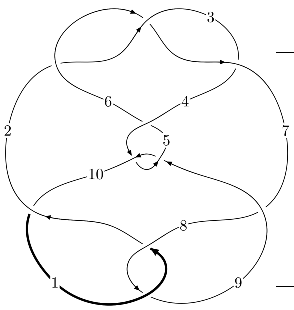
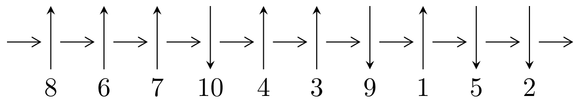
10_{70} $(K10a_{22})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -u^{34} + 2u^{33} + \cdots + 2b + 1,\ u^{12} - 5u^{10} - 2u^9 + 9u^8 + 8u^7 - 4u^6 - 10u^5 - 6u^4 + 2u^3 + 5u^2 + a + 2u + 1, \\
&\quad u^{35} - 3u^{34} + \cdots + u + 1\rangle \\
I_2^u &= \langle b^2 - b + 1,\ a + 1,\ u + 1\rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 37 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.

$$I^u_1 = \langle -u^{34}+2u^{33}+\cdots+2b+1,\ u^{12}-5u^{10}+\cdots+a+1,\ u^{35}-3u^{34}+\cdots+u+1\rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u^2+1\\u^4-2u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u^{12}+5u^{10}+\cdots-2u-1\\\frac{1}{2}u^{34}-u^{33}+\cdots+u-\frac{1}{2}\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-\frac{1}{2}u^{34}+u^{33}+\cdots-u+\frac{3}{2}\\-\frac{5}{2}u^{34}+4u^{33}+\cdots+2u+\frac{3}{2}\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-2u^{34}+3u^{33}+\cdots+6u+1\\\frac{7}{2}u^{34}-6u^{33}+\cdots-3u-\frac{5}{2}\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u^5+2u^3-u\\u^7-3u^5+2u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-3u^{34}+5u^{33}+\cdots+u+3\\-\frac{5}{2}u^{34}+4u^{33}+\cdots+2u+\frac{3}{2}\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -7u^{34}+7u^{33}+100u^{32}-67u^{31}-665u^{30}+193u^{29}+2656u^{28}+332u^{27}-6763u^{26}-4013u^{25}+10334u^{24}+13042u^{23}-5838u^{22}-22006u^{21}-10452u^{20}+17336u^{19}+25367u^{18}+3521u^{17}-19332u^{16}-18920u^{15}-1888u^{14}+11508u^{13}+11034u^{12}+2874u^{11}-3024u^{10}-4152u^{9}-2538u^{8}-542u^{7}+450u^{6}+658u^{5}+514u^{4}+230u^{3}+79u^{2}+25u+8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8	$u^{35} + 2u^{34} + \cdots - 2u^2 + 1$
c_2, c_3, c_6	$u^{35} + 3u^{34} + \cdots + u - 1$
c_4, c_9	$u^{35} + u^{34} + \cdots - 8u - 4$
c_5	$u^{35} - 15u^{34} + \cdots - 72u + 16$
c_7, c_{10}	$u^{35} + 12u^{34} + \cdots + 4u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{35} + 12y^{34} + \cdots + 4y - 1$
c_2, c_3, c_6	$y^{35} - 31y^{34} + \cdots - 17y - 1$
c_4, c_9	$y^{35} + 15y^{34} + \cdots - 72y - 16$
c_5	$y^{35} + 7y^{34} + \cdots - 2016y - 256$
c_7, c_{10}	$y^{35} + 24y^{34} + \cdots + 40y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.827242 + 0.510777I$ $a = -1.257960 - 0.317928I$ $b = 0.711723 - 0.774742I$	$3.61521 - 1.86508I$	$8.01949 + 2.70414I$
$u = -0.827242 - 0.510777I$ $a = -1.257960 + 0.317928I$ $b = 0.711723 + 0.774742I$	$3.61521 + 1.86508I$	$8.01949 - 2.70414I$
