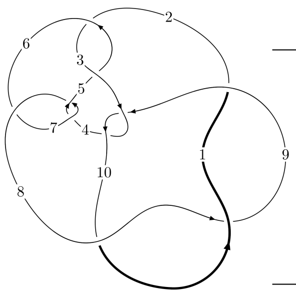
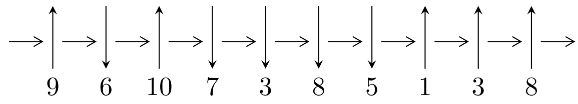
10_{153} $(K10n_{10})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^2 + b + u + 1,\ -u^4 + 6u^3 - 11u^2 + 2a + u + 11,\ u^5 - 5u^4 + 7u^3 + 2u^2 - 8u - 1 \rangle$$
$$I_2^u = \langle u^2 + b - u + 1,\ u^2 + a - u + 1,\ u^3 - u^2 + 1 \rangle$$
$$I_3^u = \langle b - 1,\ a^2 - a - 1,\ u + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 10 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.

$\boldsymbol{I_1^u = \langle -u^2+b+u+1,\ -u^4+6u^3-11u^2+2a+u+11,\ u^5-5u^4+7u^3+2u^2-8u-1\rangle}$

(i) Arc colorings

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

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

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{2}u^4 - 3u^3 + \cdots - \frac{1}{2}u - \frac{11}{2} \\ u^2 - u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^4 - 5u^3 + 7u^2 + 2u - 6 \\ \frac{1}{2}u^4 - 2u^3 + \frac{7}{2}u^2 + \frac{7}{2}u - \frac{1}{2} \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u^3 - 3u^2 + u + 3 \\ \frac{5}{2}u^4 - 7u^3 + \frac{1}{2}u^2 + \frac{19}{2}u + \frac{3}{2} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 3u^4 - 9u^3 + 15u + 5 \\ \frac{27}{2}u^4 - 47u^3 + \cdots + \frac{139}{2}u + \frac{17}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^4 + u^3 + \cdots - \frac{11}{2}u - \frac{9}{2} \\ -3u^4 + 11u^3 - 7u^2 - 20u - 3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^4 + 10u^3 - 15u^2 + 2u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8, c_{10}	$u^5 + 6u^4 + 11u^3 + u^2 - 12u + 1$
c_2, c_5	$u^5 - u^4 - 4u^3 + 23u^2 + 4u - 4$
c_3, c_9	$u^5 - u^4 - 7u^3 + 52u^2 - 12u - 8$
c_4, c_7	$u^5 - 5u^4 + 7u^3 + 2u^2 - 8u - 1$
c_6	$u^5 + 11u^4 + 53u^3 + 126u^2 + 68u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8, c_{10}	$y^5 - 14y^4 + 85y^3 - 277y^2 + 142y - 1$
c_2, c_5	$y^5 - 9y^4 + 70y^3 - 569y^2 + 200y - 16$
c_3, c_9	$y^5 - 15y^4 + 129y^3 - 2552y^2 + 976y - 64$
c_4, c_7	$y^5 - 11y^4 + 53y^3 - 126y^2 + 68y - 1$
c_6	$y^5 - 15y^4 + 173y^3 - 8690y^2 + 4372y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.844155$ $a=\ \ 0.899891$ $b=\ \ 0.556753$	-1.21003	-9.40830
$u=-0.122993$ $a=-5.34961$ $b=-0.861880$	1.12640	9.50800
$u=\ \ 1.88542+0.91135I$ $a=\ \ 0.333114+0.921118I$ $b=-0.16115+2.52520I$	$-14.3433-7.3743I$	$1.72840+2.44716I$
$u=\ \ 1.88542-0.91135I$ $a=\ \ 0.333114-0.921118I$ $b=-0.16115-2.52520I$	$-14.3433+7.3743I$	$1.72840-2.44716I$
$u=\ \ 2.19630$ $a=-0.216510$ $b=\ \ 1.62743$	5.74119	1.44340

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2 + 8u - 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.337641 - 0.562280I$ $b = -0.337641 - 0.562280I$	$4.66906 - 2.82812I$	$2.80443 + 4.65175I$
$u = 0.877439 - 0.744862I$ $a = -0.337641 + 0.562280I$ $b = -0.337641 + 0.562280I$	$4.66906 + 2.82812I$	$2.80443 - 4.65175I$
$u = -0.754878$ $a = -2.32472$ $b = -2.32472$	0.531480	-10.6090

III. $I_3^u = \langle b-1,\ a^2-a-1,\ u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -0.618034$ $b = 1.00000$	7.23771	9.00000
$u = -1.00000$ $a = 1.61803$ $b = 1.00000$	-0.657974	9.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$(u-1)^3(u^2+u-1)(u^5+6u^4+11u^3+u^2-12u+1)$
c_2	$u^2(u^3-u^2+2u-1)(u^5-u^4-4u^3+23u^2+4u-4)$
c_3	$u^3(u^2+u-1)(u^5-u^4-7u^3+52u^2-12u-8)$
c_4	$(u-1)^2(u^3+u^2-1)(u^5-5u^4+7u^3+2u^2-8u-1)$
c_5	$u^2(u^3+u^2+2u+1)(u^5-u^4-4u^3+23u^2+4u-4)$
c_6	$(u-1)^2(u^3-u^2+2u-1)(u^5+11u^4+53u^3+126u^2+68u+1)$
c_7	$(u+1)^2(u^3-u^2+1)(u^5-5u^4+7u^3+2u^2-8u-1)$
c_8	$(u+1)^3(u^2-u-1)(u^5+6u^4+11u^3+u^2-12u+1)$
c_9	$u^3(u^2-u-1)(u^5-u^4-7u^3+52u^2-12u-8)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_8, c_{10}	$(y-1)^3(y^2-3y+1)(y^5-14y^4+85y^3-277y^2+142y-1)$
c_2, c_5	$y^2(y^3+3y^2+2y-1)(y^5-9y^4+70y^3-569y^2+200y-16)$
c_3, c_9	$y^3(y^2-3y+1)(y^5-15y^4+129y^3-2552y^2+976y-64)$
c_4, c_7	$(y-1)^2(y^3-y^2+2y-1)(y^5-11y^4+53y^3-126y^2+68y-1)$
c_6	$((y-1)^2)(y^3+3y^2+2y-1)(y^5-15y^4+\cdots+4372y-1)$