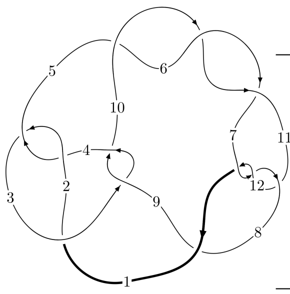
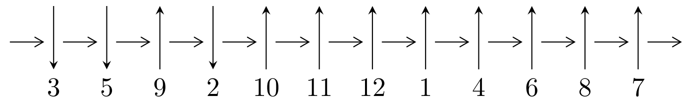
$12a_{0147}$ ($K12a_{0147}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{58} + u^{57} + \cdots + b - u,\ 2u^{57} - u^{56} + \cdots + a - 1,\ u^{60} - 2u^{59} + \cdots - 2u + 1\rangle$$
$$I_2^u = \langle b - 1,\ -u^4 - u^3 - 2u^2 + a - u - 1,\ u^6 + u^5 + 3u^4 + 2u^3 + 2u^2 + u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 66 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.

$$I_1^u = \langle u^{58}+u^{57}+\cdots+b-u,\ 2u^{57}-u^{56}+\cdots+a-1,\ u^{60}-2u^{59}+\cdots-2u+1\rangle$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-2u^{57}+u^{56}+\cdots-5u+1\\-u^{58}-u^{57}+\cdots+4u^2+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^3+2u\\u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u^8-3u^6-3u^4+1\\-u^{10}-4u^8-5u^6+3u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^{55}+u^{54}+\cdots+13u^2-5u\\-u^{57}+u^{56}+\cdots-22u^3+5u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^{57}-u^{56}+\cdots-10u^2+4u\\u^{57}-u^{56}+\cdots+14u^3-5u^2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u^2+1\\u^4+2u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^5-2u^3-u\\-u^7-3u^5-2u^3+u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u^{11}+4u^9+6u^7+2u^5-3u^3-2u\\u^{13}+5u^{11}+9u^9+4u^7-6u^5-5u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{59}+8u^{58}+\cdots+16u+11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{60} + 25u^{59} + \cdots + 71u + 1$
c_2, c_4	$u^{60} - 7u^{59} + \cdots - 15u + 1$
c_3, c_9	$u^{60} - u^{59} + \cdots - 128u + 64$
c_5, c_6, c_8 c_{10}	$u^{60} + 2u^{59} + \cdots - 22u + 17$
c_7, c_{11}, c_{12}	$u^{60} - 2u^{59} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{60} + 27y^{59} + \cdots - 5339y + 1$
c_2, c_4	$y^{60} - 25y^{59} + \cdots - 71y + 1$
c_3, c_9	$y^{60} - 39y^{59} + \cdots - 102400y + 4096$
c_5, c_6, c_8 c_{10}	$y^{60} - 74y^{59} + \cdots - 246y + 289$
c_7, c_{11}, c_{12}	$y^{60} + 46y^{59} + \cdots + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.291512 + 1.030160I$ $a = -0.678030 - 1.056140I$ $b = -1.19725 + 0.90363I$	$2.03627 + 3.48281I$	$9.26462 + 0.I$
$u = -0.291512 - 1.030160I$ $a = -0.678030 + 1.056140I$ $b = -1.19725 - 0.90363I$	$2.03627 - 3.48281I$	$9.26462 + 0.I$
$u = 0.924382 + 0.020442I$ $a = 4.05935 - 0.66619I$ $b = 3.19998 - 0.28395I$	$15.6684 + 2.9598I$	$14.3979 - 0.9035I$
$u = 0.924382 - 0.020442I$ $a = 4.05935 + 0.66619I$ $b = 3.19998 + 0.28395I$	$15.6684 - 2.9598I$	$14.3979 + 0.9035I$
$u = 0.920041 + 0.033760I$ $a = -3.85415 + 1.05460I$ $b = -3.05121 + 0.44044I$	$13.7623 + 9.2779I$	$12.25398 - 5.25271I$
$u = 0.920041 - 0.033760I$ $a = -3.85415 - 1.05460I$ $b = -3.05121 - 0.44044I$	$13.7623 - 9.2779I$	$12.25398 + 5.25271I$
$u = -0.911537 + 0.010474I$ $a = 0.074147 + 0.576052I$ $b = 0.121976 + 0.842888I$	$9.99754 - 2.62685I$	$11.37857 + 2.57042I$
$u = -0.911537 - 0.010474I$ $a = 0.074147 - 0.576052I$ $b = 0.121976 - 0.842888I$	$9.99754 + 2.62685I$	$11.37857 - 2.57042I$
$u = 0.907065$ $a = -5.12768$ $b = -3.74684$	8.33706	11.8870
$u = -0.858590$ $a = 0.363466$ $b = 0.491382$	6.74177	17.3790

