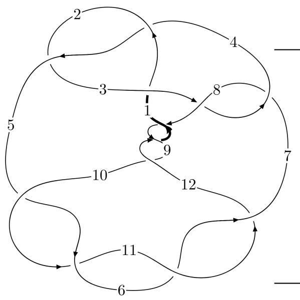
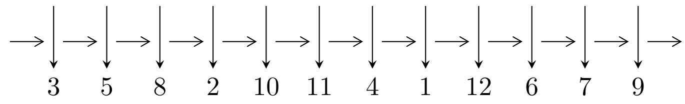
$12a_{0096}$ $(K12a_{0096})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{59} + 31u^{57} + \cdots - 4u^2 + b,\ -u^{62} - u^{61} + \cdots + a - 1,\ u^{63} + 2u^{62} + \cdots + 2u - 1\rangle$$
$$I_2^u = \langle u^4 - 2u^2 + b + 2u,\ -u^5 + 3u^3 + a + 1,\ u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 69 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. $I^u_1 =$
$\langle -u^{59}+31u^{57}+\cdots-4u^2+b,\ -u^{62}-u^{61}+\cdots+a-1,\ u^{63}+2u^{62}+\cdots+2u-1\rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^{62}+u^{61}+\cdots+2u+1\\u^{59}-31u^{57}+\cdots-3u^3+4u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}2u^{62}+u^{61}+\cdots-4u^2+5u\\u^{62}-33u^{60}+\cdots+3u-1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^{10}+5u^8-8u^6+5u^4-3u^2+1\\-u^{12}+6u^{10}-12u^8+8u^6-u^4+2u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^{61}-32u^{59}+\cdots+u+1\\-u^{62}+33u^{60}+\cdots-2u+1\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^{14}-7u^{12}+18u^{10}-21u^8+14u^6-10u^4+4u^2-1\\u^{16}-8u^{14}+24u^{12}-32u^{10}+18u^8-8u^6+8u^4\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^6+3u^4-2u^2+1\\-u^8+4u^6-4u^4\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^{61}-u^{60}+\cdots+2u-18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{63} + 27u^{62} + \cdots + 95u + 1$
c_2, c_4	$u^{63} - 7u^{62} + \cdots + u + 1$
c_3, c_7	$u^{63} + u^{62} + \cdots + 192u + 64$
c_5, c_6, c_{10} c_{11}	$u^{63} - 2u^{62} + \cdots + 2u + 1$
c_8, c_9, c_{12}	$u^{63} - 8u^{62} + \cdots + 6u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{63} + 25y^{62} + \cdots + 5299y - 1$
c_2, c_4	$y^{63} - 27y^{62} + \cdots + 95y - 1$
c_3, c_7	$y^{63} + 39y^{62} + \cdots - 40960y - 4096$
c_5, c_6, c_{10} c_{11}	$y^{63} - 68y^{62} + \cdots + 14y - 1$
c_8, c_9, c_{12}	$y^{63} + 64y^{62} + \cdots - 2246y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.552072 + 0.648887I$ $a = 0.477044 + 0.191255I$ $b = 1.98574 - 0.28222I$	$8.36290 - 11.10910I$	$-8.86571 + 8.37495I$
$u = 0.552072 - 0.648887I$ $a = 0.477044 - 0.191255I$ $b = 1.98574 + 0.28222I$	$8.36290 + 11.10910I$	$-8.86571 - 8.37495I$
$u = 0.533877 + 0.656255I$ $a = -0.086296 + 0.604333I$ $b = -0.591871 - 0.592997I$	$10.28220 - 4.95595I$	$-6.40227 + 3.95794I$
$u = 0.533877 - 0.656255I$ $a = -0.086296 - 0.604333I$ $b = -0.591871 + 0.592997I$	$10.28220 + 4.95595I$	$-6.40227 - 3.95794I$
$u = -0.518166 + 0.638255I$ $a = 0.239548 + 0.425049I$ $b = 1.50926 + 0.75312I$	$4.80189 + 4.67051I$	$-9.56411 - 5.84070I$
$u = -0.518166 - 0.638255I$ $a = 0.239548 - 0.425049I$ $b = 1.50926 - 0.75312I$	$4.80189 - 4.67051I$	$-9.56411 + 5.84070I$
