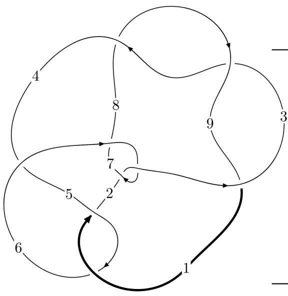
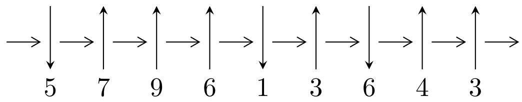
9_{46} $(K9n_5)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^3 - u^2 + 2b - 3u + 1,\ a + 1,\ u^4 + 4u^2 - 2u + 1 \rangle$$
$$I_2^u = \langle b - 1,\ 2a + u - 1,\ u^2 + u + 2 \rangle$$
$$I_3^u = \langle b - u,\ a + 1,\ u^2 + 1 \rangle$$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 14u + 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^4 + 3u^3 + 5u^2 + 3u + 2$
c_2, c_3, c_6 c_8, c_9	$u^4 + 4u^2 - 2u + 1$
c_4	$u^4 - u^3 + 11u^2 - 11u + 4$
c_7	$u^4 + 8u^3 + 18u^2 + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^4 + y^3 + 11y^2 + 11y + 4$
c_2, c_3, c_6 c_8, c_9	$y^4 + 8y^3 + 18y^2 + 4y + 1$
c_4	$y^4 + 21y^3 + 107y^2 - 33y + 16$
c_7	$y^4 - 28y^3 + 262y^2 + 20y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.264316 + 0.422125I$ $a = -1.00000$ $b = -0.219104 + 0.751390I$	$0.426736 + 1.175630I$	$4.79089 - 5.96277I$
$u = 0.264316 - 0.422125I$ $a = -1.00000$ $b = -0.219104 - 0.751390I$	$0.426736 - 1.175630I$	$4.79089 + 5.96277I$
$u = -0.26432 + 1.99036I$ $a = -1.00000$ $b = -1.28090 - 1.27441I$	$-16.8761 - 4.7517I$	$-0.79089 + 2.00586I$
$u = -0.26432 - 1.99036I$ $a = -1.00000$ $b = -1.28090 + 1.27441I$	$-16.8761 + 4.7517I$	$-0.79089 - 2.00586I$

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

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u+2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u \\ 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{1}{2}u+\frac{1}{2} \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{2}u+\frac{3}{2} \\ -1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u+\frac{1}{2} \\ -1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u-1)^2$
c_2, c_3, c_6 c_8, c_9	u^2+u+2
c_4	$(u+1)^2$
c_7	u^2+3u+4

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5	$(y-1)^2$
c_2, c_3, c_6 c_8, c_9	y^2+3y+4
c_7	y^2-y+16

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.50000 + 1.32288I$ $a = \quad 0.750000 - 0.661438I$ $b = \quad 1.00000$	-4.93480	-2.00000
$u = -0.50000 - 1.32288I$ $a = \quad 0.750000 + 0.661438I$ $b = \quad 1.00000$	-4.93480	-2.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -1.00000$ $b = 1.000000I$	-1.64493	0
$u = -1.000000I$ $a = -1.00000$ $b = -1.000000I$	-1.64493	0

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u-1)^2(u^2+1)(u^4+3u^3+5u^2+3u+2)$
c_2, c_3, c_6 c_8, c_9	$(u^2+1)(u^2+u+2)(u^4+4u^2-2u+1)$
c_4	$(u+1)^4(u^4-u^3+11u^2-11u+4)$
c_7	$(u+1)^2(u^2+3u+4)(u^4+8u^3+18u^2+4u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y-1)^2(y+1)^2(y^4+y^3+11y^2+11y+4)$
c_2, c_3, c_6 c_8, c_9	$(y+1)^2(y^2+3y+4)(y^4+8y^3+18y^2+4y+1)$
c_4	$(y-1)^4(y^4+21y^3+107y^2-33y+16)$
c_7	$(y-1)^2(y^2-y+16)(y^4-28y^3+262y^2+20y+1)$