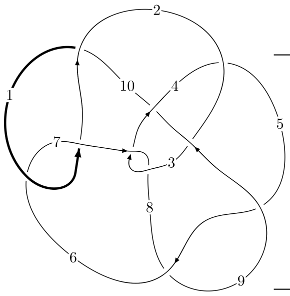
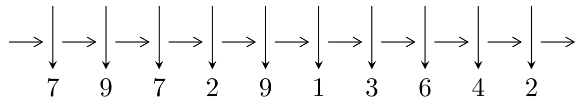
10_{161} $(K10n_{31})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u &= \langle -29u^5 + 62u^4 - 233u^3 - 17u^2 + 73b - 178u - 27,\ -15u^5 + 22u^4 - 118u^3 - 39u^2 + 73a - 228u - 19, \\ &\quad u^6 - 2u^5 + 8u^4 + u^3 + 7u^2 - u - 1 \rangle \\ I_2^u &= \langle u^2 + b + u,\ u^3 + u^2 + a - u,\ u^4 + u^3 - 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 10 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. $\boldsymbol{I_1^u = \langle -29u^5 + 62u^4 + \cdots + 73b - 27,\ -15u^5 + 22u^4 + \cdots + 73a - 19,\ u^6 - 2u^5 + 8u^4 + u^3 + 7u^2 - u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.205479u^5 - 0.301370u^4 + \cdots + 3.12329u + 0.260274 \\ 0.397260u^5 - 0.849315u^4 + \cdots + 2.43836u + 0.369863 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.260274u^5 - 0.315068u^4 + \cdots + 2.35616u + 1.86301 \\ 0.260274u^5 - 0.315068u^4 + \cdots + 2.35616u + 0.863014 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.205479u^5 + 0.301370u^4 + \cdots - 3.12329u - 0.260274 \\ -0.452055u^5 + 0.863014u^4 + \cdots - 2.67123u - 0.972603 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ -0.260274u^5 + 0.315068u^4 + \cdots - 2.35616u - 0.863014 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1 \\ -0.260274u^5 + 0.315068u^4 + \cdots - 2.35616u - 0.863014 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ 0.205479u^5 - 0.301370u^4 + \cdots + 2.12329u + 0.260274 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.657534u^5 + 1.16438u^4 + \cdots - 5.79452u - 1.23288 \\ -0.452055u^5 + 0.863014u^4 + \cdots - 2.67123u - 0.972603 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{145}{73}u^5 - \frac{310}{73}u^4 + \frac{1165}{73}u^3 + \frac{85}{73}u^2 + \frac{744}{73}u - \frac{887}{73}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^6 - 6u^5 + 16u^4 - 21u^3 + 11u^2 + 2u - 4$
c_2, c_5, c_8	$u^6 - 2u^5 + 8u^4 + u^3 + 7u^2 - u - 1$
c_3, c_7, c_9	$u^6 + u^5 + 9u^4 - 11u^3 - 4u^2 - 2u - 1$
c_4	$u^6 - 3u^5 - 3u^4 + 15u^3 - 10u^2 + 1$
c_{10}	$u^6 + 4u^5 + 26u^4 + 73u^3 + 77u^2 + 92u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^6 - 4y^5 + 26y^4 - 73y^3 + 77y^2 - 92y + 16$
c_2, c_5, c_8	$y^6 + 12y^5 + 82y^4 + 105y^3 + 35y^2 - 15y + 1$
c_3, c_7, c_9	$y^6 + 17y^5 + 95y^4 - 191y^3 - 46y^2 + 4y + 1$
c_4	$y^6 - 15y^5 + 79y^4 - 163y^3 + 94y^2 - 20y + 1$
c_{10}	$y^6 + 36y^5 + 246y^4 - 2029y^3 - 6671y^2 - 6000y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.244201 + 0.971888I$ $a = -0.24405 + 1.39509I$ $b = 0.878332 - 0.695514I$	$2.08576 + 2.67800I$	$-9.11994 - 5.42135I$
