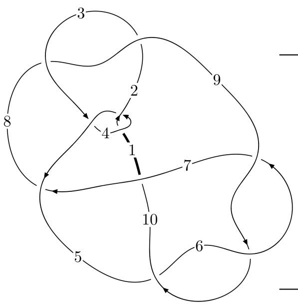
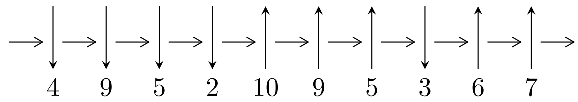
10_{129} $(K10n_{18})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & u^{12} + u^{11} + 5u^{10} + 4u^9 + 9u^8 + 6u^7 + 5u^6 + 4u^5 - 2u^4 + u^3 - 2u^2 + b + 1, \\
& - u^{14} - 2u^{13} - 8u^{12} - 11u^{11} - 23u^{10} - 23u^9 - 28u^8 - 20u^7 - 9u^6 - 5u^5 + 7u^4 + u^3 + u^2 + a - u - 3, \\
& u^{15} + 2u^{14} + 8u^{13} + 12u^{12} + 24u^{11} + 28u^{10} + 32u^9 + 29u^8 + 14u^7 + 9u^6 - 6u^5 - 5u^4 - 2u^3 - 2u^2 + 4u + 1\rangle \\
I_2^u = \langle & b + 1,\ -u^2 + a - u - 1,\ u^3 + u^2 + 2u + 1\rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 18 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.

$$\boldsymbol{I_1^u = \langle u^{12}+u^{11}+\cdots+b+1,\ -u^{14}-2u^{13}+\cdots+a-3,\ u^{15}+2u^{14}+\cdots+4u+1\rangle}$$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{14}+2u^{13}+\cdots+u+3 \\ -u^{12}-u^{11}-5u^{10}-4u^9-9u^8-6u^7-5u^6-4u^5+2u^4-u^3+2u^2-1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{14}+2u^{13}+\cdots-u+3 \\ -u^{13}-u^{12}+\cdots-u-1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^5+2u^3+u \\ -u^7-3u^5-2u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{14}+u^{13}+\cdots-2u+2 \\ -u^{13}-u^{12}+\cdots-u-1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2+1 \\ -u^4-2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^4-u^2+1 \\ -u^4-2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^{14}-2u^{13}-11u^{12}-16u^{11}-42u^{10}-47u^9-71u^8-62u^7-44u^6-31u^5+12u^4+4u^3+14u^2+5u-9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{15} - 4u^{14} + \cdots - 3u + 1$
c_2, c_8	$u^{15} + u^{14} + \cdots + 12u + 8$
c_3	$u^{15} + 2u^{14} + \cdots - 3u + 1$
c_5, c_6, c_9	$u^{15} + 2u^{14} + \cdots + 4u + 1$
c_7	$u^{15} + 8u^{14} + \cdots + 280u - 49$
c_{10}	$u^{15} - 2u^{14} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{15} - 2y^{14} + \cdots - 3y - 1$
c_2, c_8	$y^{15} + 21y^{14} + \cdots - 48y - 64$
c_3	$y^{15} + 26y^{14} + \cdots - 3y - 1$
c_5, c_6, c_9	$y^{15} + 12y^{14} + \cdots + 20y - 1$
c_7	$y^{15} - 32y^{14} + \cdots + 220108y - 2401$
c_{10}	$y^{15} - 20y^{14} + \cdots + 20y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.946822+0.058779I$ $a=-0.57292-1.67757I$ $b=\ \ 1.05231+1.07767I$	$10.46560-3.92970I$	$3.25200+2.37642I$
$u=-0.946822-0.058779I$ $a=-0.57292+1.67757I$ $b=\ \ 1.05231-1.07767I$	$10.46560+3.92970I$	$3.25200-2.37642I$
$u=-0.078813+1.147950I$ $a=-0.99527+1.21138I$ $b=-1.148380-0.278021I$	$-4.30318-1.14653I$	$-3.69630-0.14216I$
$u=-0.078813-1.147950I$ $a=-0.99527-1.21138I$ $b=-1.148380+0.278021I$	$-4.30318+1.14653I$	$-3.69630+0.14216I$
$u=\ \ 0.271249+1.119280I$ $a=\ \ 0.070766-0.823663I$ $b=-0.282237+0.716387I$	$-1.32042+2.58137I$	$0.00443-4.00241I$
$u=\ \ 0.271249-1.119280I$ $a=\ \ 0.070766+0.823663I$ $b=-0.282237-0.716387I$	$-1.32042-2.58137I$	$0.00443+4.00241I$
$u=-0.488190+1.251290I$ $a=-0.601814+0.190541I$ $b=\ \ 0.92821-1.13080I$	$6.78648-1.17157I$	$0.521469+0.840506I$
$u=-0.488190-1.251290I$ $a=-0.601814-0.190541I$ $b=\ \ 0.92821+1.13080I$	$6.78648+1.17157I$	$0.521469-0.840506I$
$u=\ \ 0.604547+0.198361I$ $a=\ \ 0.727011+0.890995I$ $b=\ \ 0.195944-0.500014I$	$1.37013+0.70150I$	$5.29100-2.23884I$
$u=\ \ 0.604547-0.198361I$ $a=\ \ 0.727011-0.890995I$ $b=\ \ 0.195944+0.500014I$	$1.37013-0.70150I$	$5.29100+2.23884I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.197329 + 1.368030I$ $a = 1.103000 + 0.360621I$ $b = 0.560305 - 0.345696I$	$-3.65536 + 3.51330I$	$0.20706 - 4.67402I$
$u = 0.197329 - 1.368030I$ $a = 1.103000 - 0.360621I$ $b = 0.560305 + 0.345696I$	$-3.65536 - 3.51330I$	$0.20706 + 4.67402I$
$u = -0.445416 + 1.338930I$ $a = 0.91370 - 1.42147I$ $b = 1.13244 + 0.99333I$	$6.09422 - 8.90152I$	$-0.37309 + 5.02376I$
$u = -0.445416 - 1.338930I$ $a = 0.91370 + 1.42147I$ $b = 1.13244 - 0.99333I$	$6.09422 + 8.90152I$	$-0.37309 - 5.02376I$
$u = -0.227769$ $a = 2.71106$ $b = -0.877160$	-1.26612	-9.41310

