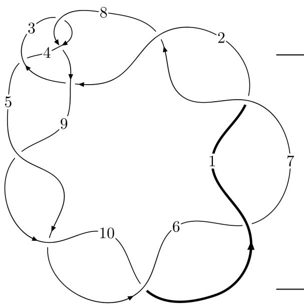
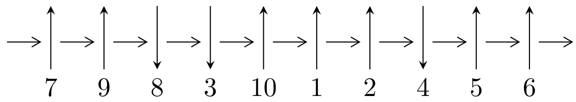
10_5 $(K10a_{56})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle u^{15} - 3u^{13} - u^{12} + 6u^{11} + 2u^{10} - 6u^9 - 4u^8 + 5u^7 + 3u^6 - 3u^5 - 3u^4 + 3u^3 + u^2 - u - 1\rangle$
$I_2^u = \langle u + 1\rangle$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 16 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. $I_1^u = \langle u^{15}-3u^{13}-u^{12}+6u^{11}+2u^{10}-6u^9-4u^8+5u^7+3u^6-3u^5-3u^4+3u^3+u^2-u-1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^3 \\ u^5-u^3+u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^8-u^6+u^4+1 \\ -u^{10}+2u^8-3u^6+2u^4-u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^{13}-2u^{11}+3u^9-2u^7+2u^5-2u^3+u \\ -u^{12}+2u^{10}+u^9-4u^8-u^7+3u^6+u^5-3u^4+u^3+u^2-1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^3 \\ -u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^8-u^6+u^4+1 \\ -u^8+2u^6-2u^4 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{13}+2u^{11}-3u^9+2u^7-2u^5+2u^3-u \\ u^{13}-3u^{11}+5u^9-4u^7+2u^5-u^3+u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -4u^{14}+12u^{12}+4u^{11}-20u^{10}-8u^9+16u^8+12u^7-8u^6-8u^5+8u^4+4u^3-8u^2-4u+10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_7, c_9, c_{10}	$u^{15} + 2u^{14} + \cdots + u + 1$
c_2	$u^{15} - 3u^{14} + \cdots + 21u - 5$
c_3, c_8	$u^{15} - 3u^{13} + \cdots - u + 1$
c_4	$u^{15} + 6u^{14} + \cdots + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_9, c_{10}	$y^{15} - 22y^{14} + \cdots + 3y - 1$
c_2	$y^{15} - 3y^{14} + \cdots + 241y - 25$
c_3, c_8	$y^{15} - 6y^{14} + \cdots + 3y - 1$
c_4	$y^{15} + 6y^{14} + \cdots - 17y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.938536 + 0.379610I$	$-1.44795 - 1.44538I$	$0.924314 + 0.710077I$
$u = \quad 0.938536 - 0.379610I$	$-1.44795 + 1.44538I$	$0.924314 - 0.710077I$
$u = -0.496009 + 0.834142I$	$17.7129 - 1.8405I$	$12.03822 + 0.10978I$
$u = -0.496009 - 0.834142I$	$17.7129 + 1.8405I$	$12.03822 - 0.10978I$
$u = -1.004360 + 0.506467I$	$-0.48193 + 4.24481I$	$5.44692 - 7.82705I$
$u = -1.004360 - 0.506467I$	$-0.48193 - 4.24481I$	$5.44692 + 7.82705I$
$u = \quad 0.483842 + 0.722916I$	$6.64012 + 1.24233I$	$12.05713 - 0.59928I$
$u = \quad 0.483842 - 0.722916I$	$6.64012 - 1.24233I$	$12.05713 + 0.59928I$
$u = \quad 1.16849$	11.7390	6.35620
$u = \quad 1.053770 + 0.600336I$	$4.96865 - 6.29824I$	$9.18075 + 5.76248I$
$u = \quad 1.053770 - 0.600336I$	$4.96865 + 6.29824I$	$9.18075 - 5.76248I$
$u = -1.090290 + 0.650224I$	$15.9255 + 7.3739I$	$9.68126 - 4.56542I$
$u = -1.090290 - 0.650224I$	$15.9255 - 7.3739I$	$9.68126 + 4.56542I$
$u = -0.469738 + 0.412319I$	$0.983732 - 0.215278I$	$10.49328 + 1.71815I$
$u = -0.469738 - 0.412319I$	$0.983732 + 0.215278I$	$10.49328 - 1.71815I$

II. $I_2^u = \langle u + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$	1.64493	6.00000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_7, c_9, c_{10}	$(u-1)(u^{15}+2u^{14}+\cdots+u+1)$
c_2	$u(u^{15}-3u^{14}+\cdots+21u-5)$
c_3, c_8	$(u-1)(u^{15}-3u^{13}+\cdots-u+1)$
c_4	$(u+1)(u^{15}+6u^{14}+\cdots+3u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_9, c_{10}	$(y-1)(y^{15} - 22y^{14} + \cdots + 3y - 1)$
c_2	$y(y^{15} - 3y^{14} + \cdots + 241y - 25)$
c_3, c_8	$(y-1)(y^{15} - 6y^{14} + \cdots + 3y - 1)$
c_4	$(y-1)(y^{15} + 6y^{14} + \cdots - 17y - 1)$