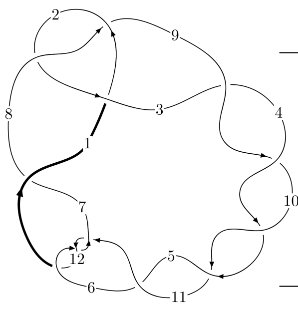
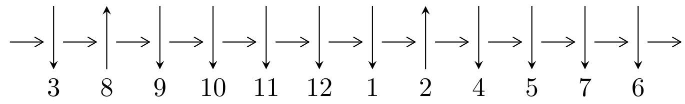
$12a_{0723}$ $(K12a_{0723})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$2,9 \underset{c_8}{\rightarrow} 8 \underset{c_2}{\rightarrow} 3 \underset{c_3}{\rightarrow} 4 \underset{c_9}{\rightarrow} 10 \underset{c_4}{\rightarrow} 5 \underset{c_{10}}{\rightarrow} 11 \underset{c_1}{\rightarrow} 1 \underset{c_7}{\rightarrow} 7 \underset{c_{11}}{\rightarrow} 12 \underset{c_6}{\rightarrow} 6 \gg c_5, c_{12}$$

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

$$I_1^u = \langle u^{22} - u^{21} + \cdots - 2u + 1 \rangle$$
$$I_2^u = \langle u^9 + 3u^7 + u^6 + 3u^5 + 2u^4 - u^3 + u^2 - 2u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 31 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. $I_1^u = \langle u^{22} - u^{21} + \cdots - 2u + 1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^9 + 2u^7 + u^5 - 2u^3 - u \\ -u^9 - 3u^7 - 3u^5 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^{12} + 3u^{10} + 3u^8 - 2u^6 - 4u^4 - u^2 + 1 \\ -u^{12} - 4u^{10} - 6u^8 - 2u^6 + 3u^4 + 2u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^6 - u^4 + 1 \\ -u^8 - 2u^6 - 2u^4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^{14} + 5u^{12} + 10u^{10} + 7u^8 - 4u^6 - u^5 - 8u^4 - 2u^3 - 2u^2 - u + 1 \\ u^{21} + 7u^{19} + \cdots + u^2 - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^{15} - 4u^{13} - 6u^{11} + 8u^7 + 6u^5 - 2u^3 - 2u \\ u^{15} + 5u^{13} + 10u^{11} + 7u^9 - 4u^7 - 8u^5 - 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -4u^{21} + 4u^{20} - 24u^{19} + 24u^{18} - 64u^{17} + 68u^{16} - 80u^{15} + 100u^{14} - 24u^{13} + 68u^{12} + 52u^{11} - 16u^{10} + 36u^9 - 52u^8 - 28u^7 - 28u^6 - 32u^5 + 8u^4 + 4u^3 + 4u^2 + 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} + 13u^{21} + \cdots + 2u + 1$
c_2, c_8	$u^{22} - u^{21} + \cdots - 2u + 1$
c_3, c_4, c_5 c_7, c_9, c_{10}	$u^{22} - 2u^{21} + \cdots - u + 2$
c_6, c_{11}, c_{12}	$u^{22} - u^{21} + \cdots + u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} - 7y^{21} + \cdots + 2y + 1$
c_2, c_8	$y^{22} + 13y^{21} + \cdots + 2y + 1$
c_3, c_4, c_5 c_7, c_9, c_{10}	$y^{22} - 30y^{21} + \cdots + 19y + 4$
c_6, c_{11}, c_{12}	$y^{22} + 17y^{21} + \cdots + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.946141 + 0.011490I$	$-13.5904 - 5.0425I$	$-10.78024 + 2.84693I$
$u = 0.946141 - 0.011490I$	$-13.5904 + 5.0425I$	$-10.78024 - 2.84693I$
$u = 0.416424 + 0.993762I$	$0.95586 + 5.59232I$	$-9.07345 - 8.52361I$
$u = 0.416424 - 0.993762I$	$0.95586 - 5.59232I$	$-9.07345 + 8.52361I$
$u = -0.327821 + 1.035380I$	$-3.20510 - 2.90050I$	$-16.7585 + 6.2360I$
$u = -0.327821 - 1.035380I$	$-3.20510 + 2.90050I$	$-16.7585 - 6.2360I$
$u = 0.153534 + 0.829883I$	$-0.664834 + 0.970955I$	$-10.56839 - 6.31245I$
$u = 0.153534 - 0.829883I$	$-0.664834 - 0.970955I$	$-10.56839 + 6.31245I$
$u = -0.373530 + 0.720587I$	$3.67591 - 1.72367I$	$-3.04572 + 4.67737I$
$u = -0.373530 - 0.720587I$	$3.67591 + 1.72367I$	$-3.04572 - 4.67737I$
$u = -0.768463 + 0.066318I$	$-2.56255 + 4.06172I$	$-9.74928 - 3.64554I$
$u = -0.768463 - 0.066318I$	$-2.56255 - 4.06172I$	$-9.74928 + 3.64554I$
$u = -0.454887 + 1.179480I$	$-5.83119 - 8.50268I$	$-12.8572 + 7.0300I$
$u = -0.454887 - 1.179480I$	$-5.83119 + 8.50268I$	$-12.8572 - 7.0300I$
$u = 0.425814 + 1.198730I$	$-9.89307 + 4.30260I$	$-17.3404 - 3.7895I$
$u = 0.425814 - 1.198730I$	$-9.89307 - 4.30260I$	$-17.3404 + 3.7895I$
$u = 0.487685 + 1.287980I$	$-17.5204 + 10.1457I$	$-13.8263 - 5.6856I$
$u = 0.487685 - 1.287980I$	$-17.5204 - 10.1457I$	$-13.8263 + 5.6856I$
$u = -0.481775 + 1.292500I$	$17.8662 - 5.0843I$	$-17.1007 + 2.8764I$
$u = -0.481775 - 1.292500I$	$17.8662 + 5.0843I$	$-17.1007 - 2.8764I$
$u = 0.476877 + 0.292674I$	$2.80571 - 1.90068I$	$-4.89982 + 3.73749I$
$u = 0.476877 - 0.292674I$	$2.80571 + 1.90068I$	$-4.89982 - 3.73749I$