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.312735 + 1.108170I$ $a = 0.561203 + 1.060260I$ $b = 1.21319 - 0.89450I$	$3.00527 - 2.16368I$	0
$u = -0.312735 - 1.108170I$ $a = 0.561203 - 1.060260I$ $b = 1.21319 + 0.89450I$	$3.00527 + 2.16368I$	0
$u = 0.220037 + 1.166580I$ $a = -0.541278 - 0.506954I$ $b = -0.442672 - 0.001765I$	$-2.04443 + 1.13435I$	0
$u = 0.220037 - 1.166580I$ $a = -0.541278 + 0.506954I$ $b = -0.442672 + 0.001765I$	$-2.04443 - 1.13435I$	0
$u = 0.090975 + 1.210730I$ $a = -0.625680 - 0.018522I$ $b = 0.008321 + 0.346144I$	$-2.94977 + 1.52826I$	0
$u = 0.090975 - 1.210730I$ $a = -0.625680 + 0.018522I$ $b = 0.008321 - 0.346144I$	$-2.94977 - 1.52826I$	0
$u = -0.216557 + 1.227250I$ $a = -0.06688 - 1.83452I$ $b = -1.97312 + 0.77412I$	$-3.87712 - 2.82894I$	0
$u = -0.216557 - 1.227250I$ $a = -0.06688 + 1.83452I$ $b = -1.97312 - 0.77412I$	$-3.87712 + 2.82894I$	0
$u = -0.023050 + 1.250010I$ $a = 1.380020 - 0.264318I$ $b = -0.591773 - 0.904308I$	$-5.85350 - 1.02296I$	0
$u = -0.023050 - 1.250010I$ $a = 1.380020 + 0.264318I$ $b = -0.591773 + 0.904308I$	$-5.85350 + 1.02296I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.245047 + 1.253190I$ $a = 0.378482 + 0.886324I$ $b = 0.132951 + 0.216928I$	$-2.88526 + 5.03495I$	0
$u = 0.245047 - 1.253190I$ $a = 0.378482 - 0.886324I$ $b = 0.132951 - 0.216928I$	$-2.88526 - 5.03495I$	0
$u = -0.705473 + 0.105742I$ $a = 1.36818 + 0.60284I$ $b = 1.53947 + 0.34903I$	$5.97344 - 1.58067I$	$14.4844 + 1.7262I$
$u = -0.705473 - 0.105742I$ $a = 1.36818 - 0.60284I$ $b = 1.53947 - 0.34903I$	$5.97344 + 1.58067I$	$14.4844 - 1.7262I$
$u = -0.683970 + 0.169452I$ $a = -1.37278 - 0.90433I$ $b = -1.63862 - 0.45396I$	$4.53909 - 7.15924I$	$11.78808 + 7.26929I$
$u = -0.683970 - 0.169452I$ $a = -1.37278 + 0.90433I$ $b = -1.63862 + 0.45396I$	$4.53909 + 7.15924I$	$11.78808 - 7.26929I$
$u = -0.289347 + 1.277000I$ $a = -0.288688 + 1.121530I$ $b = 1.51609 - 0.18929I$	$1.70407 - 5.14058I$	0
$u = -0.289347 - 1.277000I$ $a = -0.288688 - 1.121530I$ $b = 1.51609 + 0.18929I$	$1.70407 + 5.14058I$	0
$u = 0.132541 + 1.308630I$ $a = -0.406370 + 0.704082I$ $b = 0.249931 - 0.025514I$	$-3.38321 + 0.85618I$	0
$u = 0.132541 - 1.308630I$ $a = -0.406370 - 0.704082I$ $b = 0.249931 + 0.025514I$	$-3.38321 - 0.85618I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.066974 + 1.325380I$ $a = 0.781022 - 0.695467I$ $b = -0.543698 - 0.075581I$	$-4.16051 + 5.05095I$	0
$u = 0.066974 - 1.325380I$ $a = 0.781022 + 0.695467I$ $b = -0.543698 + 0.075581I$	$-4.16051 - 5.05095I$	0
$u = -0.396765 + 1.275800I$ $a = -0.075936 + 0.314839I$ $b = 0.490833 - 0.033606I$	$2.77814 - 4.50220I$	0
$u = -0.396765 - 1.275800I$ $a = -0.075936 - 0.314839I$ $b = 0.490833 + 0.033606I$	$2.77814 + 4.50220I$	0
$u = -0.266120 + 1.310510I$ $a = 0.553874 - 1.188430I$ $b = -1.70796 + 0.00761I$	$-0.07047 - 10.54190I$	0
$u = -0.266120 - 1.310510I$ $a = 0.553874 + 1.188430I$ $b = -1.70796 - 0.00761I$	$-0.07047 + 10.54190I$	0
$u = 0.457433 + 1.260060I$ $a = -1.82540 + 1.52099I$ $b = -2.98099 - 0.61431I$	$9.96888 - 4.36737I$	0
$u = 0.457433 - 1.260060I$ $a = -1.82540 - 1.52099I$ $b = -2.98099 + 0.61431I$	$9.96888 + 4.36737I$	0