$u = 0.475260 + 0.668900I$ $a = -0.500436 - 0.356756I$ $b = 0.840809 - 0.212539I$	$10.45670 + 0.49427I$	$-5.93156 + 2.06629I$
$u = 0.475260 - 0.668900I$ $a = -0.500436 + 0.356756I$ $b = 0.840809 + 0.212539I$	$10.45670 - 0.49427I$	$-5.93156 - 2.06629I$
$u = 0.453215 + 0.669802I$ $a = -0.35281 + 1.85601I$ $b = -0.317027 + 0.198250I$	$8.65681 + 6.66761I$	$-8.01120 - 2.46984I$
$u = 0.453215 - 0.669802I$ $a = -0.35281 - 1.85601I$ $b = -0.317027 - 0.198250I$	$8.65681 - 6.66761I$	$-8.01120 + 2.46984I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.500444 + 0.632445I$ $a = -0.016435 - 1.256630I$ $b = -1.040210 + 0.063749I$	$3.24652 - 2.14201I$	$-8.59063 + 3.32182I$
$u = 0.500444 - 0.632445I$ $a = -0.016435 + 1.256630I$ $b = -1.040210 - 0.063749I$	$3.24652 + 2.14201I$	$-8.59063 - 3.32182I$
$u = -0.484205 + 0.643677I$ $a = -0.75821 - 1.21698I$ $b = -0.773190 + 0.091630I$	$4.90236 - 0.33637I$	$-9.15743 - 0.38817I$
$u = -0.484205 - 0.643677I$ $a = -0.75821 + 1.21698I$ $b = -0.773190 - 0.091630I$	$4.90236 + 0.33637I$	$-9.15743 + 0.38817I$
$u = -0.657206 + 0.383548I$ $a = -0.498372 + 0.026703I$ $b = -2.07884 + 0.04909I$	$0.73856 + 7.23469I$	$-12.7532 - 9.6424I$
$u = -0.657206 - 0.383548I$ $a = -0.498372 - 0.026703I$ $b = -2.07884 - 0.04909I$	$0.73856 - 7.23469I$	$-12.7532 + 9.6424I$
$u = 0.750394 + 0.085615I$ $a = 0.447881 + 0.312629I$ $b = 1.52225 - 0.54267I$	$-0.91500 + 2.18703I$	$-15.1580 - 2.5589I$
$u = 0.750394 - 0.085615I$ $a = 0.447881 - 0.312629I$ $b = 1.52225 + 0.54267I$	$-0.91500 - 2.18703I$	$-15.1580 + 2.5589I$
$u = -0.495914 + 0.538413I$ $a = -0.181479 + 0.681833I$ $b = -0.586391 + 0.071931I$	$2.22957 + 1.86380I$	$-4.96531 - 3.49525I$
$u = -0.495914 - 0.538413I$ $a = -0.181479 - 0.681833I$ $b = -0.586391 - 0.071931I$	$2.22957 - 1.86380I$	$-4.96531 + 3.49525I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.572206+0.430292I$ $a=-0.149585+0.569347I$ $b=-0.199905-0.583366I$	$2.16114+2.24871I$	$-8.78086-4.77265I$
$u=-0.572206-0.430292I$ $a=-0.149585-0.569347I$ $b=-0.199905+0.583366I$	$2.16114-2.24871I$	$-8.78086+4.77265I$
$u=\ \ 0.539929+0.300101I$ $a=-0.044166+0.631034I$ $b=-1.65764+0.85420I$	$-1.85220-2.46880I$	$-16.2123+7.6233I$
$u=\ \ 0.539929-0.300101I$ $a=-0.044166-0.631034I$ $b=-1.65764-0.85420I$	$-1.85220+2.46880I$	$-16.2123-7.6233I$
$u=\ \ 1.398670+0.035211I$ $a=\ \ 0.815049-0.521609I$ $b=\ \ 1.42294-0.01679I$	$-1.87097-2.75507I$	0
$u=\ \ 1.398670-0.035211I$ $a=\ \ 0.815049+0.521609I$ $b=\ \ 1.42294+0.01679I$	$-1.87097+2.75507I$	0
$u=-0.259599+0.510135I$ $a=\ \ 1.097040+0.502994I$ $b=-0.487176-0.027827I$	$3.10941+0.98990I$	$-5.62147-3.24587I$
$u=-0.259599-0.510135I$ $a=\ \ 1.097040-0.502994I$ $b=-0.487176+0.027827I$	$3.10941-0.98990I$	$-5.62147+3.24587I$
$u=-0.155783+0.518364I$ $a=-0.34678+2.21283I$ $b=\ \ 0.279971+0.161759I$	$2.26897-4.12732I$	$-7.16888+3.41220I$
