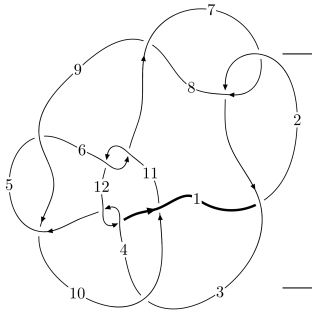
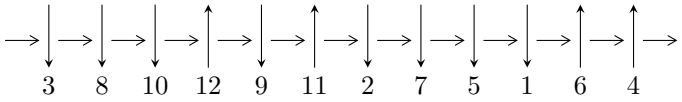
$12a_{0770}$ $(K12a_{0770})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -6.65043 \times 10^{180} u^{122} - 4.62248 \times 10^{181} u^{121} + \cdots + 5.34068 \times 10^{181} b + 2.74124 \times 10^{183},$$
$$- 7.47255 \times 10^{182} u^{122} - 1.31863 \times 10^{183} u^{121} + \cdots + 6.14178 \times 10^{182} a + 1.15546 \times 10^{184},$$
$$u^{123} + u^{122} + \cdots + 43u + 23 \rangle$$
$$I_2^u = \langle 3u^{21} - 3u^{20} + \cdots + b + 2u,\ -5u^{21} + 7u^{20} + \cdots + a + 2,\ u^{22} - 2u^{21} + \cdots - u + 1 \rangle$$
$$I_3^u = \langle 2b - a - 1,\ a^2 + 3,\ u + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 147 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. $\boldsymbol{I_1^u = \langle -6.65 \times 10^{180} u^{122} - 4.62 \times 10^{181} u^{121} + \cdots + 5.34 \times 10^{181} b + 2.74 \times 10^{183},\ -7.47 \times 10^{182} u^{122} - 1.32 \times 10^{183} u^{121} + \cdots + 6.14 \times 10^{182} a + 1.16 \times 10^{184},\ u^{123} + u^{122} + \cdots + 43u + 23 \rangle}$

(i) Arc colorings

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

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

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1.21667u^{122} + 2.14697u^{121} + \cdots - 77.9956u - 18.8131 \\ 0.124524u^{122} + 0.865522u^{121} + \cdots - 67.1265u - 51.3275 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0607396u^{122} + 0.475188u^{121} + \cdots - 44.6538u - 69.4270 \\ 1.67317u^{122} + 0.806668u^{121} + \cdots + 5.21204u + 63.7892 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1.23243u^{122} - 0.911083u^{121} + \cdots + 68.7361u + 72.5814 \\ -2.33691u^{122} - 2.63772u^{121} + \cdots + 131.127u + 1.01620 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.914222u^{122} + 0.748352u^{121} + \cdots - 27.3667u - 28.7631 \\ 1.49054u^{122} + 0.650958u^{121} + \cdots + 16.0082u + 79.3115 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.54515u^{122} - 0.506262u^{121} + \cdots - 7.26446u - 50.9718 \\ 1.79972u^{122} + 0.979358u^{121} + \cdots - 8.27209u + 29.8660 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.17727u^{122} + 1.92689u^{121} + \cdots - 54.9908u - 7.68351 \\ -0.328200u^{122} + 0.391498u^{121} + \cdots - 57.6916u - 52.2228 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.02390u^{122} - 5.22769u^{121} + \cdots + 262.256u + 134.644$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8	$u^{123} + 37u^{122} + \cdots + 8841u + 529$
c_2, c_7	$u^{123} + u^{122} + \cdots + 43u + 23$
c_3	$u^{123} + u^{122} + \cdots - 438u + 319$
c_4, c_{12}	$u^{123} + 5u^{122} + \cdots + 1096u + 193$
c_5, c_9	$u^{123} - 3u^{122} + \cdots - 2u + 1$
c_6, c_{11}	$u^{123} - u^{122} + \cdots - 2422u + 317$
c_{10}	$u^{123} - 3u^{122} + \cdots + 36u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{123} + 107y^{122} + \cdots - 3332343y - 279841$
