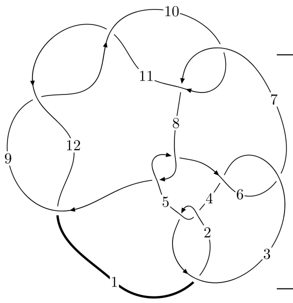
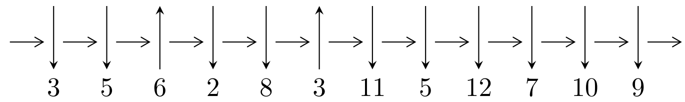
$12n_{0094}$ $(K12n_{0094})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 237180958840u^{40} + 426640636409u^{39} + \cdots + 1266022287463b - 603869550171, \\
& 184156720841u^{40} + 260129939039u^{39} + \cdots + 379806862389a - 927659389454, \\
& u^{41} + 2u^{40} + \cdots - 5u - 1\rangle \\
I_2^u = \langle & -2u^4 - u^3 + b + u - 3,\ a,\ u^5 + u^4 - u^2 + u + 1\rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 46 representations.

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[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.
$\boldsymbol{I_1^u = \langle 2.37\times10^{11}u^{40} + 4.27\times10^{11}u^{39} + \cdots + 1.27\times10^{11}b - 6.04\times10^{11},\ 1.84\times 10^{11}u^{40} + 2.60\times10^{11}u^{39} + \cdots + 3.80\times10^{11}a - 9.28\times10^{11},\ u^{41} + 2u^{40} + \cdots - 5u - 1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.484869u^{40} - 0.684901u^{39} + \cdots + 1.43981u + 2.44245 \\ -1.87343u^{40} - 3.36993u^{39} + \cdots + 10.8768u + 4.76982 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.839243u^{40} + 0.839308u^{39} + \cdots - 4.68096u - 0.119652 \\ -3.44624u^{40} - 3.41234u^{39} + \cdots + 13.1682u + 3.81213 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2.36382u^{40} + 2.16411u^{39} + \cdots - 7.95826u + 1.01795 \\ -5.33759u^{40} - 3.95656u^{39} + \cdots + 14.0481u + 5.35650 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.545392u^{40} - 0.945298u^{39} + \cdots + 1.68058u + 1.67265 \\ -2.45910u^{40} - 2.60458u^{39} + \cdots + 10.3453u + 3.00449 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.605914u^{40} + 0.205696u^{39} + \cdots - 1.92135u + 3.09715 \\ -4.95524u^{40} - 5.16076u^{39} + \cdots + 18.1862u + 6.76084 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ u^6 + u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{159607686408}{126602287463}u^{40} - \frac{572526761426}{126602287463}u^{39} + \cdots + \frac{127765468738}{126602287463}u + \frac{346980052385}{126602287463}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{41} + 44u^{40} + \cdots + 2355u + 1$
c_2, c_4	$u^{41} - 6u^{40} + \cdots + 47u - 1$
c_3, c_6	$u^{41} + 7u^{40} + \cdots + 64u + 32$
c_5, c_8	$u^{41} - 2u^{40} + \cdots + u - 1$
c_7, c_{10}	$u^{41} + 2u^{40} + \cdots - 5u - 1$
c_9, c_{11}, c_{12}	$u^{41} + 12u^{40} + \cdots + 9u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{41} - 88y^{40} + \cdots + 5466307y - 1$
c_2, c_4	$y^{41} - 44y^{40} + \cdots + 2355y - 1$
c_3, c_6	$y^{41} + 33y^{40} + \cdots + 49664y - 1024$
c_5, c_8	$y^{41} + 42y^{39} + \cdots + 9y - 1$
c_7, c_{10}	$y^{41} - 12y^{40} + \cdots + 9y - 1$
c_9, c_{11}, c_{12}	$y^{41} + 36y^{40} + \cdots + 145y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.809815 + 0.656518I$ $a = 0.18310 + 1.61197I$ $b = 2.10023 - 1.97578I$	$-1.37603 + 0.57854I$	$-11.62960 + 0.13351I$
$u = -0.809815 - 0.656518I$ $a = 0.18310 - 1.61197I$ $b = 2.10023 + 1.97578I$	$-1.37603 - 0.57854I$	$-11.62960 - 0.13351I$
$u = 0.934060 + 0.150205I$ $a = -0.18148 - 1.61697I$ $b = 0.203825 + 1.369510I$	$-3.38084 - 3.41544I$	$-14.4142 + 7.4507I$
$u = 0.934060 - 0.150205I$ $a = -0.18148 + 1.61697I$ $b = 0.203825 - 1.369510I$	$-3.38084 + 3.41544I$	$-14.4142 - 7.4507I$
$u = 0.940510$ $a = -1.80150$ $b = 0.154280$	-5.56664	-18.9570
