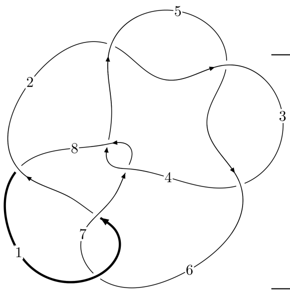
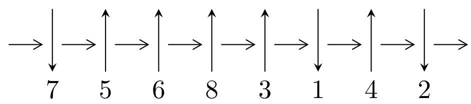
8_{10} $(K8a_3)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -2u^{10} + 2u^9 + 5u^8 - 2u^7 - 6u^6 - 7u^4 + 14u^3 + u^2 + 4b - 4u + 2, \\
& 2u^{10} - u^9 - 5u^8 + 4u^6 + u^5 + 9u^4 - 9u^3 - u^2 + 4a + 4u - 6, \\
& u^{11} - 2u^{10} - u^9 + 3u^8 + u^7 - 2u^6 + 4u^5 - 11u^4 + 9u^3 - u^2 - 2u + 2 \rangle \\
I_2^u = \langle & -a^2 + b + 2a - 2,\ a^3 - 2a^2 + 3a - 1,\ u + 1 \rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b - 1,\ v - 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 15 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.

$$\boldsymbol{I_1^u = \langle -2u^{10}+2u^9+\cdots+4b+2,\ 2u^{10}-u^9+\cdots+4a-6,\ u^{11}-2u^{10}+\cdots-2u+2\rangle}$$

(i) Arc colorings

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

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

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

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{10} + \frac{1}{4}u^9 + \cdots - u + \frac{3}{2} \\ \frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots + u - \frac{1}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{1}{4}u^9 + \frac{1}{2}u^7 + \cdots - \frac{5}{4}u^3 + 1 \\ \frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots + u - \frac{1}{2} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{4}u^{10} + \frac{3}{4}u^8 + \cdots - \frac{3}{2}u + \frac{1}{2} \\ \frac{1}{4}u^{10} - \frac{1}{4}u^9 + \cdots - \frac{1}{2}u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{4}u^8 - \frac{1}{2}u^6 + \cdots - \frac{1}{2}u + \frac{1}{2} \\ \frac{1}{2}u^5 - \frac{1}{2}u^3 - \frac{1}{2}u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{10} + 6u^8 + 2u^7 - 6u^6 - 4u^5 - 8u^4 + 8u^3 + 10u^2 - 8u + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{11} - 2u^{10} + 4u^8 - 2u^7 - 4u^6 + 5u^5 + 2u^4 - 5u^3 + u^2 + 3u - 1$
c_2, c_3, c_5	$u^{11} + 2u^{10} - 4u^9 - 8u^8 + 6u^7 + 8u^6 - 7u^5 + 2u^4 + 7u^3 - 3u^2 - u - 1$
c_4, c_7	$u^{11} + 2u^{10} - u^9 - 3u^8 + u^7 + 2u^6 + 4u^5 + 11u^4 + 9u^3 + u^2 - 2u - 2$
c_8	$u^{11} + 4u^{10} + \cdots + 11u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{11} - 4y^{10} + \cdots + 11y - 1$
c_2, c_3, c_5	$y^{11} - 12y^{10} + \cdots - 5y - 1$
c_4, c_7	$y^{11} - 6y^{10} + \cdots + 8y - 4$
c_8	$y^{11} + 8y^{10} + \cdots + 67y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.217339 + 1.116860I$ $a = 0.486755 + 0.161793I$ $b = 0.850023 - 0.614930I$	$3.20561 + 2.41892I$	$4.92816 - 2.88947I$
$u = -0.217339 - 1.116860I$ $a = 0.486755 - 0.161793I$ $b = 0.850023 + 0.614930I$	$3.20561 - 2.41892I$	$4.92816 + 2.88947I$
$u = 1.116820 + 0.404951I$ $a = 0.06010 - 1.67645I$ $b = -0.978643 + 0.595733I$	$0.67123 + 4.69742I$	$2.91876 - 5.88322I$
$u = 1.116820 - 0.404951I$ $a = 0.06010 + 1.67645I$ $b = -0.978643 - 0.595733I$	$0.67123 - 4.69742I$	$2.91876 + 5.88322I$
$u = 0.323694 + 0.583510I$ $a = 0.505484 - 0.058656I$ $b = 0.952018 + 0.226513I$	$-1.73094 - 0.74196I$	$-3.53927 + 1.11909I$
$u = 0.323694 - 0.583510I$ $a = 0.505484 + 0.058656I$ $b = 0.952018 - 0.226513I$	$-1.73094 + 0.74196I$	$-3.53927 - 1.11909I$
$u = 1.38823 + 0.36743I$ $a = 0.423130 + 0.842208I$ $b = -0.523691 - 0.948055I$	$8.61577 + 2.58451I$	$8.19194 - 1.01660I$
$u = 1.38823 - 0.36743I$ $a = 0.423130 - 0.842208I$ $b = -0.523691 + 0.948055I$	$8.61577 - 2.58451I$	$8.19194 + 1.01660I$
$u = -0.552641$ $a = 1.53210$ $b = -0.347303$	1.12618	9.42940
$u = -1.33508 + 0.61220I$ $a = -0.241523 + 1.362970I$ $b = -1.126060 - 0.711355I$	$6.76952 - 8.65115I$	$5.78570 + 5.57892I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.33508-0.61220I$ $a=-0.241523-1.362970I$ $b=-1.126060+0.711355I$	$6.76952+8.65115I$	$5.78570-5.57892I$