$u = -0.943343 + 0.501099I$ $a = -0.582372 - 0.149507I$ $b = 0.684104 + 0.942114I$	$3.09693 + 3.49535I$	$6.37889 - 3.75014I$
$u = -0.943343 - 0.501099I$ $a = -0.582372 + 0.149507I$ $b = 0.684104 - 0.942114I$	$3.09693 - 3.49535I$	$6.37889 + 3.75014I$
$u = -0.253334 + 0.839514I$ $a = -1.18782 - 1.13183I$ $b = 0.696750 - 1.005540I$	$0.97304 - 8.24742I$	$2.56945 + 7.59916I$
$u = -0.253334 - 0.839514I$ $a = -1.18782 + 1.13183I$ $b = 0.696750 + 1.005540I$	$0.97304 + 8.24742I$	$2.56945 - 7.59916I$
$u = -1.15725$ $a = -1.05692$ $b = 0.346138$	2.21114	4.02480
$u = -0.295449 + 0.784598I$ $a = -0.058917 - 0.230488I$ $b = 0.766564 + 0.673327I$	$1.97084 - 2.68874I$	$4.58889 + 2.89622I$
$u = -0.295449 - 0.784598I$ $a = -0.058917 + 0.230488I$ $b = 0.766564 - 0.673327I$	$1.97084 + 2.68874I$	$4.58889 - 2.89622I$
$u = -1.164960 + 0.288871I$ $a = -1.174190 - 0.528323I$ $b = 0.051770 - 0.955164I$	$-0.612022 - 1.167710I$	$-0.594633 + 0.482422I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.164960 - 0.288871I$ $a = -1.174190 + 0.528323I$ $b = 0.051770 + 0.955164I$	$-0.612022 + 1.167710I$	$-0.594633 - 0.482422I$
$u = -0.098834 + 0.725130I$ $a = -0.03188 + 1.73645I$ $b = -0.071862 + 1.038610I$	$-3.83291 - 2.53588I$	$-3.84686 + 3.83326I$
$u = -0.098834 - 0.725130I$ $a = -0.03188 - 1.73645I$ $b = -0.071862 - 1.038610I$	$-3.83291 + 2.53588I$	$-3.84686 - 3.83326I$
$u = 1.275860 + 0.152636I$ $a = 0.756171 + 0.131779I$ $b = -0.493777 + 1.054750I$	$2.76473 - 0.81126I$	$6.02594 + 0.I$
$u = 1.275860 - 0.152636I$ $a = 0.756171 - 0.131779I$ $b = -0.493777 - 1.054750I$	$2.76473 + 0.81126I$	$6.02594 + 0.I$
$u = -1.343360 + 0.175547I$ $a = 1.08136 + 1.66784I$ $b = -0.750068 - 0.725396I$	$4.76978 - 0.62379I$	$6.88558 + 0.I$
$u = -1.343360 - 0.175547I$ $a = 1.08136 - 1.66784I$ $b = -0.750068 + 0.725396I$	$4.76978 + 0.62379I$	$6.88558 + 0.I$
$u = 1.328700 + 0.290772I$ $a = 0.892510 - 0.521672I$ $b = -0.144398 - 1.112500I$	$0.65547 + 6.20108I$	$1.95124 - 5.89177I$
$u = 1.328700 - 0.290772I$ $a = 0.892510 + 0.521672I$ $b = -0.144398 + 1.112500I$	$0.65547 - 6.20108I$	$1.95124 + 5.89177I$
$u = -1.349650 + 0.231790I$ $a = 2.67880 - 0.00517I$ $b = -0.701280 + 0.976265I$	$4.00753 - 6.15318I$	$5.27676 + 5.00692I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.349650 - 0.231790I$ $a = 2.67880 + 0.00517I$ $b = -0.701280 - 0.976265I$	$4.00753 + 6.15318I$	$5.27676 - 5.00692I$
$u = 1.360060 + 0.198169I$ $a = 0.993954 - 0.073655I$ $b = -0.734023 - 0.241674I$	$5.16768 + 3.59908I$	$8.99233 - 3.96847I$
