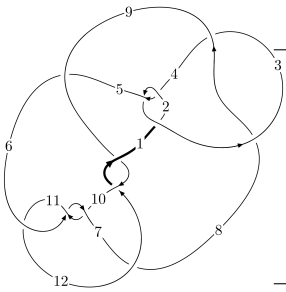
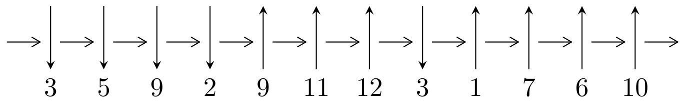
$12n_{0170}$ ($K12n_{0170}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2u^{46} + 4u^{45} + \cdots + b + 2,\ 2u^{45} - 2u^{44} + \cdots + a - 1,\ u^{47} - 2u^{46} + \cdots - 12u^2 + 1 \rangle$$
$$I_2^u = \langle b - u,\ a - u - 1,\ u^3 + 2u - 1 \rangle$$
$$I_3^u = \langle u^3 + b + 2u + 1,\ a + 1,\ u^4 + u^3 + 2u^2 + 2u + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 54 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. $I^u_1 =$
$\langle -2u^{46}+4u^{45}+\cdots+b+2,\ 2u^{45}-2u^{44}+\cdots+a-1,\ u^{47}-2u^{46}+\cdots-12u^2+1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^5+2u^3+u\\-u^7-3u^5-2u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^4-u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-2u^{45}+2u^{44}+\cdots-5u+1\\2u^{46}-4u^{45}+\cdots-3u-2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^8+3u^6+u^4-2u^2+1\\u^8+4u^6+4u^4\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-4u^{45}+4u^{44}+\cdots+16u^2-5u\\4u^{46}-8u^{45}+\cdots-4u-4\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u^{19}-8u^{17}-24u^{15}-30u^{13}-7u^{11}+10u^9-4u^7-6u^5+3u^3-2u\\-u^{19}-9u^{17}-32u^{15}-55u^{13}-43u^{11}-9u^9-4u^5+u^3+u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-u^{45}+u^{44}+\cdots-4u+2\\u^{46}-2u^{45}+\cdots-2u-1\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{46}+8u^{45}+\cdots+38u+5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{47} + 14u^{46} + \cdots - 5u + 1$
c_2, c_4	$u^{47} - 8u^{46} + \cdots - 5u + 1$
c_3, c_8	$u^{47} + u^{46} + \cdots + 192u + 128$
c_5	$u^{47} - 2u^{46} + \cdots + 2u + 1$
c_6, c_{10}, c_{11}	$u^{47} - 2u^{46} + \cdots - 12u^2 + 1$
c_7	$u^{47} + 2u^{46} + \cdots + 96u + 72$
c_9, c_{12}	$u^{47} + 8u^{46} + \cdots + 112u - 49$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{47} + 46y^{46} + \cdots + 83y - 1$
c_2, c_4	$y^{47} - 14y^{46} + \cdots - 5y - 1$
c_3, c_8	$y^{47} + 45y^{46} + \cdots - 167936y - 16384$
c_5	$y^{47} - 52y^{46} + \cdots + 24y - 1$
c_6, c_{10}, c_{11}	$y^{47} + 44y^{46} + \cdots + 24y - 1$
c_7	$y^{47} + 12y^{46} + \cdots + 50832y - 5184$
c_9, c_{12}	$y^{47} + 32y^{46} + \cdots + 170128y - 2401$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.240850 + 1.172380I$ $a = 0.76218 + 1.23522I$ $b = 0.934577 + 0.402639I$	$4.61957 - 0.02295I$	0
$u = -0.240850 - 1.172380I$ $a = 0.76218 - 1.23522I$ $b = 0.934577 - 0.402639I$	$4.61957 + 0.02295I$	0
$u = 0.708507 + 0.363703I$ $a = -0.94806 + 1.22755I$ $b = 2.37910 + 1.16766I$	$3.42438 + 9.90306I$	$2.22004 - 7.67510I$
$u = 0.708507 - 0.363703I$ $a = -0.94806 - 1.22755I$ $b = 2.37910 - 1.16766I$	$3.42438 - 9.90306I$	$2.22004 + 7.67510I$