c_2, c_7	$y^{123} - 37y^{122} + \cdots + 8841y - 529$
c_3	$y^{123} + 23y^{122} + \cdots - 8257190y - 101761$
c_4, c_{12}	$y^{123} + 87y^{122} + \cdots - 679762y - 37249$
c_5, c_9	$y^{123} + 77y^{122} + \cdots - 114y - 1$
c_6, c_{11}	$y^{123} + 75y^{122} + \cdots + 1511772y - 100489$
c_{10}	$y^{123} - 7y^{122} + \cdots - 146y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.998038 + 0.111520I$ $a = -0.618593 - 1.235120I$ $b = 0.464560 - 0.829256I$	$-3.64634 - 2.82809I$	0
$u = 0.998038 - 0.111520I$ $a = -0.618593 + 1.235120I$ $b = 0.464560 + 0.829256I$	$-3.64634 + 2.82809I$	0
$u = -1.008390 + 0.041848I$ $a = -0.012986 + 1.238690I$ $b = 0.74198 + 1.33457I$	$-5.23839 + 3.65926I$	0
$u = -1.008390 - 0.041848I$ $a = -0.012986 - 1.238690I$ $b = 0.74198 - 1.33457I$	$-5.23839 - 3.65926I$	0
$u = 0.747677 + 0.678061I$ $a = 1.29904 + 1.42318I$ $b = -1.10040 - 1.00468I$	$-0.28697 + 3.57568I$	0
$u = 0.747677 - 0.678061I$ $a = 1.29904 - 1.42318I$ $b = -1.10040 + 1.00468I$	$-0.28697 - 3.57568I$	0
$u = 0.978634 + 0.099967I$ $a = -0.575223 - 1.000370I$ $b = 0.532319 - 0.539416I$	$-3.62329 - 2.84767I$	0
$u = 0.978634 - 0.099967I$ $a = -0.575223 + 1.000370I$ $b = 0.532319 + 0.539416I$	$-3.62329 + 2.84767I$	0
$u = 0.999685 + 0.318338I$ $a = 0.846148 + 0.812960I$ $b = 0.02291 + 1.41918I$	$-8.44641 - 0.32156I$	0
$u = 0.999685 - 0.318338I$ $a = 0.846148 - 0.812960I$ $b = 0.02291 - 1.41918I$	$-8.44641 + 0.32156I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.694646 + 0.643454I$ $a = 0.846743 - 0.636508I$ $b = -0.163630 - 0.059486I$	$2.48058 - 1.47346I$	0
$u = 0.694646 - 0.643454I$ $a = 0.846743 + 0.636508I$ $b = -0.163630 + 0.059486I$	$2.48058 + 1.47346I$	0
$u = -0.718678 + 0.775205I$ $a = 1.45433 - 0.51245I$ $b = -0.796471 + 0.555784I$	$2.25372 - 2.40345I$	0
$u = -0.718678 - 0.775205I$ $a = 1.45433 + 0.51245I$ $b = -0.796471 - 0.555784I$	$2.25372 + 2.40345I$	0
$u = -0.828714 + 0.440216I$ $a = 0.405860 + 0.873938I$ $b = 0.530574 - 0.657586I$	$-1.69210 + 2.01686I$	0
$u = -0.828714 - 0.440216I$ $a = 0.405860 - 0.873938I$ $b = 0.530574 + 0.657586I$	$-1.69210 - 2.01686I$	0
$u = -0.903346 + 0.243331I$ $a = 0.0407501 - 0.0294218I$ $b = -1.183180 - 0.102475I$	$-1.43303 + 6.80135I$	0
$u = -0.903346 - 0.243331I$ $a = 0.0407501 + 0.0294218I$ $b = -1.183180 + 0.102475I$	$-1.43303 - 6.80135I$	0
$u = 1.062020 + 0.073185I$ $a = -0.736389 - 1.157230I$ $b = 0.097415 - 0.752583I$	$-3.59485 - 2.77429I$	0
$u = 1.062020 - 0.073185I$ $a = -0.736389 + 1.157230I$ $b = 0.097415 + 0.752583I$	$-3.59485 + 2.77429I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.771064+0.741605I$ $a=-0.110952+1.386560I$ $b=\ \ 0.516847-1.169790I$	$-1.99581+1.48737I$	0
$u=-0.771064-0.741605I$ $a=-0.110952-1.386560I$ $b=\ \ 0.516847+1.169790I$	$-1.99581-1.48737I$	0
$u=-1.040000+0.262995I$ $a=-1.40149+0.98571I$ $b=\ \ 0.264976+1.307830I$	$-8.72461+5.99285I$	0
$u=-1.040000-0.262995I$ $a=-1.40149-0.98571I$ $b=\ \ 0.264976-1.307830I$	$-8.72461-5.99285I$	0
