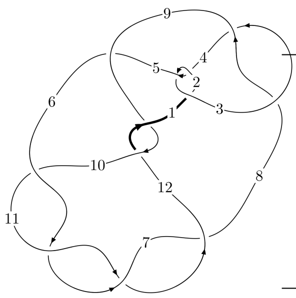
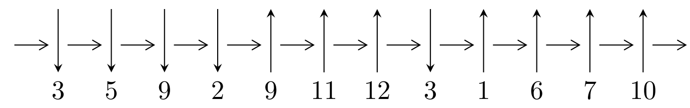
$12n_{0167}$ $(K12n_{0167})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2u^{38} - 42u^{36} + \cdots + b + 2,\ -u^{38} - u^{37} + \cdots + a - 2,\ u^{39} + 2u^{38} + \cdots + 2u + 1\rangle$$
$$I_2^u = \langle u^4 - 2u^2 + b,\ -u^5 + u^4 + 3u^3 - 2u^2 + a - 2u - 1,\ u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 45 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.

$$\boldsymbol{I_1^u = \langle 2u^{38} - 42u^{36} + \cdots + b + 2,\ -u^{38} - u^{37} + \cdots + a - 2,\ u^{39} + 2u^{38} + \cdots + 2u + 1 \rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^4 - 3u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{38} + u^{37} + \cdots - 7u + 2 \\ -2u^{38} + 42u^{36} + \cdots - 5u - 2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^8 - 5u^6 + 7u^4 - 2u^2 + 1 \\ u^8 - 4u^6 + 4u^4 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{38} + u^{37} + \cdots - 8u + 1 \\ -4u^{38} + 84u^{36} + \cdots - 8u - 4 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^{17} + 10u^{15} - 39u^{13} + 74u^{11} - 71u^9 + 38u^7 - 18u^5 + 4u^3 - u \\ -u^{17} + 9u^{15} - 31u^{13} + 50u^{11} - 37u^9 + 12u^7 - 4u^5 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{38} + u^{37} + \cdots - 5u + 3 \\ -u^{38} + 21u^{36} + \cdots - 3u - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3 + 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^{38} - 11u^{37} + \cdots + 34u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39} + 11u^{38} + \cdots - 5u + 1$
c_2, c_4	$u^{39} - 7u^{38} + \cdots - 3u + 1$
c_3, c_8	$u^{39} + u^{38} + \cdots + 64u + 64$
c_5	$u^{39} - 2u^{38} + \cdots + 2u + 1$
c_6, c_7, c_{10} c_{11}	$u^{39} + 2u^{38} + \cdots + 2u + 1$
c_9, c_{12}	$u^{39} + 8u^{38} + \cdots + 70u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} + 41y^{38} + \cdots + 87y - 1$
c_2, c_4	$y^{39} - 11y^{38} + \cdots - 5y - 1$
c_3, c_8	$y^{39} + 39y^{38} + \cdots - 24576y - 4096$
c_5	$y^{39} - 44y^{38} + \cdots + 26y - 1$
c_6, c_7, c_{10} c_{11}	$y^{39} - 44y^{38} + \cdots + 26y - 1$
c_9, c_{12}	$y^{39} + 16y^{38} + \cdots + 3318y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.929287 + 0.081478I$ $a = -0.13426 + 1.82517I$ $b = -0.120150 + 0.122224I$	$7.67542 - 3.35786I$	$7.74116 + 3.09384I$
$u = -0.929287 - 0.081478I$ $a = -0.13426 - 1.82517I$ $b = -0.120150 - 0.122224I$	$7.67542 + 3.35786I$	$7.74116 - 3.09384I$
$u = 0.638465 + 0.572171I$ $a = 0.99563 + 1.99588I$ $b = 2.30175 + 0.94966I$	$3.77609 + 9.59779I$	$3.17812 - 7.93232I$
$u = 0.638465 - 0.572171I$ $a = 0.99563 - 1.99588I$ $b = 2.30175 - 0.94966I$	$3.77609 - 9.59779I$	$3.17812 + 7.93232I$
$u = 0.662133 + 0.524823I$ $a = -0.67104 - 1.69728I$ $b = -1.95714 - 0.96279I$	$4.90817 + 2.86742I$	$5.04494 - 3.58436I$
$u = 0.662133 - 0.524823I$ $a = -0.67104 + 1.69728I$ $b = -1.95714 + 0.96279I$	$4.90817 - 2.86742I$	$5.04494 + 3.58436I$