$u = -0.635055 + 0.455943I$ $a = 0.114980 + 0.251136I$ $b = 0.0894725 + 0.0904282I$	$-4.12081 - 2.09104I$	$4.57556 + 3.64684I$
$u = -0.635055 - 0.455943I$ $a = 0.114980 - 0.251136I$ $b = 0.0894725 - 0.0904282I$	$-4.12081 + 2.09104I$	$4.57556 - 3.64684I$
$u = 0.517341 + 0.581926I$ $a = -1.35583 - 1.46783I$ $b = -1.70532 + 1.15194I$	$2.58809 - 5.73384I$	$0.56569 + 2.04831I$
$u = 0.517341 - 0.581926I$ $a = -1.35583 + 1.46783I$ $b = -1.70532 - 1.15194I$	$2.58809 + 5.73384I$	$0.56569 - 2.04831I$
$u = 0.109843 + 1.219880I$ $a = 0.767710 + 0.740963I$ $b = 0.864402 + 0.041075I$	$-2.27528 + 2.11283I$	0
$u = 0.109843 - 1.219880I$ $a = 0.767710 - 0.740963I$ $b = 0.864402 - 0.041075I$	$-2.27528 - 2.11283I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.698777 + 0.324988I$ $a = 1.001160 - 0.887981I$ $b = -2.00444 - 1.18278I$	$4.64870 + 3.20376I$	$4.16524 - 3.31906I$
$u = 0.698777 - 0.324988I$ $a = 1.001160 + 0.887981I$ $b = -2.00444 + 1.18278I$	$4.64870 - 3.20376I$	$4.16524 + 3.31906I$
$u = -0.256980 + 1.225330I$ $a = -0.62010 - 1.29363I$ $b = -0.881559 - 0.519345I$	$4.25025 - 6.95397I$	0
$u = -0.256980 - 1.225330I$ $a = -0.62010 + 1.29363I$ $b = -0.881559 + 0.519345I$	$4.25025 + 6.95397I$	0
$u = 0.435156 + 0.599476I$ $a = 1.31533 + 1.27222I$ $b = 1.34439 - 0.94929I$	$3.57234 + 0.73807I$	$1.82651 - 2.67731I$
$u = 0.435156 - 0.599476I$ $a = 1.31533 - 1.27222I$ $b = 1.34439 + 0.94929I$	$3.57234 - 0.73807I$	$1.82651 + 2.67731I$
$u = -0.037205 + 1.270570I$ $a = -1.61889 - 0.61214I$ $b = -1.283830 + 0.388483I$	$-4.85814 - 0.97601I$	0
$u = -0.037205 - 1.270570I$ $a = -1.61889 + 0.61214I$ $b = -1.283830 - 0.388483I$	$-4.85814 + 0.97601I$	0
$u = -0.623399 + 0.342153I$ $a = -0.426734 + 0.510909I$ $b = -0.111541 + 0.262625I$	$-1.47489 - 3.82342I$	$0.98515 + 6.99857I$
$u = -0.623399 - 0.342153I$ $a = -0.426734 - 0.510909I$ $b = -0.111541 - 0.262625I$	$-1.47489 + 3.82342I$	$0.98515 - 6.99857I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.701377 + 0.026834I$ $a = -0.073148 + 1.342220I$ $b = -0.017726 + 0.554191I$	$8.08746 - 3.45650I$	$7.23123 + 2.83028I$
$u = -0.701377 - 0.026834I$ $a = -0.073148 - 1.342220I$ $b = -0.017726 - 0.554191I$	$8.08746 + 3.45650I$	$7.23123 - 2.83028I$
$u = 0.568091 + 0.371758I$ $a = -2.10914 - 0.10547I$ $b = 0.57523 + 2.44925I$	$-3.30787 + 1.75612I$	$1.06262 - 3.54613I$
$u = 0.568091 - 0.371758I$ $a = -2.10914 + 0.10547I$ $b = 0.57523 - 2.44925I$	$-3.30787 - 1.75612I$	$1.06262 + 3.54613I$
$u = 0.155614 + 1.341930I$ $a = -0.415404 + 0.937335I$ $b = 0.224512 + 0.844236I$	$-3.43598 + 2.59417I$	0
$u = 0.155614 - 1.341930I$ $a = -0.415404 - 0.937335I$ $b = 0.224512 - 0.844236I$	$-3.43598 - 2.59417I$	0
$u = -0.480171 + 0.404521I$ $a = 0.848787 - 0.023160I$ $b = 0.311223 - 0.154426I$	$-1.96248 + 0.31457I$	$-1.52612 + 0.64426I$