$u=-0.897567+0.593044I$ $a=\ \ 0.702479-0.017392I$ $b=\ \ 0.139182-0.979590I$	$-1.12457+2.29817I$	0
$u=-0.897567-0.593044I$ $a=\ \ 0.702479+0.017392I$ $b=\ \ 0.139182+0.979590I$	$-1.12457-2.29817I$	0
$u=\ \ 0.245012+0.890518I$ $a=-0.355572+0.069784I$ $b=\ \ 0.419312-0.758001I$	$3.31588-1.85610I$	0
$u=\ \ 0.245012-0.890518I$ $a=-0.355572-0.069784I$ $b=\ \ 0.419312+0.758001I$	$3.31588+1.85610I$	0
$u=\ \ 0.819637+0.401676I$ $a=\ \ 0.261319-0.494561I$ $b=-0.539925+0.154824I$	$1.67415-2.68529I$	0
$u=\ \ 0.819637-0.401676I$ $a=\ \ 0.261319+0.494561I$ $b=-0.539925-0.154824I$	$1.67415+2.68529I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.832068+0.700606I$ $a=\ \ 2.25867-0.20449I$ $b=-0.161300-0.591037I$	$0.85788-2.20310I$	0
$u=-0.832068-0.700606I$ $a=\ \ 2.25867+0.20449I$ $b=-0.161300+0.591037I$	$0.85788+2.20310I$	0
$u=-0.745115+0.794136I$ $a=\ \ 1.107990-0.745099I$ $b=-0.633546+0.858719I$	$2.45030-2.24805I$	0
$u=-0.745115-0.794136I$ $a=\ \ 1.107990+0.745099I$ $b=-0.633546-0.858719I$	$2.45030+2.24805I$	0
$u=-0.586117+0.921962I$ $a=-0.124249+0.255359I$ $b=\ \ 0.423531-1.046930I$	$2.31520+1.08669I$	0
$u=-0.586117-0.921962I$ $a=-0.124249-0.255359I$ $b=\ \ 0.423531+1.046930I$	$2.31520-1.08669I$	0
$u=-0.038136+0.876287I$ $a=-0.551055-0.730714I$ $b=\ \ 0.513871+1.117790I$	$-1.63003+8.62110I$	0
$u=-0.038136-0.876287I$ $a=-0.551055+0.730714I$ $b=\ \ 0.513871-1.117790I$	$-1.63003-8.62110I$	0
$u=\ \ 0.862609+0.722091I$ $a=\ \ 1.95306-0.13787I$ $b=-0.454401+0.739122I$	$2.80440-2.13090I$	0
$u=\ \ 0.862609-0.722091I$ $a=\ \ 1.95306+0.13787I$ $b=-0.454401-0.739122I$	$2.80440+2.13090I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.961243 + 0.587894I$ $a = 1.14619 - 0.86535I$ $b = 0.31694 + 1.38447I$	$-2.03643 - 1.93180I$	0
$u = 0.961243 - 0.587894I$ $a = 1.14619 + 0.86535I$ $b = 0.31694 - 1.38447I$	$-2.03643 + 1.93180I$	0
$u = -0.873179 + 0.719044I$ $a = -1.56461 - 1.14251I$ $b = -0.05346 + 2.18005I$	$-3.82458 + 2.74777I$	0
$u = -0.873179 - 0.719044I$ $a = -1.56461 + 1.14251I$ $b = -0.05346 - 2.18005I$	$-3.82458 - 2.74777I$	0
$u = -0.826141 + 0.781445I$ $a = 1.070400 - 0.503843I$ $b = -0.612674 + 1.078900I$	$3.46834 - 2.97155I$	0
$u = -0.826141 - 0.781445I$ $a = 1.070400 + 0.503843I$ $b = -0.612674 - 1.078900I$	$3.46834 + 2.97155I$	0
$u = 0.852358 + 0.753126I$ $a = 0.237441 + 0.203080I$ $b = -0.436051 - 1.275240I$	$3.86620 - 1.44750I$	0
$u = 0.852358 - 0.753126I$ $a = 0.237441 - 0.203080I$ $b = -0.436051 + 1.275240I$	$3.86620 + 1.44750I$	0
$u = 0.787621 + 0.829507I$ $a = -1.87946 - 0.52483I$ $b = 1.41777 - 0.40004I$	$5.34270 + 5.05268I$	0
$u = 0.787621 - 0.829507I$ $a = -1.87946 + 0.52483I$ $b = 1.41777 + 0.40004I$	$5.34270 - 5.05268I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.887733 + 0.721472I$ $a = -0.856295 - 0.891714I$ $b = 0.560141 + 0.584146I$	$2.72547 - 3.38209I$	0
$u = 0.887733 - 0.721472I$ $a = -0.856295 + 0.891714I$ $b = 0.560141 - 0.584146I$	$2.72547 + 3.38209I$	0
