.341976I$ $b = -1.17922 + 1.72177I$	$1.95897 - 0.23517I$	0
$u = 0.112659 - 0.958754I$ $a = 0.550334 + 0.341976I$ $b = -1.17922 - 1.72177I$	$1.95897 + 0.23517I$	0
$u = -0.941698 + 0.193747I$ $a = 0.549932 - 0.881492I$ $b = 0.117151 - 0.720063I$	$4.85807 + 1.15903I$	0
$u = -0.941698 - 0.193747I$ $a = 0.549932 + 0.881492I$ $b = 0.117151 + 0.720063I$	$4.85807 - 1.15903I$	0
$u = 0.922599 + 0.202041I$ $a = -0.591409 - 0.833431I$ $b = -0.525947 - 0.138764I$	$0.14318 + 1.74876I$	0
$u = 0.922599 - 0.202041I$ $a = -0.591409 + 0.833431I$ $b = -0.525947 + 0.138764I$	$0.14318 - 1.74876I$	0
$u = -0.989073 + 0.373226I$ $a = 0.231341 + 0.278025I$ $b = 1.082440 + 0.064268I$	$-0.37121 - 2.19836I$	0
$u = -0.989073 - 0.373226I$ $a = 0.231341 - 0.278025I$ $b = 1.082440 - 0.064268I$	$-0.37121 + 2.19836I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.052080 + 0.121562I$ $a = -0.628103 - 1.234560I$ $b = -0.62631 + 1.29964I$	$5.22079 - 3.15983I$	0
$u = -1.052080 - 0.121562I$ $a = -0.628103 + 1.234560I$ $b = -0.62631 - 1.29964I$	$5.22079 + 3.15983I$	0
$u = -0.263231 + 1.038520I$ $a = 1.031050 - 0.733739I$ $b = -1.21393 + 1.06445I$	$5.66523 + 4.88950I$	0
$u = -0.263231 - 1.038520I$ $a = 1.031050 + 0.733739I$ $b = -1.21393 - 1.06445I$	$5.66523 - 4.88950I$	0
$u = 0.919842 + 0.048399I$ $a = 1.46700 + 0.26858I$ $b = 0.767029 + 1.031570I$	$-1.49378 + 1.54613I$	0
$u = 0.919842 - 0.048399I$ $a = 1.46700 - 0.26858I$ $b = 0.767029 - 1.031570I$	$-1.49378 - 1.54613I$	0
$u = 0.313988 + 1.041330I$ $a = 2.16348 - 0.54755I$ $b = -3.12911 + 2.53870I$	$0.16000 - 2.10599I$	0
$u = 0.313988 - 1.041330I$ $a = 2.16348 + 0.54755I$ $b = -3.12911 - 2.53870I$	$0.16000 + 2.10599I$	0
$u = 0.859832 + 0.236554I$ $a = -0.32071 + 2.46620I$ $b = -0.76197 - 1.63661I$	$-0.994600 - 0.244702I$	0
$u = 0.859832 - 0.236554I$ $a = -0.32071 - 2.46620I$ $b = -0.76197 + 1.63661I$	$-0.994600 + 0.244702I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.645211 + 0.908882I$ $a = 0.406074 - 0.178808I$ $b = -0.402066 - 1.027180I$	$-4.31644 - 4.47828I$	0
$u = -0.645211 - 0.908882I$ $a = 0.406074 + 0.178808I$ $b = -0.402066 + 1.027180I$	$-4.31644 + 4.47828I$	0
$u = 1.103470 + 0.161706I$ $a = 0.356874 - 0.708417I$ $b = 1.169370 + 0.176941I$	$-0.13349 + 1.76727I$	0
$u = 1.103470 - 0.161706I$ $a = 0.356874 + 0.708417I$ $b = 1.169370 - 0.176941I$	$-0.13349 - 1.76727I$	0
$u = -0.869520 + 0.018980I$ $a = 0.669734 - 0.947495I$ $b = 0.19478 + 1.72833I$	$4.29062 - 2.64667I$	0
$u = -0.869520 - 0.018980I$ $a = 0.669734 + 0.947495I$ $b = 0.19478 - 1.72833I$	$4.29062 + 2.64667I$	0
$u = -0.097707 + 1.131780I$ $a = -1.26124 + 0.65545I$ $b = 1.86008 - 1.30770I$	$7.06933 - 0.77487I$	0