$u = -0.494019 + 0.600246I$ $a = 0.252653 + 0.393043I$ $b = 0.096843 + 0.148262I$	$-3.75312 - 2.04581I$	$4.95801 + 3.83439I$
$u = -0.494019 - 0.600246I$ $a = 0.252653 - 0.393043I$ $b = 0.096843 - 0.148262I$	$-3.75312 + 2.04581I$	$4.95801 - 3.83439I$
$u = -0.567091 + 0.480850I$ $a = -0.585871 + 0.875832I$ $b = -0.215752 + 0.266566I$	$-1.26346 - 3.63942I$	$1.82295 + 7.50238I$
$u = -0.567091 - 0.480850I$ $a = -0.585871 - 0.875832I$ $b = -0.215752 - 0.266566I$	$-1.26346 + 3.63942I$	$1.82295 - 7.50238I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.307625 + 0.630440I$ $a = -2.49493 - 0.52608I$ $b = -1.53447 + 0.98532I$	$2.80401 - 5.51652I$	$1.04879 + 2.33706I$
$u = 0.307625 - 0.630440I$ $a = -2.49493 + 0.52608I$ $b = -1.53447 - 0.98532I$	$2.80401 + 5.51652I$	$1.04879 - 2.33706I$
$u = 0.487298 + 0.473095I$ $a = -1.50995 + 1.72805I$ $b = 0.60093 + 2.21671I$	$-3.11331 + 1.66779I$	$1.80697 - 3.74196I$
$u = 0.487298 - 0.473095I$ $a = -1.50995 - 1.72805I$ $b = 0.60093 - 2.21671I$	$-3.11331 - 1.66779I$	$1.80697 + 3.74196I$
$u = 0.237194 + 0.597912I$ $a = 2.21111 + 0.47598I$ $b = 1.19865 - 0.81016I$	$3.66747 + 0.95204I$	$2.02608 - 2.37857I$
$u = 0.237194 - 0.597912I$ $a = 2.21111 - 0.47598I$ $b = 1.19865 + 0.81016I$	$3.66747 - 0.95204I$	$2.02608 + 2.37857I$
$u = -1.373730 + 0.070434I$ $a = 0.257891 - 1.073270I$ $b = 0.278657 + 1.104960I$	$7.90973 + 2.98789I$	0
$u = -1.373730 - 0.070434I$ $a = 0.257891 + 1.073270I$ $b = 0.278657 - 1.104960I$	$7.90973 - 2.98789I$	0
$u = -0.376548 + 0.452986I$ $a = 1.297760 - 0.214121I$ $b = 0.390433 - 0.135895I$	$-1.82437 + 0.31015I$	$-1.43952 + 0.71227I$
$u = -0.376548 - 0.452986I$ $a = 1.297760 + 0.214121I$ $b = 0.390433 + 0.135895I$	$-1.82437 - 0.31015I$	$-1.43952 - 0.71227I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.570048 + 0.105370I$ $a = 0.117467 - 0.126119I$ $b = -0.536626 - 0.310271I$	$0.990011 + 0.147928I$	$10.02163 - 0.80608I$
$u = 0.570048 - 0.105370I$ $a = 0.117467 + 0.126119I$ $b = -0.536626 + 0.310271I$	$0.990011 - 0.147928I$	$10.02163 + 0.80608I$
$u = 1.51500 + 0.17385I$ $a = -0.236905 + 0.112592I$ $b = -0.307436 + 0.170867I$	$2.85829 + 4.80629I$	0
$u = 1.51500 - 0.17385I$ $a = -0.236905 - 0.112592I$ $b = -0.307436 - 0.170867I$	$2.85829 - 4.80629I$	0
$u = 1.52238 + 0.09213I$ $a = -0.528996 - 0.528049I$ $b = -0.736761 - 0.687194I$	$4.57565 + 1.35883I$	0
$u = 1.52238 - 0.09213I$ $a = -0.528996 + 0.528049I$ $b = -0.736761 + 0.687194I$	$4.57565 - 1.35883I$	0
$u = -1.53584 + 0.12162I$ $a = 1.040540 + 0.300970I$ $b = -1.70605 + 2.33955I$	$3.67223 - 3.72431I$	0
$u = -1.53584 - 0.12162I$ $a = 1.040540 - 0.300970I$ $b = -1.70605 - 2.33955I$	$3.67223 + 3.72431I$	0
$u = -1.55793 + 0.04362I$ $a = -0.237922 - 0.022146I$ $b = 1.048690 - 0.750159I$	$8.23625 - 0.76574I$	0
$u = -1.55793 - 0.04362I$ $a = -0.237922 + 0.022146I$ $b = 1.048690 + 0.750159I$	$8.23625 + 0.76574I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.55813 + 0.13570I$ $a = 0.109432 + 0.550566I$ $b = 0.178775 + 0.723045I$	$5.88421 + 5.85782I$	0