$u = 0.758416 + 0.865706I$ $a = 0.804802 + 1.078350I$ $b = -0.408380 - 1.099450I$	$-1.26568 + 5.11585I$	0
$u = 0.758416 - 0.865706I$ $a = 0.804802 - 1.078350I$ $b = -0.408380 + 1.099450I$	$-1.26568 - 5.11585I$	0
$u = -0.916667 + 0.696677I$ $a = -1.39838 + 0.44542I$ $b = 0.295926 - 0.386739I$	$0.58974 + 7.57307I$	0
$u = -0.916667 - 0.696677I$ $a = -1.39838 - 0.44542I$ $b = 0.295926 + 0.386739I$	$0.58974 - 7.57307I$	0
$u = 0.706014 + 0.915678I$ $a = -0.624192 - 0.687267I$ $b = 0.657698 + 1.214410I$	$6.59960 + 6.11951I$	0
$u = 0.706014 - 0.915678I$ $a = -0.624192 + 0.687267I$ $b = 0.657698 - 1.214410I$	$6.59960 - 6.11951I$	0
$u = -0.718343 + 0.910366I$ $a = -0.807984 + 0.965034I$ $b = 0.75916 - 1.30609I$	$2.36046 - 12.44930I$	0
$u = -0.718343 - 0.910366I$ $a = -0.807984 - 0.965034I$ $b = 0.75916 + 1.30609I$	$2.36046 + 12.44930I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.900961 + 0.743227I$ $a = -1.75793 - 0.52878I$ $b = 0.343286 - 1.313990I$	$3.71549 - 4.22857I$	0
$u = 0.900961 - 0.743227I$ $a = -1.75793 + 0.52878I$ $b = 0.343286 + 1.313990I$	$3.71549 + 4.22857I$	0
$u = 1.140660 + 0.278300I$ $a = 0.737848 + 1.093620I$ $b = -0.538495 + 1.302820I$	$-5.67717 - 12.45260I$	0
$u = 1.140660 - 0.278300I$ $a = 0.737848 - 1.093620I$ $b = -0.538495 - 1.302820I$	$-5.67717 + 12.45260I$	0
$u = 0.813009 + 0.120512I$ $a = -0.23268 - 3.53099I$ $b = 0.315947 - 0.920401I$	$-2.01877 - 5.28852I$	0
$u = 0.813009 - 0.120512I$ $a = -0.23268 + 3.53099I$ $b = 0.315947 + 0.920401I$	$-2.01877 + 5.28852I$	0
$u = 0.960387 + 0.682857I$ $a = -2.48484 - 0.60816I$ $b = 1.10630 - 1.19956I$	$-0.94330 - 8.86692I$	0
$u = 0.960387 - 0.682857I$ $a = -2.48484 + 0.60816I$ $b = 1.10630 + 1.19956I$	$-0.94330 + 8.86692I$	0
$u = -0.813819 + 0.859589I$ $a = -1.336780 + 0.401490I$ $b = 1.039350 + 0.325117I$	$9.35496 - 0.04602I$	0
$u = -0.813819 - 0.859589I$ $a = -1.336780 - 0.401490I$ $b = 1.039350 - 0.325117I$	$9.35496 + 0.04602I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.936883+0.724277I$ $a=\ \ 1.98061+0.39240I$ $b=-0.59881-1.36704I$	$-2.47707+4.09068I$	0
$u=-0.936883-0.724277I$ $a=\ \ 1.98061-0.39240I$ $b=-0.59881+1.36704I$	$-2.47707-4.09068I$	0
$u=-0.809882$ $a=-0.230136$ $b=\ \ 0.468179$	-1.31525	-6.85520
$u=-0.928238+0.754910I$ $a=-2.30996+0.61386I$ $b=\ \ 0.557724+1.130270I$	$3.15268+8.76794I$	0
$u=-0.928238-0.754910I$ $a=-2.30996-0.61386I$ $b=\ \ 0.557724-1.130270I$	$3.15268-8.76794I$	0
$u=-0.798815+0.045097I$ $a=\ \ 1.24092+2.64289I$ $b=\ \ 0.059987+1.041400I$	$-0.780386+0.986928I$	$-7.33577+0.I$
$u=-0.798815-0.045097I$ $a=\ \ 1.24092-2.64289I$ $b=\ \ 0.059987-1.041400I$	$-0.780386-0.986928I$	$-7.33577+0.I$
$u=\ \ 0.796042+0.076675I$ $a=\ \ 1.01452+1.61059I$ $b=-0.22148+1.83294I$	$-7.40333-0.39146I$	$-12.24132-5.59979I$
$u=\ \ 0.796042-0.076675I$ $a=\ \ 1.01452-1.61059I$ $b=-0.22148-1.83294I$	$-7.40333+0.39146I$	$-12.24132+5.59979I$