$u = 1.360060 - 0.198169I$ $a = 0.993954 + 0.073655I$ $b = -0.734023 + 0.241674I$	$5.16768 - 3.59908I$	$8.99233 + 3.96847I$
$u = 0.130391 + 0.566931I$ $a = 1.74005 - 1.54748I$ $b = -0.611964 - 0.968100I$	$-0.69789 + 3.19845I$	$-1.06265 - 3.08489I$
$u = 0.130391 - 0.566931I$ $a = 1.74005 + 1.54748I$ $b = -0.611964 + 0.968100I$	$-0.69789 - 3.19845I$	$-1.06265 + 3.08489I$
$u = 1.42263 + 0.31147I$ $a = -0.746326 + 1.154990I$ $b = 0.845304 - 0.658411I$	$7.44255 + 6.65019I$	0
$u = 1.42263 - 0.31147I$ $a = -0.746326 - 1.154990I$ $b = 0.845304 + 0.658411I$	$7.44255 - 6.65019I$	0
$u = 1.41674 + 0.34279I$ $a = -2.20298 + 0.34664I$ $b = 0.724315 + 1.038040I$	$6.28512 + 12.51090I$	$0. - 8.16035I$
$u = 1.41674 - 0.34279I$ $a = -2.20298 - 0.34664I$ $b = 0.724315 - 1.038040I$	$6.28512 - 12.51090I$	$0. + 8.16035I$
$u = 1.49697 + 0.02263I$ $a = -1.77693 - 0.78513I$ $b = 0.807430 + 0.880445I$	$11.46670 + 3.01120I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.49697 - 0.02263I$ $a = -1.77693 + 0.78513I$ $b = 0.807430 - 0.880445I$	$11.46670 - 3.01120I$	0
$u = -0.223261 + 0.425121I$ $a = -0.321375 + 0.194137I$ $b = -0.417087 + 0.308331I$	$0.236326 - 1.154630I$	$3.51275 + 5.51426I$
$u = -0.223261 - 0.425121I$ $a = -0.321375 - 0.194137I$ $b = -0.417087 - 0.308331I$	$0.236326 + 1.154630I$	$3.51275 - 5.51426I$
$u = 0.146719 + 0.318162I$ $a = -0.77364 - 1.20062I$ $b = -0.536572 + 0.742317I$	$0.11091 - 1.46996I$	$-0.94917 + 3.34118I$
$u = 0.146719 - 0.318162I$ $a = -0.77364 + 1.20062I$ $b = -0.536572 - 0.742317I$	$0.11091 + 1.46996I$	$-0.94917 - 3.34118I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4b + 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = \quad 0.500000 + 0.866025I$	$1.64493 + 2.02988I$	$3.00000 - 3.46410I$
$u = -1.00000$ $a = -1.00000$ $b = \quad 0.500000 - 0.866025I$	$1.64493 - 2.02988I$	$3.00000 + 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2 - u + 1)(u^{35} + 2u^{34} + \cdots - 2u^2 + 1)$
c_2, c_3	$((u+1)^2)(u^{35} + 3u^{34} + \cdots + u - 1)$
c_4, c_9	$u^2(u^{35} + u^{34} + \cdots - 8u - 4)$
c_5	$u^2(u^{35} - 15u^{34} + \cdots - 72u + 16)$
c_6	$((u-1)^2)(u^{35} + 3u^{34} + \cdots + u - 1)$
c_7, c_{10}	$(u^2 - u + 1)(u^{35} + 12u^{34} + \cdots + 4u - 1)$
c_8	$(u^2 + u + 1)(u^{35} + 2u^{34} + \cdots - 2u^2 + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_8	$(y^2 + y + 1)(y^{35} + 12y^{34} + \cdots + 4y - 1)$
c_2, c_3, c_6	$((y - 1)^2)(y^{35} - 31y^{34} + \cdots - 17y - 1)$
c_4, c_9	$y^2(y^{35} + 15y^{34} + \cdots - 72y - 16)$
c_5	$y^2(y^{35} + 7y^{34} + \cdots - 2016y - 256)$
c_7, c_{10}	$(y^2 + y + 1)(y^{35} + 24y^{34} + \cdots + 40y - 1)$