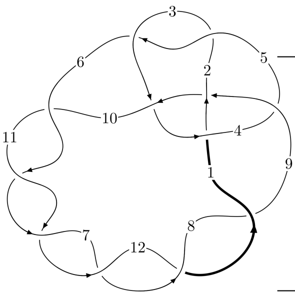
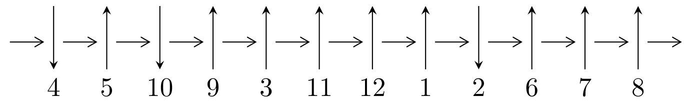
$12a_{0859}$ $(K12a_{0859})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u = \langle &-6396631669231u^{40} + 14505431853193u^{39} + \cdots + 42564399979 29b - 11189757056882, \\
&-1233760383109u^{40} + 3011254162855u^{39} + \cdots + 608062856847a - 1195143358109, \\
&u^{41} - 2u^{40} + \cdots + 5u + 1\rangle \\
I_2^u = \langle &b + 1,\ a - u + 1,\ u^2 - u - 1\rangle
\end{aligned}
$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 43 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.

$\boldsymbol{I_1^u = \langle -6.40\times10^{12}u^{40}+1.45\times10^{13}u^{39}+\cdots+4.26\times10^{12}b-1.12\times10^{13},\ -1.23\times 10^{12}u^{40}+3.01\times10^{12}u^{39}+\cdots+6.08\times10^{11}a-1.20\times10^{12},\ u^{41}-2u^{40}+\cdots+5u+1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}2.02900u^{40}-4.95221u^{39}+\cdots+15.4220u+1.96549\\1.50281u^{40}-3.40788u^{39}+\cdots+11.3789u+2.62890\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.644891u^{40}-0.202904u^{39}+\cdots-3.45077u+0.277543\\-1.08688u^{40}-0.397073u^{39}+\cdots+2.94691u+0.644891\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^2+1\\u^4-2u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}3.70468u^{40}-8.56110u^{39}+\cdots+27.1650u+4.70761\\-0.0447870u^{40}-1.39889u^{39}+\cdots+9.37521u+1.50458\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^2+1\\u^2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^3-2u\\-u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}3.76543u^{40}-8.75980u^{39}+\cdots+26.5272u+5.57736\\0.0237411u^{40}-1.60020u^{39}+\cdots+9.41064u+1.56557\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{47359814646430}{1418813332643}u^{40} + \frac{116172431816127}{1418813332643}u^{39} + \cdots - \frac{243964640346834}{1418813332643}u - \frac{78234342263103}{1418813332643}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{41} - 7u^{40} + \cdots + 20u + 4$
c_2, c_5	$u^{41} + 3u^{40} + \cdots + 14u - 1$
c_3	$u^{41} + 2u^{40} + \cdots - 7931u + 3953$
c_4	$u^{41} + 4u^{40} + \cdots + 197u - 19$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$u^{41} + 2u^{40} + \cdots + 5u - 1$
c_9	$u^{41} - 2u^{40} + \cdots - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{41} + 15y^{40} + \cdots + 104y - 16$
c_2, c_5	$y^{41} - 35y^{40} + \cdots + 102y - 1$
c_3	$y^{41} - 12y^{40} + \cdots - 126297725y - 15626209$
c_4	$y^{41} - 56y^{40} + \cdots + 33831y - 361$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^{41} - 60y^{40} + \cdots + 3y - 1$
c_9	$y^{41} + 4y^{40} + \cdots + 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.650909 + 0.546359I$ $a = -0.342020 + 0.264851I$ $b = 0.419018 - 0.668068I$	$5.06652 + 0.73720I$	$15.9081 - 0.1824I$
$u = -0.650909 - 0.546359I$ $a = -0.342020 - 0.264851I$ $b = 0.419018 + 0.668068I$	$5.06652 - 0.73720I$	$15.9081 + 0.1824I$
$u = 0.698668 + 0.479441I$ $a = 0.153099 - 0.435306I$ $b = -0.188432 + 1.146320I$	$5.52631 + 8.23953I$	$13.0991 - 8.0874I$
$u = 0.698668 - 0.479441I$ $a = 0.153099 + 0.435306I$ $b = -0.188432 - 1.146320I$	$5.52631 - 8.23953I$	$13.0991 + 8.0874I$
$u = -0.814283$ $a = 0.0171192$ $b = -0.681057$	1.28070	6.70620
$u = 1.247790 + 0.069918I$ $a = 0.862844 + 1.105030I$ $b = -0.437368 - 0.248810I$	$6.66501 + 1.00107I$	0
$u = 1.247790 - 0.069918I$ $a = 0.862844 - 1.105030I$ $b = -0.437368 + 0.248810I$	$6.66501 - 1.00107I$	0
$u = 1.28100$ $a = -3.02459$ $b = 2.36170$	8.47175	0
$u = -1.290140 + 0.118342I$ $a = 0.175331 - 1.312220I$ $b = -0.325850 - 0.263604I$	$6.85332 - 5.09177I$	0
