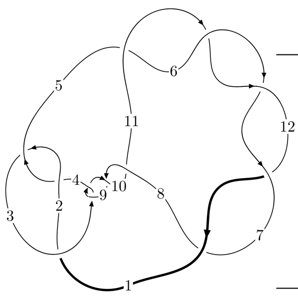
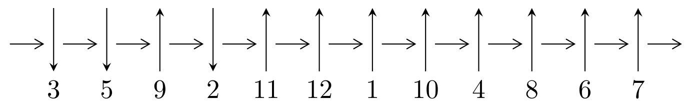
$12a_{0160}$ $(K12a_{0160})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{51} + u^{50} + \cdots + b - u,\ -u^{51} - u^{50} + \cdots + a - 1,\ u^{52} + 2u^{51} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle b + u + 2,\ a - u - 1,\ u^2 - u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 54 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.

$$\boldsymbol{I_1^u = \langle u^{51} + u^{50} + \cdots + b - u,\ -u^{51} - u^{50} + \cdots + a - 1,\ u^{52} + 2u^{51} + \cdots + 2u + 1 \rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u^{51} + u^{50} + \cdots + 7u + 1 \\ -u^{51} - u^{50} + \cdots - 4u^2 + u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u^{50} + u^{49} + \cdots + 18u^2 + 5u \\ u^{51} - 32u^{49} + \cdots + 2u + 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -2u^{51} - u^{50} + \cdots - 7u - 1 \\ 3u^{51} + 2u^{50} + \cdots + u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^7 - 4u^5 + 4u^3 - 2u \\ -u^9 + 5u^7 - 7u^5 + 2u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{12} + 7u^{10} - 17u^8 + 18u^6 - 10u^4 + u^2 + 1 \\ u^{14} - 8u^{12} + 23u^{10} - 28u^8 + 12u^6 + 2u^4 - 3u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8u^{51} + 9u^{50} + \cdots - 9u + 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{52} + 29u^{51} + \cdots + 29u + 1$
c_2, c_4	$u^{52} - 3u^{51} + \cdots - 9u + 1$
c_3, c_9	$u^{52} - u^{51} + \cdots - 4u + 4$
c_5, c_6, c_7 c_{11}, c_{12}	$u^{52} - 2u^{51} + \cdots - 2u + 1$
c_8, c_{10}	$u^{52} - 15u^{51} + \cdots - 248u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{52} - 9y^{51} + \cdots - 593y + 1$
c_2, c_4	$y^{52} - 29y^{51} + \cdots - 29y + 1$
c_3, c_9	$y^{52} - 15y^{51} + \cdots - 248y + 16$
c_5, c_6, c_7 c_{11}, c_{12}	$y^{52} - 66y^{51} + \cdots + 6y + 1$
c_8, c_{10}	$y^{52} + 41y^{51} + \cdots - 9504y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002200 + 0.101685I$ $a = 0.620325 + 0.568001I$ $b = -0.338736 - 0.201694I$	$5.42587 + 0.91536I$	$15.8250 + 0.I$
$u = 1.002200 - 0.101685I$ $a = 0.620325 - 0.568001I$ $b = -0.338736 + 0.201694I$	$5.42587 - 0.91536I$	$15.8250 + 0.I$
$u = 0.900408 + 0.415514I$ $a = -0.686316 + 0.426160I$ $b = -1.32817 - 1.98079I$	$-2.89703 + 10.97490I$	$6.84879 - 9.10557I$
$u = 0.900408 - 0.415514I$ $a = -0.686316 - 0.426160I$ $b = -1.32817 + 1.98079I$	$-2.89703 - 10.97490I$	$6.84879 + 9.10557I$
$u = 0.993272 + 0.210152I$ $a = 0.306112 - 0.310737I$ $b = -1.09437 - 1.05834I$	$4.36145 + 5.53576I$	$12.8247 - 7.7042I$
$u = 0.993272 - 0.210152I$ $a = 0.306112 + 0.310737I$ $b = -1.09437 + 1.05834I$	$4.36145 - 5.53576I$	$12.8247 + 7.7042I$
$u = 0.887221 + 0.376671I$ $a = 0.216936 + 0.254530I$ $b = 0.512607 - 0.524064I$	$0.28073 + 6.02352I$	$10.12786 - 6.24694I$