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

(i) Arc colorings

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

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

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

$$a_2 = \begin{pmatrix} a \\ a^2 - 2a + 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a^2 - a + 2 \\ a^2 - 2a + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -a^2 + 2a - 2 \\ -a^2 + a - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a^2 - a + 2 \\ a^2 - 2a + 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \ \ 0.78492 + 1.30714I$ $b = -0.662359 - 0.562280I$	1.64493	6.00000
$u = -1.00000$ $a = \ \ 0.78492 - 1.30714I$ $b = -0.662359 + 0.562280I$	1.64493	6.00000
$u = -1.00000$ $a = \ \ 0.430160$ $b = \ \ 1.32472$	1.64493	6.00000

III. $\boldsymbol{I_1^v = \langle a,\ b-1,\ v-1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

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

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

(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	$u + 1$
c_4, c_7	u
c_5, c_6, c_8	$u - 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	1.00000		
$a =$	0	0	0
$b =$	1.00000		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u+1)(u^3-u+1)$ $\cdot(u^{11}-2u^{10}+4u^8-2u^7-4u^6+5u^5+2u^4-5u^3+u^2+3u-1)$
c_2, c_3	$(u+1)(u^3-u+1)$ $\cdot(u^{11}+2u^{10}-4u^9-8u^8+6u^7+8u^6-7u^5+2u^4+7u^3-3u^2-u-1)$
c_4, c_7	$u(u-1)^3$ $\cdot(u^{11}+2u^{10}-u^9-3u^8+u^7+2u^6+4u^5+11u^4+9u^3+u^2-2u-2)$
c_5	$(u-1)(u^3-u+1)$ $\cdot(u^{11}+2u^{10}-4u^9-8u^8+6u^7+8u^6-7u^5+2u^4+7u^3-3u^2-u-1)$
c_6	$(u-1)(u^3-u+1)$ $\cdot(u^{11}-2u^{10}+4u^8-2u^7-4u^6+5u^5+2u^4-5u^3+u^2+3u-1)$
c_8	$(u-1)(u^3+2u^2+u+1)(u^{11}+4u^{10}+\cdots+11u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$(y-1)(y^3-2y^2+y-1)(y^{11}-4y^{10}+\cdots+11y-1)$
c_2, c_3, c_5	$(y-1)(y^3-2y^2+y-1)(y^{11}-12y^{10}+\cdots-5y-1)$
c_4, c_7	$y(y-1)^3(y^{11}-6y^{10}+\cdots+8y-4)$
c_8	$(y-1)(y^3-2y^2-3y-1)(y^{11}+8y^{10}+\cdots+67y-1)$