$u = -1.290140 - 0.118342I$ $a = 0.175331 + 1.312220I$ $b = -0.325850 + 0.263604I$	$6.85332 + 5.09177I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.328540 + 0.037966I$ $a = 0.004954 - 0.826516I$ $b = 1.188080 - 0.254233I$	$10.93780 - 2.08245I$	0
$u = -1.328540 - 0.037966I$ $a = 0.004954 + 0.826516I$ $b = 1.188080 + 0.254233I$	$10.93780 + 2.08245I$	0
$u = 0.659491 + 0.101039I$ $a = 1.78864 + 0.62056I$ $b = -0.599129 - 0.924522I$	$4.32500 + 1.61112I$	$18.8008 - 4.7797I$
$u = 0.659491 - 0.101039I$ $a = 1.78864 - 0.62056I$ $b = -0.599129 + 0.924522I$	$4.32500 - 1.61112I$	$18.8008 + 4.7797I$
$u = 0.576581 + 0.288116I$ $a = -0.354068 + 1.004510I$ $b = 0.372702 - 1.123810I$	$0.71083 + 3.70513I$	$10.09368 - 9.17012I$
$u = 0.576581 - 0.288116I$ $a = -0.354068 - 1.004510I$ $b = 0.372702 + 1.123810I$	$0.71083 - 3.70513I$	$10.09368 + 9.17012I$
$u = -0.043590 + 0.639393I$ $a = 1.046310 - 0.645722I$ $b = 0.0798501 + 0.0811079I$	$3.26424 - 4.59923I$	$10.62501 + 5.19359I$
$u = -0.043590 - 0.639393I$ $a = 1.046310 + 0.645722I$ $b = 0.0798501 - 0.0811079I$	$3.26424 + 4.59923I$	$10.62501 - 5.19359I$
$u = -1.344360 + 0.232182I$ $a = -0.353369 + 1.278910I$ $b = -0.006247 - 0.161367I$	$12.2007 - 10.7908I$	0
$u = -1.344360 - 0.232182I$ $a = -0.353369 - 1.278910I$ $b = -0.006247 + 0.161367I$	$12.2007 + 10.7908I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.348660 + 0.276814I$ $a = -0.414645 - 0.555057I$ $b = -0.165637 - 0.010708I$	$11.56960 + 2.23576I$	0
$u = 1.348660 - 0.276814I$ $a = -0.414645 + 0.555057I$ $b = -0.165637 + 0.010708I$	$11.56960 - 2.23576I$	0
$u = -0.497845 + 0.153887I$ $a = -0.345928 - 0.229979I$ $b = -0.477639 + 0.446316I$	$0.963123 - 0.222847I$	$11.33687 + 1.79100I$
$u = -0.497845 - 0.153887I$ $a = -0.345928 + 0.229979I$ $b = -0.477639 - 0.446316I$	$0.963123 + 0.222847I$	$11.33687 - 1.79100I$
$u = -0.503963$ $a = 4.08982$ $b = 2.61045$	2.49303	-73.8380
$u = 0.041427 + 0.380391I$ $a = -1.47501 + 1.25938I$ $b = 0.223887 + 0.085512I$	$-0.87754 - 1.43971I$	$1.57134 + 2.80893I$
$u = 0.041427 - 0.380391I$ $a = -1.47501 - 1.25938I$ $b = 0.223887 - 0.085512I$	$-0.87754 + 1.43971I$	$1.57134 - 2.80893I$
$u = 1.66053$ $a = 0.443601$ $b = -0.446168$	10.1068	0
$u = -0.150168 + 0.199500I$ $a = -3.03352 + 0.19155I$ $b = -0.797576 + 0.621794I$	$1.94826 - 0.63992I$	$4.80549 - 1.01730I$
$u = -0.150168 - 0.199500I$ $a = -3.03352 - 0.19155I$ $b = -0.797576 - 0.621794I$	$1.94826 + 0.63992I$	$4.80549 + 1.01730I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.80288 + 0.01775I$ $a = -0.75332 + 2.11781I$ $b = 1.72917 - 4.38308I$	$17.9481 - 1.4034I$	0
$u = -1.80288 - 0.01775I$ $a = -0.75332 - 2.11781I$ $b = 1.72917 + 4.38308I$	$17.9481 + 1.4034I$	0
$u = -1.81126$ $a = 2.44844$ $b = -5.97707$	-19.5212	0
$u = 1.81283 + 0.02856I$ $a = 0.40071 - 2.86621I$ $b = -0.63518 + 5.58995I$	$18.3589 + 5.7706I$	0
$u = 1.81283 - 0.02856I$ $a = 0.40071 + 2.86621I$ $b = -0.63518 - 5.58995I$	$18.3589 - 5.7706I$	0
$u = 1.82183 + 0.00897I$ $a = -1.28360 - 2.01039I$ $b = 1.99257 + 3.92606I$	$-16.7931 + 2.3034I$	0
$u = 1.82183 - 0.00897I$ $a = -1.28360 + 2.01039I$ $b = 1.99257 - 3.92606I$	$-16.7931 - 2.3034I$	0
$u = 1.82503 + 0.05956I$ $a = 0.04404 + 2.55326I$ $b = -0.10800 - 5.18854I$	$-15.5464 + 12.1966I$	0
$u = 1.82503 - 0.05956I$ $a = 0.04404 - 2.55326I$ $b = -0.10800 + 5.18854I$	$-15.5464 - 12.1966I$	0
$u = -1.82989 + 0.06825I$ $a = 0.39236 - 1.61771I$ $b = -0.69814 + 3.25968I$	$-16.1413 - 3.8895I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.82989 - 0.06825I$ $a = 0.39236 + 1.61771I$ $b = -0.69814 - 3.25968I$	$-16.1413 + 3.8895I$	0

