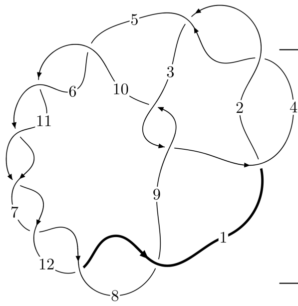
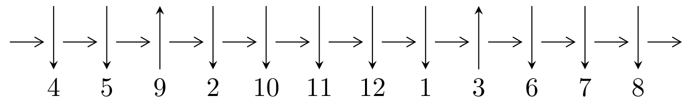
$12a_{0838}$ $(K12a_{0838})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$7{,}12 \xrightarrow[c_7]{} 8 \xrightarrow[c_{12}]{} 1{,}4 \xrightarrow[c_1]{} 2 \xrightarrow[c_8]{} 9 \xrightarrow[c_3]{} 3 \xrightarrow[c_{11}]{} 11 \xrightarrow[c_6]{} 6 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_5]{} 5 \twoheadrightarrow c_2, c_4, c_9$$

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

$$I_1^u = \langle u^{22} - 17u^{20} + \cdots + b + 1,\ u^{22} + u^{21} + \cdots + a + 2,\ u^{23} + 2u^{22} + \cdots - 12u^2 + 1\rangle$$
$$I_2^u = \langle -u^2 + b + 1,\ -u^2 + a + 2,\ u^3 - u^2 - 2u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 26 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.