$u=-0.987452+0.715297I$ $a=-1.94054+0.76734I$ $b=\ \ 0.827683+0.651069I$	$1.43912+8.05022I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.987452-0.715297I$ $a=-1.94054-0.76734I$ $b=\ \ 0.827683-0.651069I$	$1.43912-8.05022I$	0
$u=-1.185750+0.293560I$ $a=-0.746021+0.436699I$ $b=-0.298245+1.105680I$	$-5.59178-4.46851I$	0
$u=-1.185750-0.293560I$ $a=-0.746021-0.436699I$ $b=-0.298245-1.105680I$	$-5.59178+4.46851I$	0
$u=\ \ 0.482789+0.609312I$ $a=\ \ 1.11654-1.27200I$ $b=-0.432805+1.108760I$	$-0.75905-2.63678I$	$-4.00000+3.70377I$
$u=\ \ 0.482789-0.609312I$ $a=\ \ 1.11654+1.27200I$ $b=-0.432805-1.108760I$	$-0.75905+2.63678I$	$-4.00000-3.70377I$
$u=\ \ 0.892271+0.839255I$ $a=-0.601178-1.069560I$ $b=\ \ 0.650357+0.349315I$	$5.44982-3.99818I$	0
$u=\ \ 0.892271-0.839255I$ $a=-0.601178+1.069560I$ $b=\ \ 0.650357-0.349315I$	$5.44982+3.99818I$	0
$u=\ \ 0.909301+0.820936I$ $a=\ \ 1.258640-0.210367I$ $b=-0.742377+0.414370I$	$5.38340-2.18763I$	0
$u=\ \ 0.909301-0.820936I$ $a=\ \ 1.258640+0.210367I$ $b=-0.742377-0.414370I$	$5.38340+2.18763I$	0
$u=-0.986250+0.736928I$ $a=-2.03098+0.35816I$ $b=\ \ 0.618675+0.939690I$	$1.71455+8.02792I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.986250-0.736928I$ $a=-2.03098-0.35816I$ $b=\ 0.618675-0.939690I$	$1.71455-8.02792I$	0
$u=-1.203380+0.286854I$ $a=\ 0.480013-0.986726I$ $b=-0.367702-1.128060I$	$-1.56465+5.76869I$	0
$u=-1.203380-0.286854I$ $a=\ 0.480013+0.986726I$ $b=-0.367702+1.128060I$	$-1.56465-5.76869I$	0
$u=\ 0.971042+0.769166I$ $a=\ 1.20489+1.25291I$ $b=-1.50331-0.31741I$	$4.77387-11.03380I$	0
$u=\ 0.971042-0.769166I$ $a=\ 1.20489-1.25291I$ $b=-1.50331+0.31741I$	$4.77387+11.03380I$	0
$u=-0.967816+0.798846I$ $a=\ 0.910943-0.780219I$ $b=-1.080580+0.221639I$	$8.87149+6.21107I$	0
$u=-0.967816-0.798846I$ $a=\ 0.910943+0.780219I$ $b=-1.080580-0.221639I$	$8.87149-6.21107I$	0
$u=-0.914060+0.864103I$ $a=\ 0.496423+1.220680I$ $b=-0.032726-0.721159I$	$6.99072+3.20060I$	0
$u=-0.914060-0.864103I$ $a=\ 0.496423-1.220680I$ $b=-0.032726+0.721159I$	$6.99072-3.20060I$	0
$u=\ 1.004730+0.776456I$ $a=-2.08514+0.19800I$ $b=\ 0.461508-1.149300I$	$-2.03159-11.22630I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.004730 - 0.776456I$ $a = -2.08514 - 0.19800I$ $b = 0.461508 + 1.149300I$	$-2.03159 + 11.22630I$	0
$u = 1.084670 + 0.665154I$ $a = -0.963426 - 0.321344I$ $b = 0.016691 - 0.674808I$	$1.06519 - 3.48213I$	0
$u = 1.084670 - 0.665154I$ $a = -0.963426 + 0.321344I$ $b = 0.016691 + 0.674808I$	$1.06519 + 3.48213I$	0
$u = -1.041510 + 0.777555I$ $a = 2.10475 - 0.28953I$ $b = -0.76167 - 1.37001I$	$1.3497 + 18.6828I$	0
$u = -1.041510 - 0.777555I$ $a = 2.10475 + 0.28953I$ $b = -0.76167 + 1.37001I$	$1.3497 - 18.6828I$	0
$u = 1.047940 + 0.776322I$ $a = 1.82971 + 0.37317I$ $b = -0.63798 + 1.29369I$	$5.53484 - 12.36040I$	0
$u = 1.047940 - 0.776322I$ $a = 1.82971 - 0.37317I$ $b = -0.63798 - 1.29369I$	$5.53484 + 12.36040I$	0
$u = -0.003999 + 0.665189I$ $a = 0.615883 - 1.217930I$ $b = -0.089011 + 1.217220I$	$-5.41204 - 2.84363I$	$-7.09865 + 2.85875I$