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

(i) Arc colorings

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

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

$$a_8 = \begin{pmatrix} 1 \\ -u-1 \end{pmatrix}$$

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

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

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

$$a_9 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u-2 \\ 0 \end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 21$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = -1.61803$ $b = -1.00000$	2.63189	21.0000
$u = 1.61803$ $a = 0.618034$ $b = -1.00000$	10.5276	21.0000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^2(u^{41} - 7u^{40} + \cdots + 20u + 4)$
c_2	$((u+1)^2)(u^{41} + 3u^{40} + \cdots + 14u - 1)$
c_3	$(u^2 - u - 1)(u^{41} + 2u^{40} + \cdots - 7931u + 3953)$
c_4	$(u^2 - u - 1)(u^{41} + 4u^{40} + \cdots + 197u - 19)$
c_5	$((u-1)^2)(u^{41} + 3u^{40} + \cdots + 14u - 1)$
c_6, c_7, c_8	$(u^2 - u - 1)(u^{41} + 2u^{40} + \cdots + 5u - 1)$
c_9	$(u^2 - u - 1)(u^{41} - 2u^{40} + \cdots - u + 1)$
c_{10}, c_{11}, c_{12}	$(u^2 + u - 1)(u^{41} + 2u^{40} + \cdots + 5u - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^2(y^{41} + 15y^{40} + \cdots + 104y - 16)$
c_2, c_5	$((y-1)^2)(y^{41} - 35y^{40} + \cdots + 102y - 1)$
c_3	$(y^2 - 3y + 1)(y^{41} - 12y^{40} + \cdots - 1.26298 \times 10^8 y - 1.56262 \times 10^7)$
c_4	$(y^2 - 3y + 1)(y^{41} - 56y^{40} + \cdots + 33831y - 361)$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$(y^2 - 3y + 1)(y^{41} - 60y^{40} + \cdots + 3y - 1)$
c_9	$(y^2 - 3y + 1)(y^{41} + 4y^{40} + \cdots + 3y - 1)$