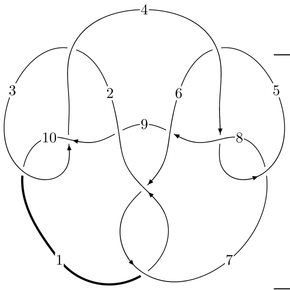
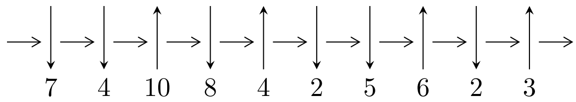
10_{137} $(K10n_2)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-u^{15} - 2u^{14} + \cdots + 2b - 5u,\\
&u^{14} + 2u^{13} + 7u^{12} + 10u^{11} + 18u^{10} + 23u^9 + 25u^8 + 32u^7 + 22u^6 + 25u^5 + 14u^4 + 6u^3 + 10u^2 + 2a - u + 3,\\
&u^{16} + 3u^{15} + \cdots + 4u + 1\rangle\\
I_2^u = \langle &b + u - 1,\ a + u + 1,\ u^2 - u + 1\rangle\\
I_3^u = \langle &b - u,\ a,\ u^2 - u + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 20 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. $I^u_1 =$
$\langle -u^{15}-2u^{14}+\cdots+2b-5u,\ u^{14}+2u^{13}+\cdots+2a+3,\ u^{16}+3u^{15}+\cdots+4u+1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u^2+1\\u^2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-\frac{1}{2}u^{14}-u^{13}+\cdots+\frac{1}{2}u-\frac{3}{2}\\ \frac{1}{2}u^{15}+u^{14}+\cdots+\frac{1}{2}u^2+\frac{5}{2}u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-\frac{1}{2}u^{15}-\frac{3}{2}u^{14}+\cdots-7u-\frac{1}{2}\\ -\frac{1}{2}u^{15}-u^{14}+\cdots-\frac{5}{2}u-1\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-u^{15}-\frac{5}{2}u^{14}+\cdots-\frac{19}{2}u-\frac{3}{2}\\ -\frac{1}{2}u^{15}-u^{14}+\cdots-\frac{5}{2}u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^{15}-\frac{7}{2}u^{14}+\cdots-\frac{21}{2}u-\frac{3}{2}\\ \frac{1}{2}u^{15}+2u^{14}+\cdots+\frac{13}{2}u^2+\frac{1}{2}u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^5+2u^3+u\\u^5+u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{5}{2}u^{15}+5u^{14}+\frac{35}{2}u^{13}+24u^{12}+46u^{11}+\frac{113}{2}u^{10}+\frac{141}{2}u^9+87u^8+71u^7+\frac{173}{2}u^6+56u^5+49u^4+43u^3+\frac{25}{2}u^2+\frac{37}{2}u+1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{16} - u^{15} + \cdots + 16u + 16$
c_2	$u^{16} + 3u^{15} + \cdots + 8u + 1$
c_3, c_{10}	$u^{16} + 3u^{15} + \cdots + 2u + 1$
c_4, c_7	$u^{16} - 3u^{15} + \cdots - 4u + 1$
c_5	$u^{16} - 11u^{15} + \cdots - 8u + 1$
c_8	$u^{16} + 3u^{15} + \cdots + 4u^2 + 1$
c_9	$u^{16} - 3u^{15} + \cdots + 202u + 73$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{16} + 25y^{15} + \cdots + 896y + 256$
c_2	$y^{16} + 23y^{15} + \cdots + 8y + 1$
c_3, c_{10}	$y^{16} + 3y^{15} + \cdots + 8y + 1$
c_4, c_7	$y^{16} + 11y^{15} + \cdots + 8y + 1$
c_5	$y^{16} - 9y^{15} + \cdots + 88y + 1$
c_8	$y^{16} - 29y^{15} + \cdots + 8y + 1$
c_9	$y^{16} + 43y^{15} + \cdots + 114832y + 5329$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.073480 + 0.057122I$ $a = -0.540627 - 0.419792I$ $b = 0.935752 - 0.958508I$	$8.77898 - 3.44428I$	$-0.71478 + 2.21154I$
$u = -1.073480 - 0.057122I$ $a = -0.540627 + 0.419792I$ $b = 0.935752 + 0.958508I$	$8.77898 + 3.44428I$	$-0.71478 - 2.21154I$
$u = -0.186461 + 1.088150I$ $a = 1.79112 - 0.29650I$ $b = -0.537019 - 1.088350I$	$1.80445 + 3.62763I$	$1.66989 - 3.19198I$
$u = -0.186461 - 1.088150I$ $a = 1.79112 + 0.29650I$ $b = -0.537019 + 1.088350I$	$1.80445 - 3.62763I$	$1.66989 + 3.19198I$
