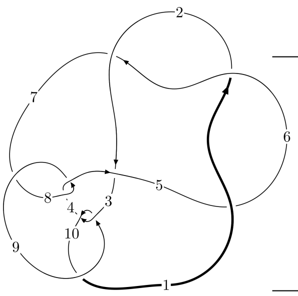
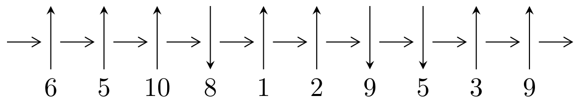
10_{143} $(K10n_{26})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 2u^{12} - 2u^{11} - 9u^{10} + 10u^9 + 12u^8 - 18u^7 + 7u^6 + 4u^5 - 25u^4 + 18u^3 + 4u^2 + 4b - 2u + 2, \\ & -u^{11} + 4u^9 - 5u^7 - u^5 + 2u^4 + 6u^3 - 2u^2 + 4a + 2u - 4, \\ & u^{13} - 2u^{12} - 3u^{11} + 9u^{10} - u^9 - 12u^8 + 14u^7 - 7u^6 - 11u^5 + 23u^4 - 12u^3 + 2u^2 - 2\rangle \\ I_2^u = \langle & b + 1,\ 2a + u,\ u^2 - 2\rangle \\ I_3^u = \langle & -a^2 + b + a,\ a^3 - 2a^2 + a - 1,\ u + 1\rangle \end{aligned}$$

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

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 19 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.

$\boldsymbol{I_1^u = \langle 2u^{12} - 2u^{11} + \cdots + 4b + 2,\ -u^{11} + 4u^9 + \cdots + 4a - 4,\ u^{13} - 2u^{12} + \cdots + 2u^2 - 2\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{4}u^{11} - u^9 + \cdots - \frac{1}{2}u + 1 \\ -\frac{1}{2}u^{12} + \frac{1}{2}u^{11} + \cdots + \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{2}u^{12} + \frac{3}{4}u^{11} + \cdots - \frac{1}{2}u^2 + \frac{1}{2} \\ -\frac{1}{2}u^{12} + \frac{1}{2}u^{11} + \cdots + \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{4}u^{11} + u^9 + \cdots - \frac{3}{2}u + 1 \\ -\frac{1}{4}u^{11} + u^9 + \cdots - \frac{1}{2}u^2 - \frac{1}{2}u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{4}u^{10} + u^8 + \cdots - \frac{1}{2}u + \frac{1}{2} \\ \frac{1}{2}u^7 - \frac{3}{2}u^5 + \frac{1}{2}u^4 + u^3 - u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 2u^{12} - 10u^{10} + 2u^9 + 18u^8 - 8u^7 - 4u^6 + 10u^5 - 26u^4 + 20u^2 - 2u + 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6	$u^{13} + 2u^{12} + \cdots - 2u^2 + 2$
c_2	$u^{13} + 3u^{12} + \cdots - 92u + 46$
c_3, c_9	$u^{13} - 2u^{12} + \cdots - 3u - 1$
c_4, c_8	$u^{13} + 2u^{12} + \cdots + 9u - 1$
c_7	$u^{13} + 18u^{12} + \cdots + 65u + 1$
c_{10}	$u^{13} - 2u^{12} + \cdots + 17u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6	$y^{13} - 10y^{12} + \cdots + 8y - 4$
c_2	$y^{13} + 23y^{12} + \cdots + 7728y - 2116$
c_3, c_9	$y^{13} - 2y^{12} + \cdots + 17y - 1$
c_4, c_8	$y^{13} - 18y^{12} + \cdots + 65y - 1$
c_7	$y^{13} - 42y^{12} + \cdots + 2989y - 1$
c_{10}	$y^{13} + 22y^{12} + \cdots + 205y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.116060 + 1.025320I$ $a = -1.94905 - 0.25674I$ $b = -1.69551 + 0.12749I$	$-10.21610 + 3.70097I$	$0.67358 - 2.50956I$
$u = 0.116060 - 1.025320I$ $a = -1.94905 + 0.25674I$ $b = -1.69551 - 0.12749I$	$-10.21610 - 3.70097I$	$0.67358 + 2.50956I$
$u = 1.197110 + 0.332616I$ $a = -0.447636 - 0.899887I$ $b = -0.583119 + 0.809161I$	$1.92578 + 4.88678I$	$6.41460 - 5.91732I$
$u = 1.197110 - 0.332616I$ $a = -0.447636 + 0.899887I$ $b = -0.583119 - 0.809161I$	$1.92578 - 4.88678I$	$6.41460 + 5.91732I$
$u = 1.236960 + 0.573659I$ $a = 0.918969 + 0.882216I$ $b = 1.67219 - 0.07727I$	$-6.78115 + 1.92961I$	$2.66803 - 0.98070I$
$u = 1.236960 - 0.573659I$ $a = 0.918969 - 0.882216I$ $b = 1.67219 + 0.07727I$	$-6.78115 - 1.92961I$	$2.66803 + 0.98070I$
$u = 1.38959$ $a = -0.810069$ $b = -0.135830$	6.53354	13.9760
$u = 0.094132 + 0.586012I$ $a = 0.854196 + 0.075054I$ $b = 0.787240 + 0.445864I$	$-1.38205 - 1.36942I$	$-0.56235 + 3.09698I$
$u = 0.094132 - 0.586012I$ $a = 0.854196 - 0.075054I$ $b = 0.787240 - 0.445864I$	$-1.38205 + 1.36942I$	$-0.56235 - 3.09698I$
$u = -1.45446$ $a = 0.0472843$ $b = -1.10499$	3.37738	1.87580