$u = -0.003999 - 0.665189I$ $a = 0.615883 + 1.217930I$ $b = -0.089011 - 1.217220I$	$-5.41204 + 2.84363I$	$-7.09865 - 2.85875I$
$u = -1.119180 + 0.782046I$ $a = 1.113900 - 0.291506I$ $b = -0.324122 - 1.234360I$	$0.70790 + 5.20301I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.119180-0.782046I$ $a=\ \ 1.113900+0.291506I$ $b=-0.324122+1.234360I$	$0.70790-5.20301I$	0
$u=-0.623377+0.019768I$ $a=\ \ 2.02034-0.18513I$ $b=-0.509884-0.855020I$	$-0.054548+0.657876I$	$-6.69982+1.00786I$
$u=-0.623377-0.019768I$ $a=\ \ 2.02034+0.18513I$ $b=-0.509884+0.855020I$	$-0.054548-0.657876I$	$-6.69982-1.00786I$
$u=-0.208421+0.564251I$ $a=-0.576081+1.185060I$ $b=\ \ 0.727228+0.311996I$	$0.74003-3.96476I$	$0.30467+2.31036I$
$u=-0.208421-0.564251I$ $a=-0.576081-1.185060I$ $b=\ \ 0.727228-0.311996I$	$0.74003+3.96476I$	$0.30467-2.31036I$
$u=\ \ 0.911037+1.074320I$ $a=-0.318477+0.197081I$ $b=\ \ 0.123702-0.704600I$	$4.10003-3.80077I$	0
$u=\ \ 0.911037-1.074320I$ $a=-0.318477-0.197081I$ $b=\ \ 0.123702+0.704600I$	$4.10003+3.80077I$	0
$u=\ \ 0.411020+0.290512I$ $a=\ \ 1.85252+1.23960I$ $b=-0.656922-0.885889I$	$-0.90884+3.74568I$	$-3.56572-0.06650I$
$u=\ \ 0.411020-0.290512I$ $a=\ \ 1.85252-1.23960I$ $b=-0.656922+0.885889I$	$-0.90884-3.74568I$	$-3.56572+0.06650I$
$u=-0.186545+0.438512I$ $a=\ \ 1.41461+0.58475I$ $b=-0.503457-0.598022I$	$-0.199538+1.165120I$	$-2.65922-3.83622I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.186545-0.438512I$ $a=\ \ 1.41461-0.58475I$ $b=-0.503457+0.598022I$	$-0.199538-1.165120I$	$-2.65922+3.83622I$
$u=-0.173256+0.421315I$ $a=\ \ 1.33171+0.56040I$ $b=-0.414662-0.591408I$	$-0.198990+1.167870I$	$-2.84829-4.65157I$
$u=-0.173256-0.421315I$ $a=\ \ 1.33171-0.56040I$ $b=-0.414662+0.591408I$	$-0.198990-1.167870I$	$-2.84829+4.65157I$

II.

$\boldsymbol{I_2^u = \langle 3u^{21}-3u^{20}+\cdots+b+2u,\ -5u^{21}+7u^{20}+\cdots+a+2,\ u^{22}-2u^{21}+\cdots-u+1\rangle}$

(i) Arc colorings

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

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

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^2+1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5-u^3+u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 5u^{21}-7u^{20}+\cdots+u-2 \\ -3u^{21}+3u^{20}+\cdots-7u^2-2u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 10u^{21}-13u^{20}+\cdots-6u-13 \\ 7u^{21}-9u^{20}+\cdots-2u-8 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^{21}+3u^{20}+\cdots+7u+3 \\ 6u^{21}-6u^{20}+\cdots+2u-6 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 8u^{21}-10u^{20}+\cdots-4u-9 \\ 8u^{21}-10u^{20}+\cdots-u-8 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{20}+3u^{18}+\cdots+3u-4 \\ -6u^{21}+9u^{20}+\cdots+2u+11 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 3u^{21}-4u^{20}+\cdots+2u+1 \\ -5u^{21}+6u^{20}+\cdots-u+2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 22u^{21}-21u^{20}-49u^{19}+64u^{18}+187u^{17}-239u^{16}-267u^{15}+424u^{14}+527u^{13}-792u^{12}-489u^{11}+893u^{10}+594u^9-983u^8-352u^7+703u^6+252u^5-426u^4-96u^3+176u^2+13u-34$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} - 6u^{21} + \cdots - 13u + 1$
