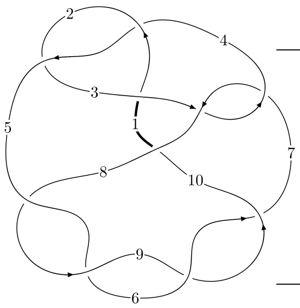
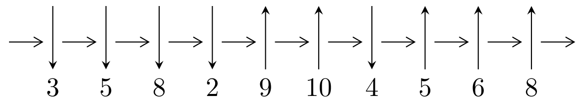
10_{125} $(K10n_{15})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle u^6 - 5u^4 + 6u^2 + b + u - 1,\ -u^5 - u^4 + 4u^3 + 3u^2 + a - 4u - 3,\ u^7 + 2u^6 - 4u^5 - 8u^4 + 4u^3 + 9u^2 + 2u -$
$I_2^u = \langle b,\ a - u - 1,\ u^2 + u - 1\rangle$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 9 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. $\boldsymbol{I_1^u = \langle u^6 - 5u^4 + 6u^2 + b + u - 1,\ -u^5 - u^4 + 4u^3 + 3u^2 + a - 4u - 3,\ u^7 + 2u^6 - 4u^5 - 8u^4 + 4u^3 + 9u^2 + 2u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^6 - 7u^5 + 15u^4 + 26u^3 - 13u^2 - 27u - 3$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^7 - u^6 + 11u^5 - 8u^4 + 13u^3 + 10u^2 - 7u + 1$
c_2, c_4	$u^7 - 3u^6 + 5u^5 - 2u^4 - u^3 + 4u^2 - u + 1$
c_3, c_7	$u^7 + u^6 + 8u^5 + u^4 + 13u^3 - 5u^2 + 4u + 4$
c_5, c_6, c_8 c_9	$u^7 - 2u^6 - 4u^5 + 8u^4 + 4u^3 - 9u^2 + 2u + 1$
c_{10}	$u^7 + 8u^6 + 8u^5 - 30u^4 + 102u^3 - 135u^2 + 78u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^7 + 21y^6 + 131y^5 + 228y^4 + 177y^3 - 266y^2 + 29y - 1$
c_2, c_4	$y^7 + y^6 + 11y^5 + 8y^4 + 13y^3 - 10y^2 - 7y - 1$
c_3, c_7	$y^7 + 15y^6 + 88y^5 + 225y^4 + 235y^3 + 71y^2 + 56y - 16$
c_5, c_6, c_8 c_9	$y^7 - 12y^6 + 56y^5 - 128y^4 + 148y^3 - 81y^2 + 22y - 1$
c_{10}	$y^7 - 48y^6 + 748y^5 + 3048y^4 + 3664y^3 - 2733y^2 + 4194y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.689874 + 0.272602I$ $a = -0.177708 + 0.654657I$ $b = -0.515013 + 0.602362I$	$1.33573 - 0.48421I$	$6.10711 + 1.60895I$
$u = -0.689874 - 0.272602I$ $a = -0.177708 - 0.654657I$ $b = -0.515013 - 0.602362I$	$1.33573 + 0.48421I$	$6.10711 - 1.60895I$
$u = 1.45176 + 0.25511I$ $a = -0.314310 + 0.755649I$ $b = 0.25005 + 1.56572I$	$8.55355 + 2.69234I$	$5.72785 - 2.29938I$
$u = 1.45176 - 0.25511I$ $a = -0.314310 - 0.755649I$ $b = 0.25005 - 1.56572I$	$8.55355 - 2.69234I$	$5.72785 + 2.29938I$
$u = 0.236235$ $a = 3.72864$ $b = 0.444320$	-1.26901	-9.72020
$u = -1.88000 + 0.08028I$ $a = 0.627700 + 0.690043I$ $b = 0.54280 + 2.32525I$	$-18.3019 - 4.6120I$	$5.02514 + 1.92936I$
$u = -1.88000 - 0.08028I$ $a = 0.627700 - 0.690043I$ $b = 0.54280 - 2.32525I$	$-18.3019 + 4.6120I$	$5.02514 - 1.92936I$

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

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u - 1 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u + 1 \\ 0 \end{pmatrix}$$

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

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

$$a_1 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u + 1 \\ 0 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^2$
c_3, c_7	y^2
c_5, c_6, c_8 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
$u = 0.618034$ $a = 1.61803$ $b = 0$	-0.657974	5.00000
$u = -1.61803$ $a = -0.618034$ $b = 0$	7.23771	5.00000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^2(u^7-u^6+11u^5-8u^4+13u^3+10u^2-7u+1)$
c_2	$(u-1)^2(u^7-3u^6+5u^5-2u^4-u^3+4u^2-u+1)$
c_3, c_7	$u^2(u^7+u^6+8u^5+u^4+13u^3-5u^2+4u+4)$
c_4	$(u+1)^2(u^7-3u^6+5u^5-2u^4-u^3+4u^2-u+1)$
c_5, c_6	$(u^2-u-1)(u^7-2u^6-4u^5+8u^4+4u^3-9u^2+2u+1)$
c_8, c_9	$(u^2+u-1)(u^7-2u^6-4u^5+8u^4+4u^3-9u^2+2u+1)$
c_{10}	$(u^2+u-1)(u^7+8u^6+8u^5-30u^4+102u^3-135u^2+78u-7)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^2(y^7+21y^6+131y^5+228y^4+177y^3-266y^2+29y-1)$
c_2, c_4	$(y-1)^2(y^7+y^6+11y^5+8y^4+13y^3-10y^2-7y-1)$
c_3, c_7	$y^2(y^7+15y^6+88y^5+225y^4+235y^3+71y^2+56y-16)$
c_5, c_6, c_8 c_9	$(y^2-3y+1)(y^7-12y^6+\cdots+22y-1)$
c_{10}	(y^2-3y+1) $\cdot(y^7-48y^6+748y^5+3048y^4+3664y^3-2733y^2+4194y-49)$