$u=-0.155783-0.518364I$ $a=-0.34678-2.21283I$ $b=\ \ 0.279971-0.161759I$	$2.26897+4.12732I$	$-7.16888-3.41220I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500479+0.194028I$ $a=-0.284102-1.118860I$ $b=\ 1.55555-0.14096I$	$-2.49270+0.60644I$	$-15.4557-10.2077I$
$u=-0.500479-0.194028I$ $a=-0.284102+1.118860I$ $b=\ 1.55555+0.14096I$	$-2.49270-0.60644I$	$-15.4557+10.2077I$
$u=-1.47733+0.20560I$ $a=-0.725820+0.543718I$ $b=-1.393370-0.049721I$	$2.40189-3.52842I$	0
$u=-1.47733-0.20560I$ $a=-0.725820-0.543718I$ $b=-1.393370+0.049721I$	$2.40189+3.52842I$	0
$u=-1.50553+0.02610I$ $a=-0.820872-0.167823I$ $b=-0.584397+0.092393I$	$-6.94722+0.20354I$	0
$u=-1.50553-0.02610I$ $a=-0.820872+0.167823I$ $b=-0.584397-0.092393I$	$-6.94722-0.20354I$	0
$u=-1.49289+0.20909I$ $a=-0.845794-0.652481I$ $b=-1.309020-0.075246I$	$4.05173+2.66575I$	0
$u=-1.49289-0.20909I$ $a=-0.845794+0.652481I$ $b=-1.309020+0.075246I$	$4.05173-2.66575I$	0
$u=\ 1.50358+0.19450I$ $a=\ 0.475568-0.695908I$ $b=\ 0.009106-0.203705I$	$-1.59595-2.66985I$	0
$u=\ 1.50358-0.19450I$ $a=\ 0.475568+0.695908I$ $b=\ 0.009106+0.203705I$	$-1.59595+2.66985I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.51480 + 0.19165I$ $a = 2.26122 + 0.97687I$ $b = 3.13502 + 1.11443I$	$-3.36903 + 5.10417I$	0
$u = -1.51480 - 0.19165I$ $a = 2.26122 - 0.97687I$ $b = 3.13502 - 1.11443I$	$-3.36903 - 5.10417I$	0
$u = 1.53183 + 0.05064I$ $a = -3.83982 + 0.14262I$ $b = -4.60648 + 0.30137I$	$-9.36673 - 1.46427I$	0
$u = 1.53183 - 0.05064I$ $a = -3.83982 - 0.14262I$ $b = -4.60648 - 0.30137I$	$-9.36673 + 1.46427I$	0
$u = 1.52279 + 0.19719I$ $a = -1.54244 + 2.21672I$ $b = -2.17598 + 1.87956I$	$-1.90943 - 7.69003I$	0
$u = 1.52279 - 0.19719I$ $a = -1.54244 - 2.21672I$ $b = -2.17598 - 1.87956I$	$-1.90943 + 7.69003I$	0
$u = 1.53422 + 0.10683I$ $a = 0.273455 - 0.876541I$ $b = 0.465154 - 1.309920I$	$-4.84076 - 4.12450I$	0
$u = 1.53422 - 0.10683I$ $a = 0.273455 + 0.876541I$ $b = 0.465154 + 1.309920I$	$-4.84076 + 4.12450I$	0
$u = -1.53626 + 0.07185I$ $a = 3.07876 + 2.19965I$ $b = 3.75488 + 1.96290I$	$-8.82652 + 3.73842I$	0
$u = -1.53626 - 0.07185I$ $a = 3.07876 - 2.19965I$ $b = 3.75488 - 1.96290I$	$-8.82652 - 3.73842I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.53186 + 0.15244I$ $a = 1.54941 - 0.72159I$ $b = 1.94893 - 0.88041I$	$-4.52737 - 4.30571I$	0
$u = 1.53186 - 0.15244I$ $a = 1.54941 + 0.72159I$ $b = 1.94893 + 0.88041I$	$-4.52737 + 4.30571I$	0
$u = -1.52911 + 0.20775I$ $a = 0.822400 - 0.471262I$ $b = 0.592425 - 1.140080I$	$3.49790 + 8.09634I$	0
$u = -1.52911 - 0.20775I$ $a = 0.822400 + 0.471262I$ $b = 0.592425 + 1.140080I$	$3.49790 - 8.09634I$	0
$u = -1.53893 + 0.20501I$ $a = -2.79319 - 1.84720I$ $b = -3.58877 - 1.49346I$	$1.4654 + 14.2222I$	0