c_2	$u^{22} + 2u^{21} + \cdots + u + 1$
c_3	$u^{22} + 2u^{21} + \cdots + 6u + 1$
c_4	$u^{22} - u^{21} + \cdots + 3u + 1$
c_5	$u^{22} - 3u^{21} + \cdots - u + 1$
c_6	$u^{22} + u^{21} + \cdots + 3u + 1$
c_7	$u^{22} - 2u^{21} + \cdots - u + 1$
c_8	$u^{22} + 6u^{21} + \cdots + 13u + 1$
c_9	$u^{22} + 3u^{21} + \cdots + u + 1$
c_{10}	$u^{22} - 7u^{21} + \cdots + u + 1$
c_{11}	$u^{22} - u^{21} + \cdots - 3u + 1$
c_{12}	$u^{22} + u^{21} + \cdots - 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{22} + 26y^{21} + \cdots - 5y + 1$
c_2, c_7	$y^{22} - 6y^{21} + \cdots - 13y + 1$
c_3	$y^{22} + 14y^{21} + \cdots + 18y + 1$
c_4, c_{12}	$y^{22} + 23y^{21} + \cdots + 3y + 1$
c_5, c_9	$y^{22} + 21y^{21} + \cdots + 23y + 1$
c_6, c_{11}	$y^{22} + 23y^{21} + \cdots + 21y + 1$
c_{10}	$y^{22} - 7y^{21} + \cdots - y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.769117 + 0.740940I$ $a = 1.78412 + 0.70850I$ $b = -0.725538 - 0.659027I$	$1.60497 + 3.45192I$	$-3.17727 - 6.09028I$
$u = 0.769117 - 0.740940I$ $a = 1.78412 - 0.70850I$ $b = -0.725538 + 0.659027I$	$1.60497 - 3.45192I$	$-3.17727 + 6.09028I$
$u = -0.646453 + 0.667635I$ $a = 0.515980 + 0.140540I$ $b = -0.425444 + 0.948018I$	$1.60310 + 0.11250I$	$-3.04196 + 0.25217I$
$u = -0.646453 - 0.667635I$ $a = 0.515980 - 0.140540I$ $b = -0.425444 - 0.948018I$	$1.60310 - 0.11250I$	$-3.04196 - 0.25217I$
$u = 0.934124 + 0.550703I$ $a = 1.096320 - 0.327063I$ $b = 0.150563 + 1.047820I$	$-0.17866 - 2.06431I$	$-2.43116 + 2.07978I$
$u = 0.934124 - 0.550703I$ $a = 1.096320 + 0.327063I$ $b = 0.150563 - 1.047820I$	$-0.17866 + 2.06431I$	$-2.43116 - 2.07978I$
$u = -0.866469 + 0.673571I$ $a = 1.64928 + 1.35172I$ $b = 0.04258 - 2.03310I$	$-4.54136 + 2.60448I$	$-13.17519 - 1.97984I$
$u = -0.866469 - 0.673571I$ $a = 1.64928 - 1.35172I$ $b = 0.04258 + 2.03310I$	$-4.54136 - 2.60448I$	$-13.17519 + 1.97984I$
$u = 0.807976 + 0.184434I$ $a = -0.75843 - 1.44451I$ $b = 0.12672 - 1.79342I$	$-7.26807 - 0.81244I$	$-5.49546 + 11.11558I$
$u = 0.807976 - 0.184434I$ $a = -0.75843 + 1.44451I$ $b = 0.12672 + 1.79342I$	$-7.26807 + 0.81244I$	$-5.49546 - 11.11558I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.958753 + 0.705982I$ $a = -2.37266 - 0.75742I$ $b = 0.757131 - 0.744024I$	$1.01676 - 8.97595I$	$-4.74740 + 12.23569I$
$u = 0.958753 - 0.705982I$ $a = -2.37266 + 0.75742I$ $b = 0.757131 + 0.744024I$	$1.01676 + 8.97595I$	$-4.74740 - 12.23569I$
$u = -0.909468 + 0.848093I$ $a = 0.372174 + 1.170000I$ $b = -0.020778 - 0.479465I$	$7.40722 + 3.15191I$	$9.47301 - 1.45257I$
$u = -0.909468 - 0.848093I$ $a = 0.372174 - 1.170000I$ $b = -0.020778 + 0.479465I$	$7.40722 - 3.15191I$	$9.47301 + 1.45257I$
$u = 0.651600 + 0.333644I$ $a = 1.57695 - 1.54768I$ $b = -0.221719 + 0.730024I$	$0.54600 - 1.55366I$	$-0.61325 + 3.47852I$