$u = -0.097707 - 1.131780I$ $a = -1.26124 - 0.65545I$ $b = 1.86008 + 1.30770I$	$7.06933 + 0.77487I$	0
$u = 1.062140 + 0.446911I$ $a = -0.744235 - 1.049370I$ $b = 1.011560 + 0.521470I$	$3.05226 + 7.00346I$	0
$u = 1.062140 - 0.446911I$ $a = -0.744235 + 1.049370I$ $b = 1.011560 - 0.521470I$	$3.05226 - 7.00346I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.116720 + 0.299470I$ $a = 0.66546 + 1.25680I$ $b = -0.756923 - 0.431765I$	$4.78310 + 1.56650I$	0
$u = 1.116720 - 0.299470I$ $a = 0.66546 - 1.25680I$ $b = -0.756923 + 0.431765I$	$4.78310 - 1.56650I$	0
$u = -0.106096 + 0.835679I$ $a = -1.71103 - 0.38039I$ $b = 1.45697 + 0.32666I$	$-2.60168 + 8.03413I$	0
$u = -0.106096 - 0.835679I$ $a = -1.71103 + 0.38039I$ $b = 1.45697 - 0.32666I$	$-2.60168 - 8.03413I$	0
$u = -1.074420 + 0.471048I$ $a = 0.48698 + 2.05471I$ $b = 2.14483 - 1.48985I$	$-2.53810 - 4.23062I$	0
$u = -1.074420 - 0.471048I$ $a = 0.48698 - 2.05471I$ $b = 2.14483 + 1.48985I$	$-2.53810 + 4.23062I$	0
$u = 0.750829 + 0.302715I$ $a = 0.640656 - 1.016480I$ $b = 0.600724 - 0.528679I$	$-1.53487 + 7.70823I$	0
$u = 0.750829 - 0.302715I$ $a = 0.640656 + 1.016480I$ $b = 0.600724 + 0.528679I$	$-1.53487 - 7.70823I$	0
$u = -0.404340 + 0.667214I$ $a = -2.16675 - 0.27634I$ $b = 1.38716 + 1.41067I$	$-4.57208 - 0.19764I$	0
$u = -0.404340 - 0.667214I$ $a = -2.16675 + 0.27634I$ $b = 1.38716 - 1.41067I$	$-4.57208 + 0.19764I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.562718 + 0.536308I$ $a = -0.119967 + 0.522623I$ $b = 0.699792 + 0.611127I$	$-1.65451 - 1.50529I$	0
$u = -0.562718 - 0.536308I$ $a = -0.119967 - 0.522623I$ $b = 0.699792 - 0.611127I$	$-1.65451 + 1.50529I$	0
$u = 0.323687 + 1.179730I$ $a = -0.409973 + 0.354108I$ $b = 0.60376 - 2.00524I$	$1.24304 - 4.46857I$	0
$u = 0.323687 - 1.179730I$ $a = -0.409973 - 0.354108I$ $b = 0.60376 + 2.00524I$	$1.24304 + 4.46857I$	0
$u = -0.962683 + 0.788038I$ $a = -0.260779 - 0.039002I$ $b = -0.405012 + 0.743652I$	$-3.38522 - 1.66545I$	0
$u = -0.962683 - 0.788038I$ $a = -0.260779 + 0.039002I$ $b = -0.405012 - 0.743652I$	$-3.38522 + 1.66545I$	0
$u = -0.287462 + 0.691754I$ $a = 0.593994 - 0.634266I$ $b = -0.811368 - 0.733768I$	$-4.17219 + 2.32119I$	0
$u = -0.287462 - 0.691754I$ $a = 0.593994 + 0.634266I$ $b = -0.811368 + 0.733768I$	$-4.17219 - 2.32119I$	0
$u = 1.014560 + 0.732117I$ $a = 0.215744 + 0.187366I$ $b = -0.010991 + 0.513589I$	$1.05711 + 6.04270I$	0
$u = 1.014560 - 0.732117I$ $a = 0.215744 - 0.187366I$ $b = -0.010991 - 0.513589I$	$1.05711 - 6.04270I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.161230 + 0.475817I$ $a = -0.277099 - 0.217089I$ $b = -1.200030 + 0.265794I$	$-1.50046 - 6.83730I$	0
