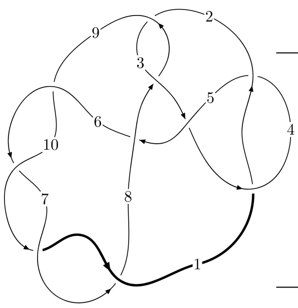
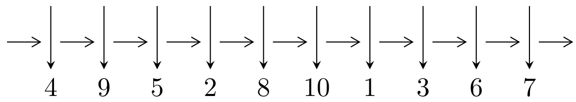
10_{49} $(K10a_{13})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{30} + 17u^{28} + \cdots + b - 1,\ u^{29} + u^{28} + \cdots + a + 1,\ u^{31} + 2u^{30} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle b,\ a - u + 1,\ u^2 - u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 33 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.

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$$\boldsymbol{I_1^u = \langle -u^{30}+17u^{28}+\cdots+b-1,\ u^{29}+u^{28}+\cdots+a+1,\ u^{31}+2u^{30}+\cdots+2u+1\rangle}$$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -u^{29}-u^{28}+\cdots-u-1 \\ u^{30}-17u^{28}+\cdots+3u+1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{30}-u^{29}+\cdots-3u^2+2u \\ u^{30}-17u^{28}+\cdots+3u+1 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^7-4u^5+4u^3 \\ u^9-5u^7+7u^5-2u^3+u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{29}-u^{28}+\cdots-u^2+u \\ -u^{14}+8u^{12}+\cdots+u^2+2u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= 4u^{30}+3u^{29}-63u^{28}-42u^{27}+425u^{26}+231u^{25}-1601u^{24}-582u^{23}+3678u^{22}+378u^{21}-5240u^{20}+1434u^{19}+4267u^{18}-3741u^{17}-861u^{16}+3662u^{15}-2258u^{14}-1402u^{13}+2636u^{12}-406u^{11}-1210u^{10}+852u^9+292u^8-384u^7+86u^6+142u^5-32u^4-6u^3+13u^2+9u-11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{31} - 3u^{30} + \cdots + 3u + 1$
c_2, c_8	$u^{31} + u^{30} + \cdots + 12u + 4$
c_3	$u^{31} + 15u^{30} + \cdots + 29u + 1$
c_5	$u^{31} - 8u^{30} + \cdots + 14u + 7$
c_6, c_7, c_9 c_{10}	$u^{31} + 2u^{30} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{31} - 15y^{30} + \cdots + 29y - 1$
c_2, c_8	$y^{31} + 15y^{30} + \cdots - 8y - 16$
c_3	$y^{31} + 5y^{30} + \cdots + 505y - 1$
c_5	$y^{31} + 20y^{29} + \cdots - 602y - 49$
c_6, c_7, c_9 c_{10}	$y^{31} - 36y^{30} + \cdots + 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.942627 + 0.191065I$ $a = -0.160124 + 0.103064I$ $b = 0.324783 + 0.959750I$	$-1.73768 - 1.98261I$	$-12.51789 + 2.95931I$
$u = -0.942627 - 0.191065I$ $a = -0.160124 - 0.103064I$ $b = 0.324783 - 0.959750I$	$-1.73768 + 1.98261I$	$-12.51789 - 2.95931I$
$u = 0.696545 + 0.545292I$ $a = 1.23592 - 1.62736I$ $b = 0.613275 + 1.178920I$	$0.71112 - 8.80296I$	$-11.07196 + 8.43090I$
$u = 0.696545 - 0.545292I$ $a = 1.23592 + 1.62736I$ $b = 0.613275 - 1.178920I$	$0.71112 + 8.80296I$	$-11.07196 - 8.43090I$
$u = 0.605327 + 0.533968I$ $a = -1.15171 + 1.76364I$ $b = -0.398966 - 1.160740I$	$2.77360 - 3.43811I$	$-7.57029 + 4.39561I$
$u = 0.605327 - 0.533968I$ $a = -1.15171 - 1.76364I$ $b = -0.398966 + 1.160740I$	$2.77360 + 3.43811I$	$-7.57029 - 4.39561I$
$u = -0.605796 + 0.419305I$ $a = -0.106041 + 0.538372I$ $b = 0.914628 + 0.393426I$	$-1.75392 + 3.16934I$	$-13.1405 - 6.2492I$
$u = -0.605796 - 0.419305I$ $a = -0.106041 - 0.538372I$ $b = 0.914628 - 0.393426I$	$-1.75392 - 3.16934I$	$-13.1405 + 6.2492I$
$u = 0.216063 + 0.636597I$ $a = 0.53700 - 1.67610I$ $b = -0.488198 + 1.161550I$	$2.12474 + 4.80226I$	$-7.72031 - 3.44347I$
$u = 0.216063 - 0.636597I$ $a = 0.53700 + 1.67610I$ $b = -0.488198 - 1.161550I$	$2.12474 - 4.80226I$	$-7.72031 + 3.44347I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.331449 + 0.582530I$ $a = -0.68223 + 1.81325I$ $b = 0.208622 - 1.161580I$	$3.57659 - 0.38668I$	$-5.31318 + 2.65084I$