$u = 0.651600 - 0.333644I$ $a = 1.57695 + 1.54768I$ $b = -0.221719 - 0.730024I$	$0.54600 + 1.55366I$	$-0.61325 - 3.47852I$
$u = -1.074670 + 0.698273I$ $a = -1.283180 + 0.542936I$ $b = 0.383628 + 1.145330I$	$0.22038 + 5.22224I$	$-8.78194 - 6.94109I$
$u = -1.074670 - 0.698273I$ $a = -1.283180 - 0.542936I$ $b = 0.383628 - 1.145330I$	$0.22038 - 5.22224I$	$-8.78194 + 6.94109I$
$u = 0.896920 + 1.033760I$ $a = 0.236079 - 0.292404I$ $b = -0.087902 + 0.702704I$	$4.01072 - 3.70076I$	$-18.6298 - 14.4658I$
$u = 0.896920 - 1.033760I$ $a = 0.236079 + 0.292404I$ $b = -0.087902 - 0.702704I$	$4.01072 + 3.70076I$	$-18.6298 + 14.4658I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.521436+0.129813I$		
$a=-0.81663+2.70369I$	$-1.13120+4.68440I$	$-4.87958-6.54854I$
$b=-0.479240-0.593765I$		
$u=-0.521436-0.129813I$		
$a=-0.81663-2.70369I$	$-1.13120-4.68440I$	$-4.87958+6.54854I$
$b=-0.479240+0.593765I$		

III. $I_3^u = \langle 2b - a - 1,\ a^2 + 3,\ u + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4a - 9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 1.73205I$ $b = 0.500000 + 0.866025I$	$-3.28987 + 4.05977I$	$-9.00000 - 6.92820I$
$u = -1.00000$ $a = -1.73205I$ $b = 0.500000 - 0.866025I$	$-3.28987 - 4.05977I$	$-9.00000 + 6.92820I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^{22}-6u^{21}+\cdots-13u+1)$ $\cdot(u^{123}+37u^{122}+\cdots+8841u+529)$
c_2	$((u-1)^2)(u^{22}+2u^{21}+\cdots+u+1)(u^{123}+u^{122}+\cdots+43u+23)$
c_3	$((u-1)^2)(u^{22}+2u^{21}+\cdots+6u+1)(u^{123}+u^{122}+\cdots-438u+319)$
c_4	$(u^2+u+1)(u^{22}-u^{21}+\cdots+3u+1)(u^{123}+5u^{122}+\cdots+1096u+193)$
c_5	$(u^2+u+1)(u^{22}-3u^{21}+\cdots-u+1)(u^{123}-3u^{122}+\cdots-2u+1)$
c_6	$(u^2-u+1)(u^{22}+u^{21}+\cdots+3u+1)(u^{123}-u^{122}+\cdots-2422u+317)$
c_7	$((u+1)^2)(u^{22}-2u^{21}+\cdots-u+1)(u^{123}+u^{122}+\cdots+43u+23)$
c_8	$((u+1)^2)(u^{22}+6u^{21}+\cdots+13u+1)$ $\cdot(u^{123}+37u^{122}+\cdots+8841u+529)$
c_9	$(u^2-u+1)(u^{22}+3u^{21}+\cdots+u+1)(u^{123}-3u^{122}+\cdots-2u+1)$
c_{10}	$(u^2-u+1)(u^{22}-7u^{21}+\cdots+u+1)(u^{123}-3u^{122}+\cdots+36u-1)$
c_{11}	$(u^2+u+1)(u^{22}-u^{21}+\cdots-3u+1)(u^{123}-u^{122}+\cdots-2422u+317)$
c_{12}	$(u^2-u+1)(u^{22}+u^{21}+\cdots-3u+1)(u^{123}+5u^{122}+\cdots+1096u+193)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_8	$((y-1)^2)(y^{22}+26y^{21}+\cdots-5y+1)$ $\cdot(y^{123}+107y^{122}+\cdots-3332343y-279841)$
c_2, c_7	$((y-1)^2)(y^{22}-6y^{21}+\cdots-13y+1)$ $\cdot(y^{123}-37y^{122}+\cdots+8841y-529)$
c_3	$((y-1)^2)(y^{22}+14y^{21}+\cdots+18y+1)$ $\cdot(y^{123}+23y^{122}+\cdots-8257190y-101761)$
c_4, c_{12}	$(y^2+y+1)(y^{22}+23y^{21}+\cdots+3y+1)$ $\cdot(y^{123}+87y^{122}+\cdots-679762y-37249)$
c_5, c_9	$(y^2+y+1)(y^{22}+21y^{21}+\cdots+23y+1)(y^{123}+77y^{122}+\cdots-114y-1)$
c_6, c_{11}	$(y^2+y+1)(y^{22}+23y^{21}+\cdots+21y+1)$ $\cdot(y^{123}+75y^{122}+\cdots+1511772y-100489)$
c_{10}	$(y^2+y+1)(y^{22}-7y^{21}+\cdots-y+1)(y^{123}-7y^{122}+\cdots-146y-1)$