$u = -0.480171 - 0.404521I$ $a = 0.848787 + 0.023160I$ $b = 0.311223 + 0.154426I$	$-1.96248 - 0.31457I$	$-1.52612 - 0.64426I$
$u = -0.19689 + 1.43311I$ $a = -0.446867 + 0.559009I$ $b = -0.063667 + 0.550788I$	$-7.79399 - 2.25837I$	0
$u = -0.19689 - 1.43311I$ $a = -0.446867 - 0.559009I$ $b = -0.063667 - 0.550788I$	$-7.79399 + 2.25837I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.12786 + 1.44594I$ $a = -1.76062 + 0.79907I$ $b = -0.81689 + 1.44748I$	$-2.88567 + 2.62103I$	0
$u = 0.12786 - 1.44594I$ $a = -1.76062 - 0.79907I$ $b = -0.81689 - 1.44748I$	$-2.88567 - 2.62103I$	0
$u = -0.23877 + 1.43350I$ $a = 0.045007 - 0.588992I$ $b = -0.205747 - 0.403699I$	$-7.17228 - 6.98944I$	0
$u = -0.23877 - 1.43350I$ $a = 0.045007 + 0.588992I$ $b = -0.205747 + 0.403699I$	$-7.17228 + 6.98944I$	0
$u = 0.21933 + 1.43707I$ $a = 1.26805 - 3.51350I$ $b = -0.98988 - 3.16929I$	$-9.10435 + 4.67464I$	0
$u = 0.21933 - 1.43707I$ $a = 1.26805 + 3.51350I$ $b = -0.98988 + 3.16929I$	$-9.10435 - 4.67464I$	0
$u = 0.26857 + 1.43228I$ $a = 0.89236 + 2.94088I$ $b = 2.26858 + 1.61505I$	$-0.98075 + 6.72660I$	0
$u = 0.26857 - 1.43228I$ $a = 0.89236 - 2.94088I$ $b = 2.26858 - 1.61505I$	$-0.98075 - 6.72660I$	0
$u = 0.518516 + 0.082438I$ $a = 0.604605 + 0.167780I$ $b = -0.557380 - 0.379635I$	$1.061820 + 0.206928I$	$9.18626 - 0.93345I$
$u = 0.518516 - 0.082438I$ $a = 0.604605 - 0.167780I$ $b = -0.557380 + 0.379635I$	$1.061820 - 0.206928I$	$9.18626 + 0.93345I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.26958 + 1.45051I$ $a = -1.41479 - 3.13096I$ $b = -2.74488 - 1.48581I$	$-2.40424 + 13.46930I$	0
$u = 0.26958 - 1.45051I$ $a = -1.41479 + 3.13096I$ $b = -2.74488 + 1.48581I$	$-2.40424 - 13.46930I$	0
$u = 0.15911 + 1.47665I$ $a = 2.44634 - 0.79574I$ $b = 1.32702 - 1.81501I$	$-4.02537 - 3.37401I$	0
$u = 0.15911 - 1.47665I$ $a = 2.44634 + 0.79574I$ $b = 1.32702 + 1.81501I$	$-4.02537 + 3.37401I$	0
$u = -0.22773 + 1.47482I$ $a = -0.232276 - 0.098321I$ $b = -0.194212 + 0.027487I$	$-10.35500 - 5.24252I$	0
$u = -0.22773 - 1.47482I$ $a = -0.232276 + 0.098321I$ $b = -0.194212 - 0.027487I$	$-10.35500 + 5.24252I$	0
$u = -0.235762$ $a = 2.71069$ $b = 0.517152$	-1.27831	-10.8230

II. $I_2^u = \langle b - u,\ a - u - 1,\ u^3 + 2u - 1\rangle$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} u^2 + 1 \\ -u \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} u^2 - u + 1 \\ -u \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} u + 1 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^2 + u - 1 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^2 + 2 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7u^2 + 5u + 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.22670 + 1.46771I$ $a = 0.77330 + 1.46771I$ $b = -0.22670 + 1.46771I$	$-11.08570 - 5.13794I$	$-9.85299 + 2.68036I$