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.40252 + 0.47847I$ $a = 0.81193 - 1.16730I$ $b = 1.62497 + 0.28976I$	$-5.44762 - 9.07090I$	$4.16718 + 5.02365I$
$u = -1.40252 - 0.47847I$ $a = 0.81193 + 1.16730I$ $b = 1.62497 - 0.28976I$	$-5.44762 + 9.07090I$	$4.16718 - 5.02365I$
$u = -0.418617$ $a = 1.38596$ $b = -0.370722$	0.992576	11.4260

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = -0.707107$ $b = -1.00000$	4.93480	8.00000
$u = -1.41421$ $a = 0.707107$ $b = -1.00000$	4.93480	8.00000

III. $\boldsymbol{I_3^u = \langle -a^2 + b + a,\ a^3 - 2a^2 + a - 1,\ u + 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

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

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

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

$$a_9 = \begin{pmatrix} a \\ a^2 - a \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -a^2 \\ -a \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} a^2 \\ a^2 - a \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.122561 + 0.744862I$ $b = -0.662359 - 0.562280I$	1.64493	6.00000
$u = -1.00000$ $a = \quad 0.122561 - 0.744862I$ $b = -0.662359 + 0.562280I$	1.64493	6.00000
$u = -1.00000$ $a = \quad 1.75488$ $b = \quad 1.32472$	1.64493	6.00000

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

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

$$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

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

$$a_{10} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

(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_5 c_6	u
c_3, c_4, c_7 c_{10}	$u - 1$
c_8, c_9	$u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6	$u(u-1)^3(u^2-2)(u^{13}+2u^{12}+\cdots-2u^2+2)$
c_2	$u^4(u^2-2)(u^{13}+3u^{12}+\cdots-92u+46)$
c_3	$(u-1)(u+1)^2(u^3-u+1)(u^{13}-2u^{12}+\cdots-3u-1)$
c_4	$(u-1)(u+1)^2(u^3-u+1)(u^{13}+2u^{12}+\cdots+9u-1)$
c_7	$((u-1)^3)(u^3+2u^2+u+1)(u^{13}+18u^{12}+\cdots+65u+1)$
c_8	$((u-1)^2)(u+1)(u^3-u+1)(u^{13}+2u^{12}+\cdots+9u-1)$
c_9	$((u-1)^2)(u+1)(u^3-u+1)(u^{13}-2u^{12}+\cdots-3u-1)$
c_{10}	$((u-1)^3)(u^3-2u^2+u-1)(u^{13}-2u^{12}+\cdots+17u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6	$y(y-2)^2(y-1)^3(y^{13}-10y^{12}+\cdots+8y-4)$
c_2	$y^4(y-2)^2(y^{13}+23y^{12}+\cdots+7728y-2116)$
c_3, c_9	$((y-1)^3)(y^3-2y^2+y-1)(y^{13}-2y^{12}+\cdots+17y-1)$
c_4, c_8	$((y-1)^3)(y^3-2y^2+y-1)(y^{13}-18y^{12}+\cdots+65y-1)$
c_7	$((y-1)^3)(y^3-2y^2-3y-1)(y^{13}-42y^{12}+\cdots+2989y-1)$
c_{10}	$((y-1)^3)(y^3-2y^2-3y-1)(y^{13}+22y^{12}+\cdots+205y-1)$