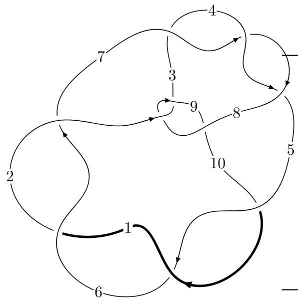
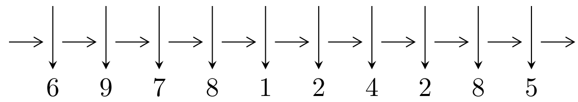
10_{139} $(K10n_{27})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

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

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

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 7 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.

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

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^3 + u^2 + u \\ u^3 + 3u^2 + 2u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}u^3 - u^2 + 1 \\ -2u^2 - 2u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ 4u^3 + 8u^2 + 2u - 2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{3}{2}u^3 + 5u^2 + 4u - 2 \\ -3u^3 - 5u^2 + u + 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{3}{2}u^3 + u^2 - 2u \\ 8u^3 + 28u^2 + 16u - 11 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u - 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_{10}	$u^4 - 4u^3 + 6u^2 - 2u - 2$
c_2, c_3, c_4 c_7, c_8	$u^4 + 2u^3 + 4u^2 - 2u - 1$
c_9	$u^4 - 4u^3 + 22u^2 + 12u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_{10}	$y^4 - 4y^3 + 16y^2 - 28y + 4$
c_2, c_3, c_4 c_7, c_8	$y^4 + 4y^3 + 22y^2 - 12y + 1$
c_9	$y^4 + 28y^3 + 582y^2 - 100y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.47463$ $a=-0.903408$ $b=-0.632293$	-6.80412	-13.0510
$u=\ 0.395337$ $a=\ 0.582522$ $b=\ 0.321336$	-0.588647	-16.7910
$u=-1.46036+1.13932I$ $a=\ 0.660443+0.716885I$ $b=\ 1.15548-1.89385I$	$4.51885+4.85117I$	$-13.07929-2.27864I$
$u=-1.46036-1.13932I$ $a=\ 0.660443-0.716885I$ $b=\ 1.15548+1.89385I$	$4.51885-4.85117I$	$-13.07929+2.27864I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = -0.292893$ $b = -1.00000$	-8.22467	-20.0000
$u = -1.41421$ $a = -1.70711$ $b = -1.00000$	-8.22467	-20.0000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_{10}	$u(u^2-2)(u^4-4u^3+6u^2-2u-2)$
c_2, c_7	$(u-1)^2(u+1)(u^4+2u^3+4u^2-2u-1)$
c_3, c_4, c_8	$(u-1)(u+1)^2(u^4+2u^3+4u^2-2u-1)$
c_9	$(u+1)^3(u^4-4u^3+22u^2+12u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_{10}	$y(y-2)^2(y^4-4y^3+16y^2-28y+4)$
c_2, c_3, c_4 c_7, c_8	$(y-1)^3(y^4+4y^3+22y^2-12y+1)$
c_9	$(y-1)^3(y^4+28y^3+582y^2-100y+1)$