$u = -0.22670 - 1.46771I$ $a = 0.77330 - 1.46771I$ $b = -0.22670 - 1.46771I$	$-11.08570 + 5.13794I$	$-9.85299 - 2.68036I$
$u = 0.453398$ $a = 1.45340$ $b = 0.453398$	-0.857735	9.70600

III. $\boldsymbol{I_3^u = \langle u^3 + b + 2u + 1,\ a + 1,\ u^4 + u^3 + 2u^2 + 2u + 1\rangle}$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} u^2 + 1 \\ u^3 + 2u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^3 + 2u + 1 \\ -u^3 - u^2 - u - 2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 + u^2 + 2u + 2 \\ u^3 + 2u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1 \\ -u^3 - 2u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^3 + 2u + 1 \\ -u^3 - u^2 - u - 2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1 \\ -u^3 - 2u - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^3 - u^2 - 2u - 2 \\ -u^3 - 2u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3 + u^2 + 2u + 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.621744+0.440597I$ $a=-1.00000$ $b=\ \ 0.121744-1.306620I$	$-4.93480-2.02988I$	$-6.26314+3.25323I$
$u=-0.621744-0.440597I$ $a=-1.00000$ $b=\ \ 0.121744+1.306620I$	$-4.93480+2.02988I$	$-6.26314-3.25323I$
$u=\ \ 0.121744+1.306620I$ $a=-1.00000$ $b=-0.621744-0.440597I$	$-4.93480+2.02988I$	$-3.23686-4.54099I$
$u=\ \ 0.121744-1.306620I$ $a=-1.00000$ $b=-0.621744+0.440597I$	$-4.93480-2.02988I$	$-3.23686+4.54099I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^7)(u^{47}+14u^{46}+\cdots-5u+1)$
c_2	$((u-1)^7)(u^{47}-8u^{46}+\cdots-5u+1)$
c_3, c_8	$u^7(u^{47}+u^{46}+\cdots+192u+128)$
c_4	$((u+1)^7)(u^{47}-8u^{46}+\cdots-5u+1)$
c_5	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{47}-2u^{46}+\cdots+2u+1)$
c_6	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{47}-2u^{46}+\cdots-12u^2+1)$
c_7	$((u^2-u+1)^2)(u^3+3u^2+5u+2)(u^{47}+2u^{46}+\cdots+96u+72)$
c_9	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{47}+8u^{46}+\cdots+112u-49)$
c_{10}, c_{11}	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{47}-2u^{46}+\cdots-12u^2+1)$
c_{12}	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{47}+8u^{46}+\cdots+112u-49)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^7)(y^{47}+46y^{46}+\cdots+83y-1)$
c_2, c_4	$((y-1)^7)(y^{47}-14y^{46}+\cdots-5y-1)$
c_3, c_8	$y^7(y^{47}+45y^{46}+\cdots-167936y-16384)$
c_5	$(y^3+4y^2+4y-1)(y^4+3y^3+2y^2+1)(y^{47}-52y^{46}+\cdots+24y-1)$
c_6, c_{10}, c_{11}	$(y^3+4y^2+4y-1)(y^4+3y^3+2y^2+1)(y^{47}+44y^{46}+\cdots+24y-1)$
c_7	$((y^2+y+1)^2)(y^3+y^2+13y-4)(y^{47}+12y^{46}+\cdots+50832y-5184)$
c_9, c_{12}	$(y^3+4y^2+4y-1)(y^4+3y^3+2y^2+1)$ $\cdot\,(y^{47}+32y^{46}+\cdots+170128y-2401)$