$u = 0.331449 - 0.582530I$ $a = -0.68223 - 1.81325I$ $b = 0.208622 + 1.161580I$	$3.57659 + 0.38668I$	$-5.31318 - 2.65084I$
$u = 0.574643 + 0.305412I$ $a = 1.51598 - 2.33460I$ $b = 0.313373 + 0.704732I$	$-2.56499 - 0.98527I$	$-12.14842 + 6.83319I$
$u = 0.574643 - 0.305412I$ $a = 1.51598 + 2.33460I$ $b = 0.313373 - 0.704732I$	$-2.56499 + 0.98527I$	$-12.14842 - 6.83319I$
$u = -1.400590 + 0.076803I$ $a = 0.284363 + 0.723650I$ $b = 0.076838 - 1.243230I$	$-1.80597 + 2.68803I$	$-9.99041 - 3.16248I$
$u = -1.400590 - 0.076803I$ $a = 0.284363 - 0.723650I$ $b = 0.076838 + 1.243230I$	$-1.80597 - 2.68803I$	$-9.99041 + 3.16248I$
$u = 1.54559 + 0.05817I$ $a = 0.500839 - 0.189268I$ $b = 0.922872 - 0.250964I$	$-7.37189 - 0.63906I$	$-13.31985 + 0.I$
$u = 1.54559 - 0.05817I$ $a = 0.500839 + 0.189268I$ $b = 0.922872 + 0.250964I$	$-7.37189 + 0.63906I$	$-13.31985 + 0.I$
$u = -0.283148 + 0.347355I$ $a = -0.301800 - 0.948705I$ $b = -0.732891 + 0.139904I$	$-0.846644 - 0.285966I$	$-10.27924 - 1.27611I$
$u = -0.283148 - 0.347355I$ $a = -0.301800 + 0.948705I$ $b = -0.732891 - 0.139904I$	$-0.846644 + 0.285966I$	$-10.27924 + 1.27611I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.440544$ $a = -0.456355$ $b = -0.447925$	-0.703249	-13.8910
$u = -1.56849 + 0.15264I$ $a = \ \ 1.094690 + 0.849273I$ $b = \ \ 0.557583 - 1.179560I$	$-4.51872 + 5.93011I$	$-10.96804 - 3.41229I$
$u = -1.56849 - 0.15264I$ $a = \ \ 1.094690 - 0.849273I$ $b = \ \ 0.557583 + 1.179560I$	$-4.51872 - 5.93011I$	$-10.96804 + 3.41229I$
$u = -1.57353 + 0.09063I$ $a = -1.14209 - 1.28668I$ $b = -0.446370 + 0.932965I$	$-9.92171 + 2.45212I$	$-15.0553 - 2.8825I$
$u = -1.57353 - 0.09063I$ $a = -1.14209 + 1.28668I$ $b = -0.446370 - 0.932965I$	$-9.92171 - 2.45212I$	$-15.0553 + 2.8825I$
$u = \ \ 1.57590 + 0.11764I$ $a = -0.484278 + 0.374146I$ $b = -1.031430 + 0.523808I$	$-9.15652 - 5.11817I$	$-15.5151 + 3.8713I$
$u = \ \ 1.57590 - 0.11764I$ $a = -0.484278 - 0.374146I$ $b = -1.031430 - 0.523808I$	$-9.15652 + 5.11817I$	$-15.5151 - 3.8713I$
$u = -1.60251 + 0.16367I$ $a = -1.24549 - 0.75908I$ $b = -0.711416 + 1.179640I$	$-7.05058 + 11.45320I$	$-13.9714 - 7.0213I$
$u = -1.60251 - 0.16367I$ $a = -1.24549 + 0.75908I$ $b = -0.711416 - 1.179640I$	$-7.05058 - 11.45320I$	$-13.9714 + 7.0213I$
$u = \ \ 1.65145 + 0.04258I$ $a = -0.166851 + 0.356098I$ $b = -0.398737 + 0.726247I$	$-10.63140 + 1.14909I$	$-14.4727 - 5.7136I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.65145 - 0.04258I$ $a = -0.166851 - 0.356098I$ $b = -0.398737 - 0.726247I$	$-10.63140 - 1.14909I$	$-14.4727 + 5.7136I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -15$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = -1.61803$ $b = 0$	-2.63189	-15.0000
$u = 1.61803$ $a = 0.618034$ $b = 0$	-10.5276	-15.0000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^{31}-3u^{30}+\cdots+3u+1)$
c_2, c_8	$u^2(u^{31}+u^{30}+\cdots+12u+4)$
c_3	$((u-1)^2)(u^{31}+15u^{30}+\cdots+29u+1)$
c_4	$((u+1)^2)(u^{31}-3u^{30}+\cdots+3u+1)$
c_5	$(u^2+u-1)(u^{31}-8u^{30}+\cdots+14u+7)$
c_6, c_7	$(u^2+u-1)(u^{31}+2u^{30}+\cdots+2u+1)$
c_9, c_{10}	$(u^2-u-1)(u^{31}+2u^{30}+\cdots+2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^2)(y^{31} - 15y^{30} + \cdots + 29y - 1)$
c_2, c_8	$y^2(y^{31} + 15y^{30} + \cdots - 8y - 16)$
c_3	$((y-1)^2)(y^{31} + 5y^{30} + \cdots + 505y - 1)$
c_5	$(y^2 - 3y + 1)(y^{31} + 20y^{29} + \cdots - 602y - 49)$
c_6, c_7, c_9 c_{10}	$(y^2 - 3y + 1)(y^{31} - 36y^{30} + \cdots + 10y - 1)$