$u = 0.887221 - 0.376671I$ $a = 0.216936 - 0.254530I$ $b = 0.512607 + 0.524064I$	$0.28073 - 6.02352I$	$10.12786 + 6.24694I$
$u = -0.853207 + 0.384206I$ $a = 0.903606 + 0.104965I$ $b = 1.14253 - 1.97773I$	$-3.75080 - 4.74137I$	$5.53664 + 4.96484I$
$u = -0.853207 - 0.384206I$ $a = 0.903606 - 0.104965I$ $b = 1.14253 + 1.97773I$	$-3.75080 + 4.74137I$	$5.53664 - 4.96484I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.825680 + 0.382316I$ $a = -0.111743 - 0.969230I$ $b = 1.57224 + 1.67207I$	$-3.92292 + 1.91465I$	$5.33907 - 3.86780I$
$u = 0.825680 - 0.382316I$ $a = -0.111743 + 0.969230I$ $b = 1.57224 - 1.67207I$	$-3.92292 - 1.91465I$	$5.33907 + 3.86780I$
$u = -0.768059 + 0.439344I$ $a = -0.195399 - 0.893583I$ $b = -1.17619 + 1.70576I$	$-3.69972 + 3.78870I$	$5.61035 - 2.00055I$
$u = -0.768059 - 0.439344I$ $a = -0.195399 + 0.893583I$ $b = -1.17619 - 1.70576I$	$-3.69972 - 3.78870I$	$5.61035 + 2.00055I$
$u = -0.869138 + 0.090566I$ $a = -0.624942 - 0.906814I$ $b = 0.124670 - 0.964759I$	$1.28982 - 1.61982I$	$10.04112 + 4.38556I$
$u = -0.869138 - 0.090566I$ $a = -0.624942 + 0.906814I$ $b = 0.124670 + 0.964759I$	$1.28982 + 1.61982I$	$10.04112 - 4.38556I$
$u = -0.778648 + 0.361263I$ $a = -0.381137 + 0.106397I$ $b = -0.541900 - 0.279638I$	$-0.394378 - 0.492969I$	$9.04055 + 1.45710I$
$u = -0.778648 - 0.361263I$ $a = -0.381137 - 0.106397I$ $b = -0.541900 + 0.279638I$	$-0.394378 + 0.492969I$	$9.04055 - 1.45710I$
$u = 0.803120$ $a = -0.675162$ $b = 2.05557$	0.0369555	14.8580
$u = -0.062250 + 0.639708I$ $a = -3.04229 + 0.33326I$ $b = 0.028753 - 0.273837I$	$-5.82794 - 7.41916I$	$2.02402 + 6.23213I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.062250-0.639708I$ $a=-3.04229-0.33326I$ $b=\ \ 0.028753+0.273837I$	$-5.82794+7.41916I$	$2.02402-6.23213I$
$u=\ \ 0.013286+0.599769I$ $a=\ \ 3.16045+0.60539I$ $b=\ \ 0.050264-0.426280I$	$-6.37556+1.41175I$	$0.512224-0.772694I$
$u=\ \ 0.013286-0.599769I$ $a=\ \ 3.16045-0.60539I$ $b=\ \ 0.050264+0.426280I$	$-6.37556-1.41175I$	$0.512224+0.772694I$
$u=-0.051648+0.589699I$ $a=-0.118187+0.761845I$ $b=\ \ 0.019107+0.393978I$	$-2.57484-2.75018I$	$4.73313+3.20106I$
$u=-0.051648-0.589699I$ $a=-0.118187-0.761845I$ $b=\ \ 0.019107-0.393978I$	$-2.57484+2.75018I$	$4.73313-3.20106I$
$u=-0.429505+0.363992I$ $a=-0.283846+0.092161I$ $b=-0.501430+0.658806I$	$0.985801+0.373941I$	$10.64681+0.40187I$
$u=-0.429505-0.363992I$ $a=-0.283846-0.092161I$ $b=-0.501430-0.658806I$	$0.985801-0.373941I$	$10.64681-0.40187I$
$u=-0.260485+0.467225I$ $a=-1.65751+0.54880I$ $b=-0.417669-0.022465I$	$0.44749-3.27943I$	$7.33672+8.28421I$
$u=-0.260485-0.467225I$ $a=-1.65751-0.54880I$ $b=-0.417669+0.022465I$	$0.44749+3.27943I$	$7.33672-8.28421I$
$u=-0.449135$ $a=-0.461577$ $b=-0.372331$	0.706606	14.1070