$u = -1.161230 - 0.475817I$ $a = -0.277099 + 0.217089I$ $b = -1.200030 - 0.265794I$	$-1.50046 + 6.83730I$	0
$u = 0.447908 + 0.581740I$ $a = -1.18928 - 0.85724I$ $b = 0.364030 - 0.116853I$	$1.18207 - 2.86004I$	0
$u = 0.447908 - 0.581740I$ $a = -1.18928 + 0.85724I$ $b = 0.364030 + 0.116853I$	$1.18207 + 2.86004I$	0
$u = 1.284600 + 0.081267I$ $a = 0.17262 - 1.57344I$ $b = 0.216790 - 0.027700I$	$4.50061 + 1.87825I$	0
$u = 1.284600 - 0.081267I$ $a = 0.17262 + 1.57344I$ $b = 0.216790 + 0.027700I$	$4.50061 - 1.87825I$	0
$u = 0.814984 + 1.000110I$ $a = -0.255947 + 0.372325I$ $b = -0.65284 - 1.48503I$	$0.256128 + 0.215496I$	0
$u = 0.814984 - 1.000110I$ $a = -0.255947 - 0.372325I$ $b = -0.65284 + 1.48503I$	$0.256128 - 0.215496I$	0
$u = 1.061310 + 0.734995I$ $a = 0.231002 - 0.484171I$ $b = 1.28384 + 0.99105I$	$-0.08758 - 3.32486I$	0
$u = 1.061310 - 0.734995I$ $a = 0.231002 + 0.484171I$ $b = 1.28384 - 0.99105I$	$-0.08758 + 3.32486I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.140581 + 0.678756I$ $a = 1.92559 + 0.47607I$ $b = -1.116120 - 0.595282I$	$-0.07044 + 3.09882I$	0
$u = -0.140581 - 0.678756I$ $a = 1.92559 - 0.47607I$ $b = -1.116120 + 0.595282I$	$-0.07044 - 3.09882I$	0
$u = 0.480520 + 0.491232I$ $a = 0.479661 + 0.474885I$ $b = -1.358880 - 0.118546I$	$1.19166 - 0.82959I$	0
$u = 0.480520 - 0.491232I$ $a = 0.479661 - 0.474885I$ $b = -1.358880 + 0.118546I$	$1.19166 + 0.82959I$	0
$u = 0.664039 + 0.056295I$ $a = -2.16392 - 2.68234I$ $b = 1.22695 + 1.89143I$	$-0.844006 + 0.123701I$	$16.1538 - 18.4285I$
$u = 0.664039 - 0.056295I$ $a = -2.16392 + 2.68234I$ $b = 1.22695 - 1.89143I$	$-0.844006 - 0.123701I$	$16.1538 + 18.4285I$
$u = -1.264170 + 0.444282I$ $a = -0.14613 - 1.65167I$ $b = -1.87414 + 0.52156I$	$3.43374 - 7.46948I$	0
$u = -1.264170 - 0.444282I$ $a = -0.14613 + 1.65167I$ $b = -1.87414 - 0.52156I$	$3.43374 + 7.46948I$	0
$u = -1.305310 + 0.328556I$ $a = 0.89998 - 1.79680I$ $b = -0.91086 - 1.12171I$	$5.51452 - 2.03742I$	0
$u = -1.305310 - 0.328556I$ $a = 0.89998 + 1.79680I$ $b = -0.91086 + 1.12171I$	$5.51452 + 2.03742I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.277820 + 1.323270I$ $a = -1.62486 + 0.15415I$ $b = 3.25584 - 1.48744I$	$6.13010 - 4.83002I$	0
$u = 0.277820 - 1.323270I$ $a = -1.62486 - 0.15415I$ $b = 3.25584 + 1.48744I$	$6.13010 + 4.83002I$	0
$u = 1.362900 + 0.209748I$ $a = 0.02427 + 1.55962I$ $b = -0.574884 + 0.351957I$	$2.55654 + 7.34989I$	0
$u = 1.362900 - 0.209748I$ $a = 0.02427 - 1.55962I$ $b = -0.574884 - 0.351957I$	$2.55654 - 7.34989I$	0
$u = 1.338470 + 0.333318I$ $a = -0.877831 + 0.950009I$ $b = -2.01412 - 1.14375I$	$10.99310 - 0.43900I$	0