$$I_1^u = \langle u^{22} - 17u^{20} + \cdots + b + 1,\ u^{22} + u^{21} + \cdots + a + 2,\ u^{23} + 2u^{22} + \cdots - 12u^2 + 1\rangle$$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{22} - u^{21} + \cdots + 11u - 2 \\ -u^{22} + 17u^{20} + \cdots + 2u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{21} - 16u^{19} + \cdots - 11u + 2 \\ -u^{22} + 16u^{20} + \cdots + 9u^2 - u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{22} - u^{21} + \cdots + 10u - 1 \\ 3u^{22} - 48u^{20} + \cdots + u + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^4 - 3u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 5u^{22} + 8u^{21} - 81u^{20} - 126u^{19} + 556u^{18} + 835u^{17} - 2107u^{16} - 3020u^{15} + 4822u^{14} + 6443u^{13} - 6906u^{12} - 8110u^{11} + 6388u^{10} + 5547u^9 - 4175u^8 - 1464u^7 + 2179u^6 - 280u^5 - 757u^4 + 196u^3 + 80u^2 - 23u - 5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4	$u^{23} - 4u^{22} + \cdots + 5u - 1$
c_3, c_9	$u^{23} - u^{22} + \cdots - 28u - 8$
c_5, c_6, c_7 c_8, c_{10}, c_{11} c_{12}	$u^{23} - 2u^{22} + \cdots + 12u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^{23} - 26y^{22} + \cdots + 57y - 1$
c_3, c_9	$y^{23} + 21y^{22} + \cdots + 592y - 64$
c_5, c_6, c_7 c_8, c_{10}, c_{11} c_{12}	$y^{23} - 36y^{22} + \cdots + 24y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.899656 + 0.367597I$ $a = -0.129750 - 0.316248I$ $b = 1.37701 + 0.64432I$	$-10.62640 + 4.79693I$	$-18.4963 - 4.5941I$
$u = -0.899656 - 0.367597I$ $a = -0.129750 + 0.316248I$ $b = 1.37701 - 0.64432I$	$-10.62640 - 4.79693I$	$-18.4963 + 4.5941I$
$u = 0.869158$ $a = -0.611937$ $b = 1.66429$	-5.48753	-17.2890
$u = -0.821958 + 0.135064I$ $a = -0.253247 + 1.039930I$ $b = -0.445233 + 0.309895I$	$-3.58507 + 2.11349I$	$-17.2477 - 5.0037I$
$u = -0.821958 - 0.135064I$ $a = -0.253247 - 1.039930I$ $b = -0.445233 - 0.309895I$	$-3.58507 - 2.11349I$	$-17.2477 + 5.0037I$
$u = -1.29295$ $a = -0.815349$ $b = -0.215176$	-6.99093	-10.8460
$u = 0.292199 + 0.547469I$ $a = -0.70419 + 1.55774I$ $b = -0.871306 + 0.010708I$	$-6.92984 - 1.76193I$	$-14.7690 + 3.3456I$
$u = 0.292199 - 0.547469I$ $a = -0.70419 - 1.55774I$ $b = -0.871306 - 0.010708I$	$-6.92984 + 1.76193I$	$-14.7690 - 3.3456I$
$u = 1.43893 + 0.05540I$ $a = -0.573918 + 0.627821I$ $b = -0.269240 + 1.142030I$	$-11.26780 - 2.80601I$	$-17.5990 + 3.0357I$
$u = 1.43893 - 0.05540I$ $a = -0.573918 - 0.627821I$ $b = -0.269240 - 1.142030I$	$-11.26780 + 2.80601I$	$-17.5990 - 3.0357I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.45875$ $a = 2.49389$ $b = 1.79311$	-13.4340	-18.2600
$u = 0.523970$ $a = 0.174078$ $b = -0.424666$	-0.880680	-10.8440
$u = 1.46882 + 0.17141I$ $a = 1.75548 - 0.96316I$ $b = 1.371010 - 0.251551I$	$-18.5944 - 6.8465I$	$-19.2959 + 3.6692I$
$u = 1.46882 - 0.17141I$ $a = 1.75548 + 0.96316I$ $b = 1.371010 + 0.251551I$	$-18.5944 + 6.8465I$	$-19.2959 - 3.6692I$
$u = 0.198961 + 0.259775I$ $a = 1.162630 + 0.050871I$ $b = 0.098000 - 0.372398I$	$-0.444837 - 0.821194I$	$-9.62649 + 8.14856I$
$u = 0.198961 - 0.259775I$ $a = 1.162630 - 0.050871I$ $b = 0.098000 + 0.372398I$	$-0.444837 + 0.821194I$	$-9.62649 - 8.14856I$
$u = -0.236506$ $a = -3.87954$ $b = -0.871608$	-1.99765	0.552820
$u = 1.81292$ $a = 1.34454$ $b = 2.75785$	-18.5335	-9.99140
$u = -1.85429 + 0.01361I$ $a = 1.048680 + 0.206116I$ $b = 2.22063 + 0.96437I$	$15.7173 + 3.1639I$	$-17.6160 - 2.4156I$
$u = -1.85429 - 0.01361I$ $a = 1.048680 - 0.206116I$ $b = 2.22063 - 0.96437I$	$15.7173 - 3.1639I$	$-17.6160 + 2.4156I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.85896$ $a = -3.64519$ $b = -8.09850$	13.4167	-18.4390
$u = -1.86140 + 0.04356I$ $a = -2.83593 - 1.10657I$ $b = -6.28352 - 2.42136I$	$8.27161 + 7.98934I$	$-19.2912 - 3.1659I$
$u = -1.86140 - 0.04356I$ $a = -2.83593 + 1.10657I$ $b = -6.28352 + 2.42136I$	$8.27161 - 7.98934I$	$-19.2912 + 3.1659I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^2-u-23$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^3$
c_3, c_9	y^3
c_5, c_6, c_7 c_8, c_{10}, c_{11} c_{12}	$y^3 - 5y^2 + 6y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.24698$ $a=-0.445042$ $b=\ \ 0.554958$	-7.98968	-20.1980
$u=\ \ 0.445042$ $a=-1.80194$ $b=-0.801938$	-2.34991	-23.2470
$u=\ \ 1.80194$ $a=\ \ 1.24698$ $b=\ \ 2.24698$	-19.2692	-21.5550

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2	$((u-1)^3)(u^{23} - 4u^{22} + \cdots + 5u - 1)$
c_3, c_9	$u^3(u^{23} - u^{22} + \cdots - 28u - 8)$
c_4	$((u+1)^3)(u^{23} - 4u^{22} + \cdots + 5u - 1)$
c_5, c_6, c_7 c_8	$(u^3 - u^2 - 2u + 1)(u^{23} - 2u^{22} + \cdots + 12u^2 - 1)$
c_{10}, c_{11}, c_{12}	$(u^3 + u^2 - 2u - 1)(u^{23} - 2u^{22} + \cdots + 12u^2 - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$((y-1)^3)(y^{23} - 26y^{22} + \cdots + 57y - 1)$
c_3, c_9	$y^3(y^{23} + 21y^{22} + \cdots + 592y - 64)$
c_5, c_6, c_7 c_8, c_{10}, c_{11} c_{12}	$(y^3 - 5y^2 + 6y - 1)(y^{23} - 36y^{22} + \cdots + 24y - 1)$