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.58988$ $a = 2.20327$ $b = -3.13699$	7.80979	0
$u = 1.62815 + 0.10007I$ $a = 2.77026 + 1.09581I$ $b = -3.78872 - 1.31091I$	$4.49371 - 1.83490I$	0
$u = 1.62815 - 0.10007I$ $a = 2.77026 - 1.09581I$ $b = -3.78872 + 1.31091I$	$4.49371 + 1.83490I$	0
$u = 1.65492 + 0.07803I$ $a = 0.986803 - 0.272171I$ $b = -1.64509 + 0.11104I$	$8.08427 + 2.03863I$	0
$u = 1.65492 - 0.07803I$ $a = 0.986803 + 0.272171I$ $b = -1.64509 - 0.11104I$	$8.08427 - 2.03863I$	0
$u = -1.66220 + 0.09221I$ $a = -3.12446 + 1.04099I$ $b = 4.21717 - 1.24397I$	$4.73033 - 3.67102I$	0
$u = -1.66220 - 0.09221I$ $a = -3.12446 - 1.04099I$ $b = 4.21717 + 1.24397I$	$4.73033 + 3.67102I$	0
$u = -1.67125$ $a = -3.25510$ $b = 4.37303$	8.84251	0
$u = 1.67019 + 0.09664I$ $a = -2.99043 - 2.84568I$ $b = 4.30768 + 4.47913I$	$5.04044 + 6.55656I$	0
$u = 1.67019 - 0.09664I$ $a = -2.99043 + 2.84568I$ $b = 4.30768 - 4.47913I$	$5.04044 - 6.55656I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.68080 + 0.01746I$ $a = 0.01213 - 2.15798I$ $b = -0.39566 + 3.61473I$	$10.32590 + 1.99807I$	0
$u = 1.68080 - 0.01746I$ $a = 0.01213 + 2.15798I$ $b = -0.39566 - 3.61473I$	$10.32590 - 1.99807I$	0
$u = -1.68130 + 0.09775I$ $a = -0.765995 - 0.522974I$ $b = 1.297310 + 0.421881I$	$9.25802 - 7.84981I$	0
$u = -1.68130 - 0.09775I$ $a = -0.765995 + 0.522974I$ $b = 1.297310 - 0.421881I$	$9.25802 + 7.84981I$	0
$u = -1.68310 + 0.11088I$ $a = 3.15694 - 2.48000I$ $b = -4.50686 + 3.86266I$	$6.1040 - 13.0204I$	0
$u = -1.68310 - 0.11088I$ $a = 3.15694 + 2.48000I$ $b = -4.50686 - 3.86266I$	$6.1040 + 13.0204I$	0
$u = -1.70835 + 0.02404I$ $a = 0.042019 + 0.436305I$ $b = 0.256089 - 1.030400I$	$15.0483 - 1.4053I$	0
$u = -1.70835 - 0.02404I$ $a = 0.042019 - 0.436305I$ $b = 0.256089 + 1.030400I$	$15.0483 + 1.4053I$	0
$u = -1.70818 + 0.04745I$ $a = 1.55667 - 1.83823I$ $b = -1.98030 + 3.09035I$	$13.9392 - 6.5232I$	0
$u = -1.70818 - 0.04745I$ $a = 1.55667 + 1.83823I$ $b = -1.98030 - 3.09035I$	$13.9392 + 6.5232I$	0

	Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.123626 + 0.224585I$		
$a =$	$0.84430 + 2.89252I$	$-1.62775 + 0.54260I$	$-3.36212 - 1.400035I$
$b =$	$0.727029 - 0.150879I$		
$u =$	$0.123626 - 0.224585I$		
$a =$	$0.84430 - 2.89252I$	$-1.62775 - 0.54260I$	$-3.36212 + 1.400035I$
$b =$	$0.727029 + 0.150879I$		

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

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ -u-1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ -u-1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u+1 \\ -u-2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ u+1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 0.381966$ $b = -1.38197$	-0.657974	3.00000
$u = 1.61803$ $a = 2.61803$ $b = -3.61803$	7.23771	3.00000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^{52}+29u^{51}+\cdots+29u+1)$
c_2	$((u-1)^2)(u^{52}-3u^{51}+\cdots-9u+1)$
c_3, c_9	$u^2(u^{52}-u^{51}+\cdots-4u+4)$
c_4	$((u+1)^2)(u^{52}-3u^{51}+\cdots-9u+1)$
c_5, c_6, c_7	$(u^2-u-1)(u^{52}-2u^{51}+\cdots-2u+1)$
c_8, c_{10}	$u^2(u^{52}-15u^{51}+\cdots-248u+16)$
c_{11}, c_{12}	$(u^2+u-1)(u^{52}-2u^{51}+\cdots-2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^2)(y^{52}-9y^{51}+\cdots-593y+1)$
c_2, c_4	$((y-1)^2)(y^{52}-29y^{51}+\cdots-29y+1)$
c_3, c_9	$y^2(y^{52}-15y^{51}+\cdots-248y+16)$
c_5, c_6, c_7 c_{11}, c_{12}	$(y^2-3y+1)(y^{52}-66y^{51}+\cdots+6y+1)$
c_8, c_{10}	$y^2(y^{52}+41y^{51}+\cdots-9504y+256)$