$u = 1.338470 - 0.333318I$ $a = -0.877831 - 0.950009I$ $b = -2.01412 + 1.14375I$	$10.99310 + 0.43900I$	0
$u = -1.316050 + 0.429456I$ $a = 0.944070 - 0.591573I$ $b = 0.66430 - 1.46767I$	$6.42012 - 4.59902I$	0
$u = -1.316050 - 0.429456I$ $a = 0.944070 + 0.591573I$ $b = 0.66430 + 1.46767I$	$6.42012 + 4.59902I$	0
$u = 0.610427$ $a = 0.610429$ $b = -0.200993$	0.859712	11.9150
$u = 1.286140 + 0.548627I$ $a = -0.443252 + 0.043811I$ $b = -1.048490 - 0.319033I$	$5.53294 + 5.70610I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.286140 - 0.548627I$ $a = -0.443252 - 0.043811I$ $b = -1.048490 + 0.319033I$	$5.53294 - 5.70610I$	0
$u = -1.310080 + 0.531274I$ $a = -0.03910 + 1.65684I$ $b = 2.16792 - 0.22426I$	$1.11481 - 13.24070I$	0
$u = -1.310080 - 0.531274I$ $a = -0.03910 - 1.65684I$ $b = 2.16792 + 0.22426I$	$1.11481 + 13.24070I$	0
$u = -1.28436 + 0.61419I$ $a = 0.742337 - 1.065820I$ $b = -1.41432 - 0.47830I$	$8.88079 - 10.89320I$	0
$u = -1.28436 - 0.61419I$ $a = 0.742337 + 1.065820I$ $b = -1.41432 + 0.47830I$	$8.88079 + 10.89320I$	0
$u = 1.28360 + 0.62427I$ $a = -0.52411 + 1.93638I$ $b = -3.41369 - 1.15161I$	$3.26019 + 8.19420I$	0
$u = 1.28360 - 0.62427I$ $a = -0.52411 - 1.93638I$ $b = -3.41369 + 1.15161I$	$3.26019 - 8.19420I$	0
$u = -1.41781 + 0.19610I$ $a = -1.080480 + 0.444312I$ $b = -1.41301 + 1.02495I$	$7.77601 - 0.27066I$	0
$u = -1.41781 - 0.19610I$ $a = -1.080480 - 0.444312I$ $b = -1.41301 - 1.02495I$	$7.77601 + 0.27066I$	0
$u = 0.38913 + 1.38262I$ $a = 1.62101 + 0.04014I$ $b = -3.56558 + 1.43739I$	$4.02685 - 10.51750I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.38913 - 1.38262I$ $a = 1.62101 - 0.04014I$ $b = -3.56558 - 1.43739I$	$4.02685 + 10.51750I$	0
$u = -0.549537 + 0.083222I$ $a = 0.274559 - 0.934457I$ $b = -0.19496 + 2.94085I$	$4.16876 - 2.73247I$	$34.1878 - 1.6499I$
$u = -0.549537 - 0.083222I$ $a = 0.274559 + 0.934457I$ $b = -0.19496 - 2.94085I$	$4.16876 + 2.73247I$	$34.1878 + 1.6499I$
$u = 1.37781 + 0.43660I$ $a = 0.718387 - 1.203630I$ $b = 2.36665 + 1.01786I$	$11.96300 + 6.19123I$	0
$u = 1.37781 - 0.43660I$ $a = 0.718387 + 1.203630I$ $b = 2.36665 - 1.01786I$	$11.96300 - 6.19123I$	0
$u = 0.182434 + 0.518573I$ $a = 1.66248 + 0.93649I$ $b = -0.473030 - 0.208731I$	$1.99985 + 1.66123I$	$2.31051 - 3.78283I$
$u = 0.182434 - 0.518573I$ $a = 1.66248 - 0.93649I$ $b = -0.473030 + 0.208731I$	$1.99985 - 1.66123I$	$2.31051 + 3.78283I$
$u = -1.37397 + 0.53912I$ $a = -0.631049 + 1.262440I$ $b = 1.48385 + 0.78634I$	$11.21670 - 5.22488I$	0
$u = -1.37397 - 0.53912I$ $a = -0.631049 - 1.262440I$ $b = 1.48385 - 0.78634I$	$11.21670 + 5.22488I$	0