$u = -0.244201 - 0.971888I$ $a = -0.24405 - 1.39509I$ $b = 0.878332 + 0.695514I$	$2.08576 - 2.67800I$	$-9.11994 + 5.42135I$
$u = 0.403945$ $a = 1.70981$ $b = 1.58486$	-7.78420	-6.88360
$u = -0.304480$ $a = -0.689933$ $b = -0.449415$	-0.637429	-15.6380
$u = 1.19447 + 2.58259I$ $a = 0.234107 - 0.606474I$ $b = 1.55395 + 1.43504I$	$13.6396 - 5.6388I$	$-8.61921 + 2.01004I$
$u = 1.19447 - 2.58259I$ $a = 0.234107 + 0.606474I$ $b = 1.55395 - 1.43504I$	$13.6396 + 5.6388I$	$-8.61921 - 2.01004I$

II. $\boldsymbol{I_2^u = \langle u^2 + b + u,\ u^3 + u^2 + a - u,\ u^4 + u^3 - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^3 - 7u^2 - 7u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^4 - 2u^2 + u + 1$
c_2, c_8	$u^4 + u^3 - 1$
c_3, c_9	$u^4 + u - 1$
c_4	$u^4 + 4u^3 + 4u^2 + u + 1$
c_5	$u^4 - u^3 - 1$
c_6	$u^4 - 2u^2 - u + 1$
c_7	$u^4 - u - 1$
c_{10}	$u^4 - 4u^3 + 6u^2 - 5u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^4 - 4y^3 + 6y^2 - 5y + 1$
c_2, c_5, c_8	$y^4 - y^3 - 2y^2 + 1$
c_3, c_7, c_9	$y^4 - 2y^2 - y + 1$
c_4	$y^4 - 8y^3 + 10y^2 + 7y + 1$
c_{10}	$y^4 - 4y^3 - 2y^2 - 13y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.219447 + 0.914474I$ $a = 0.02868 + 1.94846I$ $b = 1.007550 - 0.513116I$	$3.04135 + 1.96274I$	$-4.02709 - 2.32656I$
$u = -0.219447 - 0.914474I$ $a = 0.02868 - 1.94846I$ $b = 1.007550 + 0.513116I$	$3.04135 - 1.96274I$	$-4.02709 + 2.32656I$
$u = 0.819173$ $a = -0.401572$ $b = -1.49022$	-8.36260	-21.5310
$u = -1.38028$ $a = -0.655786$ $b = -0.524889$	-4.29983	-8.41490

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^4-2u^2+u+1)(u^6-6u^5+16u^4-21u^3+11u^2+2u-4)$
c_2, c_8	$(u^4+u^3-1)(u^6-2u^5+8u^4+u^3+7u^2-u-1)$
c_3, c_9	$(u^4+u-1)(u^6+u^5+9u^4-11u^3-4u^2-2u-1)$
c_4	$(u^4+4u^3+4u^2+u+1)(u^6-3u^5-3u^4+15u^3-10u^2+1)$
c_5	$(u^4-u^3-1)(u^6-2u^5+8u^4+u^3+7u^2-u-1)$
c_6	$(u^4-2u^2-u+1)(u^6-6u^5+16u^4-21u^3+11u^2+2u-4)$
c_7	$(u^4-u-1)(u^6+u^5+9u^4-11u^3-4u^2-2u-1)$
c_{10}	$(u^4-4u^3+6u^2-5u+1)(u^6+4u^5+\cdots+92u+16)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$(y^4 - 4y^3 + 6y^2 - 5y + 1)(y^6 - 4y^5 + \cdots - 92y + 16)$
c_2, c_5, c_8	$(y^4 - y^3 - 2y^2 + 1)(y^6 + 12y^5 + 82y^4 + 105y^3 + 35y^2 - 15y + 1)$
c_3, c_7, c_9	$(y^4 - 2y^2 - y + 1)(y^6 + 17y^5 + 95y^4 - 191y^3 - 46y^2 + 4y + 1)$
c_4	$(y^4 - 8y^3 + 10y^2 + 7y + 1)(y^6 - 15y^5 + \cdots - 20y + 1)$
c_{10}	$(y^4 - 4y^3 - 2y^2 - 13y + 1)$ $\cdot\,(y^6 + 36y^5 + 246y^4 - 2029y^3 - 6671y^2 - 6000y + 256)$