$u = -0.765786 + 0.781729I$ $a = -1.48698 + 0.38083I$ $b = 0.91217 + 1.53968I$	$2.58614 - 2.24374I$	$-5.47598 + 3.48781I$
$u = -0.765786 - 0.781729I$ $a = -1.48698 - 0.38083I$ $b = 0.91217 - 1.53968I$	$2.58614 + 2.24374I$	$-5.47598 - 3.48781I$
$u = 0.825264 + 0.768049I$ $a = -0.533792 - 0.264806I$ $b = -0.363252 - 0.579554I$	$2.79960 - 1.79972I$	$-4.96538 + 4.18830I$
$u = 0.825264 - 0.768049I$ $a = -0.533792 + 0.264806I$ $b = -0.363252 + 0.579554I$	$2.79960 + 1.79972I$	$-4.96538 - 4.18830I$
$u = 0.871525 + 0.715232I$ $a = 0.317178 - 0.359818I$ $b = 2.05567 + 2.91440I$	$0.88954 - 2.73561I$	$12.1135 + 7.6213I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.871525 - 0.715232I$ $a = 0.317178 + 0.359818I$ $b = 2.05567 - 2.91440I$	$0.88954 + 2.73561I$	$12.1135 - 7.6213I$
$u = 0.710841 + 0.488347I$ $a = 0.458035 - 0.499819I$ $b = -0.032082 + 0.328781I$	$1.44935 - 1.91021I$	$-0.76032 + 4.38625I$
$u = 0.710841 - 0.488347I$ $a = 0.458035 + 0.499819I$ $b = -0.032082 - 0.328781I$	$1.44935 + 1.91021I$	$-0.76032 - 4.38625I$
$u = -0.923416 + 0.674039I$ $a = 1.66369 + 0.14363I$ $b = -0.43727 - 2.53225I$	$-1.74586 + 4.59945I$	$-12.56472 - 5.90817I$
$u = -0.923416 - 0.674039I$ $a = 1.66369 - 0.14363I$ $b = -0.43727 + 2.53225I$	$-1.74586 - 4.59945I$	$-12.56472 + 5.90817I$
$u = 1.118030 + 0.271471I$ $a = -0.17044 + 1.50981I$ $b = -0.89384 - 1.26952I$	$-11.21910 - 7.94660I$	$-13.0997 + 5.5632I$
$u = 1.118030 - 0.271471I$ $a = -0.17044 - 1.50981I$ $b = -0.89384 + 1.26952I$	$-11.21910 + 7.94660I$	$-13.0997 - 5.5632I$
$u = -0.720515 + 0.902697I$ $a = 1.42868 - 0.16952I$ $b = -0.66709 - 1.95032I$	$-3.31648 - 7.81279I$	$-7.43198 + 3.38635I$
$u = -0.720515 - 0.902697I$ $a = 1.42868 + 0.16952I$ $b = -0.66709 + 1.95032I$	$-3.31648 + 7.81279I$	$-7.43198 - 3.38635I$
$u = -1.121650 + 0.291198I$ $a = 0.498876 - 1.312020I$ $b = -1.197720 + 0.633604I$	$-11.09620 - 0.45608I$	$-13.41842 - 0.76918I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.121650-0.291198I$ $a=\ \ 0.498876+1.312020I$ $b=-1.197720-0.633604I$	$-11.09620+0.45608I$	$-13.41842+0.76918I$
$u=-0.019251+0.828572I$ $a=-1.74001+0.53051I$ $b=\ \ 1.287330-0.377518I$	$-7.34491+4.27339I$	$-8.31191-2.78880I$
$u=-0.019251-0.828572I$ $a=-1.74001-0.53051I$ $b=\ \ 1.287330+0.377518I$	$-7.34491-4.27339I$	$-8.31191+2.78880I$
$u=\ \ 0.731013+0.924450I$ $a=\ \ 0.923425+0.604573I$ $b=-1.26483+1.04082I$	$-2.90816-0.63484I$	$-9.12562+1.25059I$
$u=\ \ 0.731013-0.924450I$ $a=\ \ 0.923425-0.604573I$ $b=-1.26483-1.04082I$	$-2.90816+0.63484I$	$-9.12562-1.25059I$
$u=-0.804662+0.114668I$ $a=-0.147294+0.641401I$ $b=\ \ 0.80950-2.46652I$	$-2.53010+0.33755I$	$-19.6414+2.1587I$
$u=-0.804662-0.114668I$ $a=-0.147294-0.641401I$ $b=\ \ 0.80950+2.46652I$	$-2.53010-0.33755I$	$-19.6414-2.1587I$
$u=\ \ 0.926559+0.745351I$ $a=\ \ 0.274837+0.567927I$ $b=-1.08422-1.33352I$	$2.48539-3.92858I$	$-5.87670+1.12171I$
$u=\ \ 0.926559-0.745351I$ $a=\ \ 0.274837-0.567927I$ $b=-1.08422+1.33352I$	$2.48539+3.92858I$	$-5.87670-1.12171I$
$u=-0.965249+0.735330I$ $a=\ \ 0.31200-1.49463I$ $b=-2.37280+1.50589I$	$1.97721+7.97688I$	$-7.20424-8.75185I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.965249 - 0.735330I$ $a = 0.31200 + 1.49463I$ $b = -2.37280 - 1.50589I$	$1.97721 - 7.97688I$	$-7.20424 + 8.75185I$
$u = -0.930134 + 0.890297I$ $a = -0.321692 - 0.288040I$ $b = -0.267302 + 0.867780I$	$9.70942 + 3.28933I$	$6.13928 - 1.45507I$