$u = 1.32163 + 0.66916I$ $a = 0.428382 + 0.007783I$ $b = 0.979772 + 0.650539I$	$4.46415 + 11.08430I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.32163 - 0.66916I$ $a = 0.428382 - 0.007783I$ $b = 0.979772 - 0.650539I$	$4.46415 - 11.08430I$	0
$u = 1.38900 + 0.70279I$ $a = 0.13070 - 1.64504I$ $b = 3.33755 + 0.49016I$	$9.7116 + 11.9730I$	0
$u = 1.38900 - 0.70279I$ $a = 0.13070 + 1.64504I$ $b = 3.33755 - 0.49016I$	$9.7116 - 11.9730I$	0
$u = 1.37841 + 0.77274I$ $a = 0.06128 + 1.66829I$ $b = -3.52485 - 0.31007I$	$7.2346 + 18.0734I$	0
$u = 1.37841 - 0.77274I$ $a = 0.06128 - 1.66829I$ $b = -3.52485 + 0.31007I$	$7.2346 - 18.0734I$	0
$u = -1.58390$ $a = -2.28456$ $b = -3.83094$	7.84469	0
$u = -1.67053 + 0.32452I$ $a = 0.03761 + 1.53472I$ $b = 1.94736 + 1.83024I$	$12.87440 - 1.42369I$	0
$u = -1.67053 - 0.32452I$ $a = 0.03761 - 1.53472I$ $b = 1.94736 - 1.83024I$	$12.87440 + 1.42369I$	0
$u = -1.77832 + 0.22948I$ $a = -0.32455 - 1.46958I$ $b = -2.20973 - 2.18426I$	$11.74710 + 4.07589I$	0
$u = -1.77832 - 0.22948I$ $a = -0.32455 + 1.46958I$ $b = -2.20973 + 2.18426I$	$11.74710 - 4.07589I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.104682$ $a = -3.89166$ $b = 8.91953$	0.460815	373.120
$u = 0.0766424$ $a = -7.27868$ $b = 0.661524$	-1.20372	-8.99900

II. $I^u_2 = \langle -3u^7 + u^6 + \cdots + b - 4,\ 4u^7 - 2u^6 + \cdots + a + 6,\ u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 44u^7 - 15u^6 - 58u^5 + 53u^4 + 78u^3 - 42u^2 - 28u + 73$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^8$
c_3, c_6	y^8
c_5, c_8	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$
c_7, c_{11}	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$
c_9, c_{10}, c_{12}	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.570868 + 0.730671I$ $a = 1.145920 + 0.510212I$ $b = -1.80990 + 0.33963I$	$-0.604279 - 1.131230I$	$0.744211 - 0.553382I$
$u = 0.570868 - 0.730671I$ $a = 1.145920 - 0.510212I$ $b = -1.80990 - 0.33963I$	$-0.604279 + 1.131230I$	$0.744211 + 0.553382I$
$u = -0.855237 + 0.665892I$ $a = -0.315815 + 0.718986I$ $b = 1.043770 - 0.152194I$	$-3.80435 - 2.57849I$	$-2.39106 + 4.72239I$
$u = -0.855237 - 0.665892I$ $a = -0.315815 - 0.718986I$ $b = 1.043770 + 0.152194I$	$-3.80435 + 2.57849I$	$-2.39106 - 4.72239I$
$u = -1.09818$ $a = 0.755058$ $b = 0.155540$	4.85780	8.45210
$u = 1.031810 + 0.655470I$ $a = 0.069364 + 0.543055I$ $b = -0.759875 - 0.104398I$	$0.73474 + 6.44354I$	$0.47538 - 9.99765I$
$u = 1.031810 - 0.655470I$ $a = 0.069364 - 0.543055I$ $b = -0.759875 + 0.104398I$	$0.73474 - 6.44354I$	$0.47538 + 9.99765I$
$u = 0.603304$ $a = -4.55399$ $b = 2.89645$	-0.799899	60.8910

III.