$u = -1.53893 - 0.20501I$ $a = -2.79319 + 1.84720I$ $b = -3.58877 + 1.49346I$	$1.4654 - 14.2222I$	0
$u = 1.56803 + 0.09676I$ $a = 3.77845 - 0.81683I$ $b = 4.48012 - 0.48475I$	$-6.75258 - 8.93003I$	0
$u = 1.56803 - 0.09676I$ $a = 3.77845 + 0.81683I$ $b = 4.48012 + 0.48475I$	$-6.75258 + 8.93003I$	0
$u = -1.57741 + 0.02042I$ $a = -3.19867 - 1.01092I$ $b = -3.77337 - 1.31247I$	$-8.71900 - 1.82197I$	0
$u = -1.57741 - 0.02042I$ $a = -3.19867 + 1.01092I$ $b = -3.77337 + 1.31247I$	$-8.71900 + 1.82197I$	0

Solutions to I_1^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	0.403832		
$a =$	0.621632	-0.597749	-16.5810
$b =$	0.331645		
$u =$	$0.217719 + 0.282787I$		
$a =$	$1.35864 - 1.85170I$	$-0.947414 + 0.254780I$	$-11.01418 + 1.68068I$
$b =$	$0.495682 + 0.230950I$		
$u =$	$0.217719 - 0.282787I$		
$a =$	$1.35864 + 1.85170I$	$-0.947414 - 0.254780I$	$-11.01418 - 1.68068I$
$b =$	$0.495682 - 0.230950I$		

II.

$$\boldsymbol{I_2^u = \langle u^4 - 2u^2 + b + 2u,\ -u^5 + 3u^3 + a + 1,\ u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^5 - u^4 + 6u^3 + u^2 + 2u - 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_7	y^6
c_5, c_6, c_{10} c_{11}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$
c_8, c_9, c_{12}	$y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.493180 + 0.575288I$ $a = 0.011399 - 0.918055I$ $b = -0.847526 + 0.083869I$	$1.31531 - 1.97241I$	$-14.7121 + 3.8836I$
$u = 0.493180 - 0.575288I$ $a = 0.011399 + 0.918055I$ $b = -0.847526 - 0.083869I$	$1.31531 + 1.97241I$	$-14.7121 - 3.8836I$
$u = -0.483672$ $a = -0.687021$ $b = 1.38049$	-2.38379	-15.3880
$u = -1.52087 + 0.16310I$ $a = 1.98288 + 0.88048I$ $b = 2.63293 + 0.95019I$	$-5.34051 + 4.59213I$	$-18.4963 - 3.9250I$
$u = -1.52087 - 0.16310I$ $a = 1.98288 - 0.88048I$ $b = 2.63293 - 0.95019I$	$-5.34051 - 4.59213I$	$-18.4963 + 3.9250I$
$u = 1.53904$ $a = -3.30155$ $b = -3.95130$	-9.30502	-18.1960

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{63}+27u^{62}+\cdots+95u+1)$
c_2	$((u-1)^6)(u^{63}-7u^{62}+\cdots+u+1)$
c_3, c_7	$u^6(u^{63}+u^{62}+\cdots+192u+64)$
c_4	$((u+1)^6)(u^{63}-7u^{62}+\cdots+u+1)$
c_5, c_6	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{63}-2u^{62}+\cdots+2u+1)$
c_8, c_9	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)(u^{63}-8u^{62}+\cdots+6u+7)$
c_{10}, c_{11}	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)(u^{63}-2u^{62}+\cdots+2u+1)$
c_{12}	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{63}-8u^{62}+\cdots+6u+7)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{63}+25y^{62}+\cdots+5299y-1)$
c_2, c_4	$((y-1)^6)(y^{63}-27y^{62}+\cdots+95y-1)$
c_3, c_7	$y^6(y^{63}+39y^{62}+\cdots-40960y-4096)$
c_5, c_6, c_{10} c_{11}	$(y^6-7y^5+\cdots-5y+1)(y^{63}-68y^{62}+\cdots+14y-1)$
c_8, c_9, c_{12}	$(y^6+5y^5+\cdots-5y+1)(y^{63}+64y^{62}+\cdots-2246y-49)$