II. $I_2^u = \langle u^9 + 3u^7 + u^6 + 3u^5 + 2u^4 - u^3 + u^2 - 2u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9+6u^8+15u^7+15u^6-5u^5-24u^4-13u^3+7u^2+6u-1$
c_2, c_6, c_8 c_{11}, c_{12}	$u^9+3u^7+u^6+3u^5+2u^4-u^3+u^2-2u-1$
c_3, c_4, c_5 c_7, c_9, c_{10}	$(u^3+u^2-2u-1)^3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^9 - 6y^8 + \cdots + 50y - 1$
c_2, c_6, c_8 c_{11}, c_{12}	$y^9 + 6y^8 + 15y^7 + 15y^6 - 5y^5 - 24y^4 - 13y^3 + 7y^2 + 6y - 1$
c_3, c_4, c_5 c_7, c_9, c_{10}	$(y^3 - 5y^2 + 6y - 1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.948532$	-17.6243	-14.0000
$u=\quad 0.193528+1.054680I$	-0.704972	-14.0000
$u=\quad 0.193528-1.054680I$	-0.704972	-14.0000
$u=\quad 0.777314$	-6.34475	-14.0000
$u=-0.388657+1.205470I$	-6.34475	-14.0000
$u=-0.388657-1.205470I$	-6.34475	-14.0000
$u=\quad 0.474266+1.294140I$	-17.6243	-14.0000
$u=\quad 0.474266-1.294140I$	-17.6243	-14.0000
$u=-0.387056$	-0.704972	-14.0000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^9+6u^8+15u^7+15u^6-5u^5-24u^4-13u^3+7u^2+6u-1)$ $\cdot(u^{22}+13u^{21}+\cdots+2u+1)$
c_2, c_8	$(u^9+3u^7+\cdots-2u-1)(u^{22}-u^{21}+\cdots-2u+1)$
c_3, c_4, c_5 c_7, c_9, c_{10}	$((u^3+u^2-2u-1)^3)(u^{22}-2u^{21}+\cdots-u+2)$
c_6, c_{11}, c_{12}	$(u^9+3u^7+\cdots-2u-1)(u^{22}-u^{21}+\cdots+u^2+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^9 - 6y^8 + \cdots + 50y - 1)(y^{22} - 7y^{21} + \cdots + 2y + 1)$
c_2, c_8	$(y^9 + 6y^8 + 15y^7 + 15y^6 - 5y^5 - 24y^4 - 13y^3 + 7y^2 + 6y - 1)$ $\cdot (y^{22} + 13y^{21} + \cdots + 2y + 1)$
c_3, c_4, c_5 c_7, c_9, c_{10}	$((y^3 - 5y^2 + 6y - 1)^3)(y^{22} - 30y^{21} + \cdots + 19y + 4)$
c_6, c_{11}, c_{12}	$(y^9 + 6y^8 + 15y^7 + 15y^6 - 5y^5 - 24y^4 - 13y^3 + 7y^2 + 6y - 1)$ $\cdot (y^{22} + 17y^{21} + \cdots + 2y + 1)$