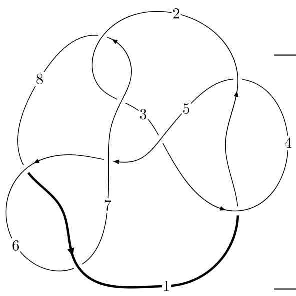
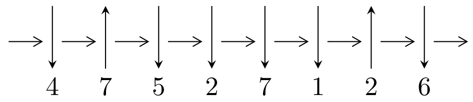
8_{21} $(K8n_2)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

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

* 3 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. $I^u_1 = \langle -u^2 + b + u + 1,\ -u^2 + a + u,\ u^4 - u^3 + u + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$y^4 - y^3 + 4y^2 - y + 1$
c_2, c_7	$y^4 - 3y^3 + y^2 + 8y + 4$
c_3, c_5	$y^4 + 7y^3 + 16y^2 + 7y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.566121 + 0.458821I$ $a = \quad 0.676097 - 0.978318I$ $b = -0.323903 - 0.978318I$	$-0.66070 + 1.45022I$	$-4.56010 - 4.72374I$
$u = -0.566121 - 0.458821I$ $a = \quad 0.676097 + 0.978318I$ $b = -0.323903 + 0.978318I$	$-0.66070 - 1.45022I$	$-4.56010 + 4.72374I$
$u = \quad 1.066120 + 0.864054I$ $a = -0.676097 + 0.978318I$ $b = -1.67610 + 0.97832I$	$4.77303 - 6.78371I$	$-3.43990 + 4.72374I$
$u = \quad 1.066120 - 0.864054I$ $a = -0.676097 - 0.978318I$ $b = -1.67610 - 0.97832I$	$4.77303 + 6.78371I$	$-3.43990 - 4.72374I$

II. $\boldsymbol{I_2^u = \langle b - 1,\ u^3 + a + 1,\ u^4 - u^3 + 2u - 1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$y^4 - y^3 + 2y^2 - 4y + 1$
c_2, c_7	$(y^2 - 3y + 1)^2$
c_3, c_5	$y^4 + 3y^3 - 2y^2 - 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.15372$ $a = 0.535687$ $b = 1.00000$	-2.30291	-2.00000
$u = 0.809017 + 0.981593I$ $a = 0.809017 - 0.981593I$ $b = 1.00000$	5.59278	-2.00000
$u = 0.809017 - 0.981593I$ $a = 0.809017 + 0.981593I$ $b = 1.00000$	5.59278	-2.00000
$u = 0.535687$ $a = -1.15372$ $b = 1.00000$	-2.30291	-2.00000

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5 c_6	$u-1$
c_2, c_7	u
c_4, c_8	$u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_5, c_6, c_8	$y-1$
c_2, c_7	y

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

IV. u-Polynomials

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

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$(y-1)(y^4 - y^3 + 2y^2 - 4y + 1)(y^4 - y^3 + 4y^2 - y + 1)$
c_2, c_7	$y(y^2 - 3y + 1)^2(y^4 - 3y^3 + y^2 + 8y + 4)$
c_3, c_5	$(y-1)(y^4 + 3y^3 - 2y^2 - 12y + 1)(y^4 + 7y^3 + 16y^2 + 7y + 1)$