$\boldsymbol{I^u_3 = \langle -2a^2u-3a^2+3au+b+4a-u-1,\ a^3-2a^2u-au+a-2u+1,\ u^2+u-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 19a^2u+23a^2-17au-29a+3u+1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.08457$ $b = 0.251717$	-0.126494	0.874100
$u = 0.618034$ $a = 0.075747 + 0.460350I$ $b = 0.30119 - 2.39951I$	$4.01109 + 2.82812I$	$-7.3018 - 15.7639I$
$u = 0.618034$ $a = 0.075747 - 0.460350I$ $b = 0.30119 + 2.39951I$	$4.01109 - 2.82812I$	$-7.3018 + 15.7639I$
$u = -1.61803$ $a = -0.198308 + 1.205210I$ $b = -0.453796 + 1.142220I$	$11.90680 - 2.82812I$	$7.38403 + 1.90115I$
$u = -1.61803$ $a = -0.198308 - 1.205210I$ $b = -0.453796 - 1.142220I$	$11.90680 + 2.82812I$	$7.38403 - 1.90115I$
$u = -1.61803$ $a = -2.83945$ $b = -4.94651$	7.76919	-62.0390

IV. $\boldsymbol{I_1^v = \langle a,\ 4v^8 + 372v^7 + \cdots + 683b - 4863,\ v^9 - 7v^8 + \cdots + 13v + 1\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 0 \\ -0.00585652v^8 - 0.544656v^7 + \cdots - 4.97804v + 7.12006 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -0.565154v^8 + 3.44070v^7 + \cdots + 7.61933v + 0.585652 \\ -0.00585652v^8 - 0.544656v^7 + \cdots - 4.97804v + 7.12006 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} v \\ 0.595900v^8 - 3.58126v^7 + \cdots - 7.48463v + 3.28404 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.00439v^8 + 5.59151v^7 + \cdots + 9.26647v + 0.590044 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1.00439v^8 + 5.59151v^7 + \cdots + 9.26647v + 1.59004 \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.00439v^8 - 5.59151v^7 + \cdots - 9.26647v - 0.590044 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.00439v^8 + 5.59151v^7 + \cdots + 9.26647v + 0.590044 \\ 0.00585652v^8 - 0.455344v^7 + \cdots - 3.02196v + 3.87994 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.569546v^8 - 3.03221v^7 + \cdots - 3.88580v - 0.175695 \\ 0.00585652v^8 - 0.455344v^7 + \cdots - 3.02196v + 3.87994 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$$= -\frac{8299}{683}v^8 + \frac{59404}{683}v^7 - \frac{175193}{683}v^6 + \frac{233079}{683}v^5 - \frac{71022}{683}v^4 - \frac{122802}{683}v^3 + \frac{17898}{683}v^2 + \frac{188382}{683}v - \frac{131415}{683}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9 - 5u^8 + 12u^7 - 15u^6 + 9u^5 + u^4 - 4u^3 + 2u^2 + u - 1$
c_2	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_3	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_4	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$
c_5	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$
c_6	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_7, c_{11}	u^9
c_8	$u^9 - 3u^8 + 8u^7 - 13u^6 + 17u^5 - 17u^4 + 12u^3 - 6u^2 + u + 1$
c_9, c_{10}	$(u + 1)^9$
c_{12}	$(u - 1)^9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$
c_2, c_4	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_3, c_6	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_5, c_8	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_7, c_{11}	y^9
c_9, c_{10}, c_{12}	$(y-1)^9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.763784 + 0.496693I$ $a = 0$ $b = -0.449406 + 0.973624I$	$3.42837 - 2.09337I$	$7.68972 + 3.82038I$