$u = 0.531252 + 0.974365I$ $a = -1.283580 - 0.440428I$ $b = 0.361572 - 0.440175I$	$0.15035 - 2.79885I$	$-1.52268 + 1.51981I$
$u = 0.531252 - 0.974365I$ $a = -1.283580 + 0.440428I$ $b = 0.361572 + 0.440175I$	$0.15035 + 2.79885I$	$-1.52268 - 1.51981I$
$u = 0.044881 + 1.189250I$ $a = 1.25145 - 0.74047I$ $b = -0.849220 + 0.545637I$	$3.73547 - 1.61832I$	$3.41778 + 2.30788I$
$u = 0.044881 - 1.189250I$ $a = 1.25145 + 0.74047I$ $b = -0.849220 - 0.545637I$	$3.73547 + 1.61832I$	$3.41778 - 2.30788I$
$u = 0.460182 + 0.643087I$ $a = -0.627874 + 0.508017I$ $b = -0.003649 + 0.625754I$	$-0.82216 - 1.37285I$	$-5.23267 + 4.39698I$
$u = 0.460182 - 0.643087I$ $a = -0.627874 - 0.508017I$ $b = -0.003649 - 0.625754I$	$-0.82216 + 1.37285I$	$-5.23267 - 4.39698I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.55660+1.34475I$ $a=-1.82052+0.34354I$ $b=\ 0.923344+1.057020I$	$12.7882+9.2506I$	$1.44636-5.03050I$
$u=-0.55660-1.34475I$ $a=-1.82052-0.34354I$ $b=\ 0.923344-1.057020I$	$12.7882-9.2506I$	$1.44636+5.03050I$
$u=-0.48833+1.38689I$ $a=-0.783578+0.870931I$ $b=\ 1.031440-0.889735I$	$13.35520+2.10741I$	$2.23202-0.63352I$
$u=-0.48833-1.38689I$ $a=-0.783578-0.870931I$ $b=\ 1.031440+0.889735I$	$13.35520-2.10741I$	$2.23202+0.63352I$
$u=-0.231448+0.297600I$ $a=-1.48639+0.77777I$ $b=-0.362224+0.817550I$	$-0.31203-1.54541I$	$-2.29594+4.92633I$
$u=-0.231448-0.297600I$ $a=-1.48639-0.77777I$ $b=-0.362224-0.817550I$	$-0.31203+1.54541I$	$-2.29594-4.92633I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8u - 7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = -1.50000 - 0.86603I$ $b = 0.500000 - 0.866025I$	$-4.05977I$	$-3.00000 + 6.92820I$
$u = 0.500000 - 0.866025I$ $a = -1.50000 + 0.86603I$ $b = 0.500000 + 0.866025I$	$4.05977I$	$-3.00000 - 6.92820I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.500000 + 0.866025I$		
$a =$	0	0	0
$b =$	$0.500000 + 0.866025I$		
$u =$	$0.500000 - 0.866025I$		
$a =$	0	0	0
$b =$	$0.500000 - 0.866025I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^4(u^{16} - u^{15} + \cdots + 16u + 16)$
c_2	$((u^2 - u + 1)^2)(u^{16} + 3u^{15} + \cdots + 8u + 1)$
c_3	$((u^2 - u + 1)^2)(u^{16} + 3u^{15} + \cdots + 2u + 1)$
c_4	$((u^2 - u + 1)^2)(u^{16} - 3u^{15} + \cdots - 4u + 1)$
c_5	$((u^2 - u + 1)^2)(u^{16} - 11u^{15} + \cdots - 8u + 1)$
c_7	$((u^2 + u + 1)^2)(u^{16} - 3u^{15} + \cdots - 4u + 1)$
c_8	$((u^2 - u + 1)^2)(u^{16} + 3u^{15} + \cdots + 4u^2 + 1)$
c_9	$((u^2 - u + 1)^2)(u^{16} - 3u^{15} + \cdots + 202u + 73)$
c_{10}	$((u^2 + u + 1)^2)(u^{16} + 3u^{15} + \cdots + 2u + 1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^4(y^{16} + 25y^{15} + \cdots + 896y + 256)$
c_2	$((y^2 + y + 1)^2)(y^{16} + 23y^{15} + \cdots + 8y + 1)$
c_3, c_{10}	$((y^2 + y + 1)^2)(y^{16} + 3y^{15} + \cdots + 8y + 1)$
c_4, c_7	$((y^2 + y + 1)^2)(y^{16} + 11y^{15} + \cdots + 8y + 1)$
c_5	$((y^2 + y + 1)^2)(y^{16} - 9y^{15} + \cdots + 88y + 1)$
c_8	$((y^2 + y + 1)^2)(y^{16} - 29y^{15} + \cdots + 8y + 1)$
c_9	$((y^2 + y + 1)^2)(y^{16} + 43y^{15} + \cdots + 114832y + 5329)$