$u = -0.930134 - 0.890297I$ $a = -0.321692 + 0.288040I$ $b = -0.267302 - 0.867780I$	$9.70942 - 3.28933I$	$6.13928 + 1.45507I$
$u = -1.037090 + 0.774259I$ $a = -0.100822 + 1.364460I$ $b = 2.50179 - 1.88429I$	$-4.3067 + 14.0138I$	$-8.63515 - 7.83947I$
$u = -1.037090 - 0.774259I$ $a = -0.100822 - 1.364460I$ $b = 2.50179 + 1.88429I$	$-4.3067 - 14.0138I$	$-8.63515 + 7.83947I$
$u = 1.045430 + 0.785315I$ $a = -0.491121 - 0.952641I$ $b = 2.29006 + 0.47538I$	$-3.90534 - 5.67266I$	$-9.98188 + 3.51111I$
$u = 1.045430 - 0.785315I$ $a = -0.491121 + 0.952641I$ $b = 2.29006 - 0.47538I$	$-3.90534 + 5.67266I$	$-9.98188 - 3.51111I$
$u = -0.666990$ $a = 0.215563$ $b = 0.523845$	-0.906933	-11.3940
$u = -0.035730 + 0.419728I$ $a = 2.06556 - 0.62654I$ $b = -0.346501 - 0.304456I$	$-0.57624 + 1.50346I$	$-4.65093 - 4.60849I$
$u = -0.035730 - 0.419728I$ $a = 2.06556 + 0.62654I$ $b = -0.346501 + 0.304456I$	$-0.57624 - 1.50346I$	$-4.65093 + 4.60849I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.332380$ $a = 1.68244$ $b = 1.85453$	-2.28489	0.221560

II. $I_2^u = \langle -2u^4 - u^3 + b + u - 3,\ a,\ u^5 + u^4 - u^2 + u + 1 \rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0 \\ 2u^4 + u^3 - u + 3 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 0 \\ 2u^4 + u^3 - u + 3 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3 \\ 3u^4 + 2u^3 - u^2 - u + 4 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^3 \\ u^4 + u^3 - u^2 + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -18u^4 - 7u^3 + 7u^2 + 18u - 39$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^5$
c_3, c_6	y^5
c_5, c_8, c_9 c_{11}, c_{12}	$y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1$
c_7, c_{10}	$y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.758138 + 0.584034I$ $a = 0$ $b = 0.442614 + 1.051550I$	$0.17487 - 2.21397I$	$-8.20462 + 3.60694I$
$u = 0.758138 - 0.584034I$ $a = 0$ $b = 0.442614 - 1.051550I$	$0.17487 + 2.21397I$	$-8.20462 - 3.60694I$
$u = -0.935538 + 0.903908I$ $a = 0$ $b = -0.304213 + 0.337334I$	$9.31336 + 3.33174I$	$-14.3260 - 3.4701I$
$u = -0.935538 - 0.903908I$ $a = 0$ $b = -0.304213 - 0.337334I$	$9.31336 - 3.33174I$	$-14.3260 + 3.4701I$
$u = -0.645200$ $a = 0$ $b = 3.72320$	-2.52712	-48.9390

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^{41}+44u^{40}+\cdots+2355u+1)$
c_2	$((u-1)^5)(u^{41}-6u^{40}+\cdots+47u-1)$
c_3, c_6	$u^5(u^{41}+7u^{40}+\cdots+64u+32)$
c_4	$((u+1)^5)(u^{41}-6u^{40}+\cdots+47u-1)$
c_5	$(u^5-u^4+4u^3-3u^2+3u-1)(u^{41}-2u^{40}+\cdots+u-1)$
c_7	$(u^5-u^4+u^2+u-1)(u^{41}+2u^{40}+\cdots-5u-1)$
c_8	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{41}-2u^{40}+\cdots+u-1)$
c_9	$(u^5-u^4+4u^3-3u^2+3u-1)(u^{41}+12u^{40}+\cdots+9u+1)$
c_{10}	$(u^5+u^4-u^2+u+1)(u^{41}+2u^{40}+\cdots-5u-1)$
c_{11}, c_{12}	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{41}+12u^{40}+\cdots+9u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^5)(y^{41} - 88y^{40} + \cdots + 5466307y - 1)$
c_2, c_4	$((y-1)^5)(y^{41} - 44y^{40} + \cdots + 2355y - 1)$
c_3, c_6	$y^5(y^{41} + 33y^{40} + \cdots + 49664y - 1024)$
c_5, c_8	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)(y^{41} + 42y^{39} + \cdots + 9y - 1)$
c_7, c_{10}	$(y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1)(y^{41} - 12y^{40} + \cdots + 9y - 1)$
c_9, c_{11}, c_{12}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)(y^{41} + 36y^{40} + \cdots + 145y - 1)$