$v = -0.763784 - 0.496693I$ $a = 0$ $b = -0.449406 - 0.973624I$	$3.42837 + 2.09337I$	$7.68972 - 3.82038I$
$v = 1.072290 + 0.815867I$ $a = 0$ $b = -0.764470 - 0.234457I$	$1.02799 - 2.45442I$	$5.04100 + 1.69416I$
$v = 1.072290 - 0.815867I$ $a = 0$ $b = -0.764470 + 0.234457I$	$1.02799 + 2.45442I$	$5.04100 - 1.69416I$
$v = 1.353070 + 0.224375I$ $a = 0$ $b = 0.485105 - 0.622283I$	$-2.72642 - 1.33617I$	$-1.56769 + 0.26615I$
$v = 1.353070 - 0.224375I$ $a = 0$ $b = 0.485105 + 0.622283I$	$-2.72642 + 1.33617I$	$-1.56769 - 0.26615I$
$v = -0.0689118$ $a = 0$ $b = 7.43498$	0.446489	-211.240
$v = 1.87288 + 1.26938I$ $a = 0$ $b = 0.511281 + 0.180088I$	$-1.95319 - 7.08493I$	$0.45449 + 1.34000I$
$v = 1.87288 - 1.26938I$ $a = 0$ $b = 0.511281 - 0.180088I$	$-1.95319 + 7.08493I$	$0.45449 - 1.34000I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^8(u^3-u^2+2u-1)^2$ $\cdot(u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1)$ $\cdot(u^{112}+52u^{111}+\cdots+6550u+1)$
c_2	$(u-1)^8(u^3+u^2-1)^2(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{112}-12u^{111}+\cdots+78u+1)$
c_3	$u^8(u^3-u^2+2u-1)^2(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)$ $\cdot(u^{112}-4u^{111}+\cdots-1664u+256)$
c_4	$(u+1)^8(u^3-u^2+1)^2(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)$ $\cdot(u^{112}-12u^{111}+\cdots+78u+1)$
c_5	$u^6(u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1)$ $\cdot(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{112}+3u^{111}+\cdots-224u-64)$
c_6	$u^8(u^3+u^2+2u+1)^2(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(u^{112}-4u^{111}+\cdots-1664u+256)$
c_7	$u^9(u^2-u-1)^3(u^8+u^7-u^6-2u^5+u^4+2u^3-2u-1)$ $\cdot(u^{112}-5u^{111}+\cdots-5632u+512)$
c_8	$u^6(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)$ $\cdot(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{112}+3u^{111}+\cdots-224u-64)$
c_9, c_{10}	$(u+1)^9(u^2-u-1)^3(u^8-u^7-3u^6+2u^5+3u^4-2u-1)$ $\cdot(u^{112}+14u^{111}+\cdots+171u-1)$
c_{11}	$u^9(u^2+u-1)^3(u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1)$ $\cdot(u^{112}-5u^{111}+\cdots-5632u+512)$
c_{12}	$(u-1)^9(u^2+u-1)^3(u^8+u^7-3u^6-2u^5+3u^4+2u-1)$ $\cdot(u^{112}+14u^{111}+\cdots+171u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^8(y^3+3y^2+2y-1)^2$ $\cdot\,(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot\,(y^{112}+28y^{111}+\cdots-43105022y+1)$
c_2, c_4	$(y-1)^8(y^3-y^2+2y-1)^2$ $\cdot\,(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot\,(y^{112}-52y^{111}+\cdots-6550y+1)$
c_3, c_6	$y^8(y^3+3y^2+2y-1)^2$ $\cdot\,(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot\,(y^{112}+60y^{111}+\cdots-3784704y+65536)$
c_5, c_8	$y^6(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)$ $\cdot\,(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot\,(y^{112}+47y^{111}+\cdots-185344y+4096)$
c_7, c_{11}	$y^9(y^2-3y+1)^3(y^8-3y^7+\cdots-4y+1)$ $\cdot\,(y^{112}-69y^{111}+\cdots-75235328y+262144)$
c_9, c_{10}, c_{12}	$(y-1)^9(y^2-3y+1)^3$ $\cdot\,(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot\,(y^{112}-110y^{111}+\cdots-28983y+1)$