$u = 1.55813 - 0.13570I$ $a = 0.109432 - 0.550566I$ $b = 0.178775 - 0.723045I$	$5.88421 - 5.85782I$	0
$u = -1.57931 + 0.17338I$ $a = 0.210755 + 1.250430I$ $b = -2.99968 + 0.82586I$	$11.2088 - 12.3506I$	0
$u = -1.57931 - 0.17338I$ $a = 0.210755 - 1.250430I$ $b = -2.99968 - 0.82586I$	$11.2088 + 12.3506I$	0
$u = -1.58740 + 0.15498I$ $a = -0.271413 - 1.006140I$ $b = 2.71217 - 1.00066I$	$12.48550 - 5.38089I$	0
$u = -1.58740 - 0.15498I$ $a = -0.271413 + 1.006140I$ $b = 2.71217 + 1.00066I$	$12.48550 + 5.38089I$	0
$u = 1.62512 + 0.01288I$ $a = 0.034213 + 1.205770I$ $b = 0.05087 + 1.57468I$	$16.3023 + 3.6362I$	0
$u = 1.62512 - 0.01288I$ $a = 0.034213 - 1.205770I$ $b = 0.05087 - 1.57468I$	$16.3023 - 3.6362I$	0
$u = -0.244498$ $a = 3.28769$ $b = 0.512609$	-1.28163	-11.2860

II. $I_2^u =$
$\langle u^4-2u^2+b,\ -u^5+u^4+3u^3-2u^2+a-2u-1,\ u^6-u^5-3u^4+2u^3+2u^2+u-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^5-u^4-14u^3+u^2+14u+6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_8	y^6
c_5, c_9, c_{12}	$y^6+5y^5+9y^4+4y^3-6y^2-5y+1$
c_6, c_7, c_{10} c_{11}	$y^6-7y^5+17y^4-16y^3+6y^2-5y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.493180 + 0.575288I$ $a = -0.858925 - 1.001920I$ $b = 0.138835 - 1.234450I$	$-4.60518 - 1.97241I$	$-5.56070 + 3.48596I$
$u = -0.493180 - 0.575288I$ $a = -0.858925 + 1.001920I$ $b = 0.138835 + 1.234450I$	$-4.60518 + 1.97241I$	$-5.56070 - 3.48596I$
$u = 0.483672$ $a = 2.06752$ $b = 0.413150$	-0.906083	11.4460
$u = 1.52087 + 0.16310I$ $a = 0.650045 - 0.069710I$ $b = -0.408802 - 1.276380I$	$2.05064 + 4.59213I$	$-1.33400 - 2.48468I$
$u = 1.52087 - 0.16310I$ $a = 0.650045 + 0.069710I$ $b = -0.408802 + 1.276380I$	$2.05064 - 4.59213I$	$-1.33400 + 2.48468I$
$u = -1.53904$ $a = -0.649754$ $b = -0.873214$	6.01515	6.34350

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{39}+11u^{38}+\cdots-5u+1)$
c_2	$((u-1)^6)(u^{39}-7u^{38}+\cdots-3u+1)$
c_3, c_8	$u^6(u^{39}+u^{38}+\cdots+64u+64)$
c_4	$((u+1)^6)(u^{39}-7u^{38}+\cdots-3u+1)$
c_5	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{39}-2u^{38}+\cdots+2u+1)$
c_6, c_7	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)(u^{39}+2u^{38}+\cdots+2u+1)$
c_9	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{39}+8u^{38}+\cdots+70u-7)$
c_{10}, c_{11}	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{39}+2u^{38}+\cdots+2u+1)$
c_{12}	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)(u^{39}+8u^{38}+\cdots+70u-7)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{39}+41y^{38}+\cdots+87y-1)$
c_2, c_4	$((y-1)^6)(y^{39}-11y^{38}+\cdots-5y-1)$
c_3, c_8	$y^6(y^{39}+39y^{38}+\cdots-24576y-4096)$
c_5	$(y^6+5y^5+\cdots-5y+1)(y^{39}-44y^{38}+\cdots+26y-1)$
c_6, c_7, c_{10} c_{11}	$(y^6-7y^5+\cdots-5y+1)(y^{39}-44y^{38}+\cdots+26y-1)$
c_9, c_{12}	$(y^6+5y^5+\cdots-5y+1)(y^{39}+16y^{38}+\cdots+3318y-49)$