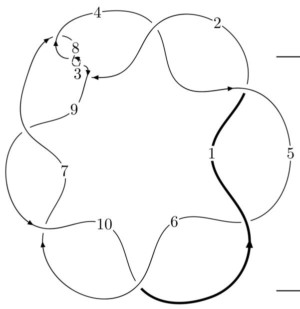
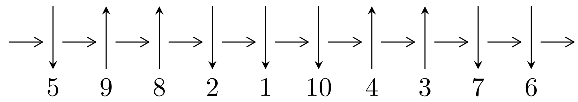
10_3 $(K10a_{117})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{12} - u^{11} + 9u^{10} - 8u^9 + 29u^8 - 22u^7 + 40u^6 - 24u^5 + 22u^4 - 9u^3 + 3u^2 + 1 \rangle$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 12 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.

$$I_1^u = \langle u^{12} - u^{11} + 9u^{10} - 8u^9 + 29u^8 - 22u^7 + 40u^6 - 24u^5 + 22u^4 - 9u^3 + 3u^2 + 1 \rangle$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^8 + 5u^6 + 7u^4 + 4u^2 + 1 \\ -u^{10} - 6u^8 - 11u^6 - 6u^4 + u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^9 + 6u^7 + 11u^5 + 6u^3 - u \\ u^9 + 5u^7 + 7u^5 + 4u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{10} - 4u^9 + 32u^8 - 28u^7 + 88u^6 - 64u^5 + 96u^4 - 52u^3 + 36u^2 - 12u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_6, c_9, c_{10}	$u^{12} - u^{11} + \cdots + 3u^2 + 1$
c_2, c_3, c_7 c_8	$u^{12} - u^{11} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_6, c_9, c_{10}	$y^{12} + 17y^{11} + \cdots + 6y + 1$
c_2, c_3, c_7 c_8	$y^{12} + 13y^{11} + \cdots + 6y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.088430+1.124390I$	$4.57295+1.88989I$	$3.52820-3.98383I$
$u=-0.088430-1.124390I$	$4.57295-1.88989I$	$3.52820+3.98383I$
$u=\ 0.262297+1.106610I$	$-1.85830-4.37390I$	$-0.54525+3.77995I$
$u=\ 0.262297-1.106610I$	$-1.85830+4.37390I$	$-0.54525-3.77995I$
$u=\ 0.520232+0.348843I$	$-6.43201-1.71442I$	$-5.08194+3.66811I$
$u=\ 0.520232-0.348843I$	$-6.43201+1.71442I$	$-5.08194-3.66811I$
$u=-0.237731+0.323766I$	$-0.073452+0.847212I$	$-1.79874-8.22796I$
$u=-0.237731-0.323766I$	$-0.073452-0.847212I$	$-1.79874+8.22796I$
$u=\ 0.06408+1.75550I$	$8.44501-5.73210I$	$0.29636+2.78231I$
$u=\ 0.06408-1.75550I$	$8.44501+5.73210I$	$0.29636-2.78231I$
$u=-0.02045+1.76385I$	$15.0850+2.3421I$	$3.60137-2.79467I$
$u=-0.02045-1.76385I$	$15.0850-2.3421I$	$3.60137+2.79467I$

II. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_6, c_9, c_{10}	$u^{12} - u^{11} + \cdots + 3u^2 + 1$
c_2, c_3, c_7 c_8	$u^{12} - u^{11} + \cdots - 2u + 1$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_6, c_9, c_{10}	$y^{12} + 17y^{11} + \cdots + 6y + 1$
c_2, c_3, c_7 c_8	$y^{12} + 13y^{11} + \cdots + 6y + 1$