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 5u^2+4u+4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.215080 + 1.307140I$ $a = -0.877439 + 0.744862I$ $b = -1.00000$	$-4.66906 - 2.82812I$	$-5.17211 + 2.41717I$
$u = -0.215080 - 1.307140I$ $a = -0.877439 - 0.744862I$ $b = -1.00000$	$-4.66906 + 2.82812I$	$-5.17211 - 2.41717I$
$u = -0.569840$ $a = 0.754878$ $b = -1.00000$	-0.531480	3.34420

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^3)(u^{15}-4u^{14}+\cdots-3u+1)$
c_2, c_8	$u^3(u^{15}+u^{14}+\cdots+12u+8)$
c_3	$((u-1)^3)(u^{15}+2u^{14}+\cdots-3u+1)$
c_4	$((u+1)^3)(u^{15}-4u^{14}+\cdots-3u+1)$
c_5, c_6	$(u^3+u^2+2u+1)(u^{15}+2u^{14}+\cdots+4u+1)$
c_7	$(u^3+u^2-1)(u^{15}+8u^{14}+\cdots+280u-49)$
c_9	$(u^3-u^2+2u-1)(u^{15}+2u^{14}+\cdots+4u+1)$
c_{10}	$(u^3+u^2-1)(u^{15}-2u^{14}+\cdots+2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^3)(y^{15}-2y^{14}+\cdots-3y-1)$
c_2, c_8	$y^3(y^{15}+21y^{14}+\cdots-48y-64)$
c_3	$((y-1)^3)(y^{15}+26y^{14}+\cdots-3y-1)$
c_5, c_6, c_9	$(y^3+3y^2+2y-1)(y^{15}+12y^{14}+\cdots+20y-1)$
c_7	$(y^3-y^2+2y-1)(y^{15}-32y^{14}+\cdots+220108y-2401)$
c_{10}	$(y^3-y^2+2y-1)(y^{15}-20y^{14}+\cdots+20y-1)$