$u = -0.442079 + 1.277110I$ $a = 0.504030 + 0.136393I$ $b = -0.009416 - 0.838158I$	$6.06778 - 2.20599I$	0
$u = -0.442079 - 1.277110I$ $a = 0.504030 - 0.136393I$ $b = -0.009416 + 0.838158I$	$6.06778 + 2.20599I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.456253 + 1.272990I$ $a = 1.76917 - 1.83592I$ $b = 3.14034 + 0.47569I$	$11.78740 + 1.96281I$	0
$u = 0.456253 - 1.272990I$ $a = 1.76917 + 1.83592I$ $b = 3.14034 - 0.47569I$	$11.78740 - 1.96281I$	0
$u = 0.435543 + 1.284440I$ $a = -2.03302 + 2.66752I$ $b = -3.71170 - 0.21616I$	$4.34700 + 4.79676I$	0
$u = 0.435543 - 1.284440I$ $a = -2.03302 - 2.66752I$ $b = -3.71170 + 0.21616I$	$4.34700 - 4.79676I$	0
$u = -0.436271 + 1.293570I$ $a = -0.519420 - 0.001879I$ $b = 0.243847 + 0.801514I$	$5.94185 - 7.44193I$	0
$u = -0.436271 - 1.293570I$ $a = -0.519420 + 0.001879I$ $b = 0.243847 - 0.801514I$	$5.94185 + 7.44193I$	0
$u = 0.442698 + 1.304280I$ $a = 1.24864 - 2.54832I$ $b = 3.18374 - 0.09677I$	$11.54400 + 7.84056I$	0
$u = 0.442698 - 1.304280I$ $a = 1.24864 + 2.54832I$ $b = 3.18374 + 0.09677I$	$11.54400 - 7.84056I$	0
$u = 0.616209 + 0.070001I$ $a = -0.315993 + 1.163010I$ $b = -0.151276 + 0.030346I$	$1.15428 + 1.92974I$	$10.88557 - 4.32279I$
$u = 0.616209 - 0.070001I$ $a = -0.315993 - 1.163010I$ $b = -0.151276 - 0.030346I$	$1.15428 - 1.92974I$	$10.88557 + 4.32279I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.435774 + 1.312250I$ $a = -1.01023 + 2.65881I$ $b = -3.05202 + 0.27246I$	$9.5655 + 14.1217I$	0
$u = 0.435774 - 1.312250I$ $a = -1.01023 - 2.65881I$ $b = -3.05202 - 0.27246I$	$9.5655 - 14.1217I$	0
$u = 0.329295 + 0.475961I$ $a = 0.395337 - 0.738913I$ $b = -0.440113 + 0.509380I$	$1.24419 + 3.93574I$	$8.26947 - 6.96230I$
$u = 0.329295 - 0.475961I$ $a = 0.395337 + 0.738913I$ $b = -0.440113 - 0.509380I$	$1.24419 - 3.93574I$	$8.26947 + 6.96230I$
$u = -0.566627$ $a = -2.54741$ $b = -2.01582$	-0.173331	14.7800
$u = 0.421793 + 0.356280I$ $a = -0.581552 + 0.715018I$ $b = 0.190880 - 0.469674I$	$1.63592 - 0.97554I$	$10.14221 - 1.13061I$
$u = 0.421793 - 0.356280I$ $a = -0.581552 - 0.715018I$ $b = 0.190880 + 0.469674I$	$1.63592 + 0.97554I$	$10.14221 + 1.13061I$
$u = 0.342205$ $a = -0.672021$ $b = 0.116519$	0.576782	17.2090
$u = -0.131606 + 0.232247I$ $a = 0.11377 - 2.33220I$ $b = -0.662340 - 0.292492I$	$-1.60725 - 0.57664I$	$-2.01562 + 2.57957I$
$u = -0.131606 - 0.232247I$ $a = 0.11377 + 2.33220I$ $b = -0.662340 + 0.292492I$	$-1.60725 + 0.57664I$	$-2.01562 - 2.57957I$

II.

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^6$
c_3, c_9	u^6
c_4	$(u+1)^6$
c_5, c_6, c_8	$u^6+u^5-3u^4-2u^3+2u^2-u-1$
c_7	$u^6-u^5+3u^4-2u^3+2u^2-u-1$
c_{10}	$u^6-u^5-3u^4+2u^3+2u^2+u-1$
c_{11}, 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_9	y^6
c_5, c_6, c_8 c_{10}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$
c_7, c_{11}, 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
$u = -0.873214$ $a = 1.56737$ $b = 1.00000$	6.01515	5.47870
$u = 0.138835 + 1.234450I$ $a = -0.356069 - 0.921195I$ $b = 1.00000$	$-4.60518 + 1.97241I$	$0.92955 - 2.53106I$
$u = 0.138835 - 1.234450I$ $a = -0.356069 + 0.921195I$ $b = 1.00000$	$-4.60518 - 1.97241I$	$0.92955 + 2.53106I$
$u = -0.408802 + 1.276380I$ $a = 0.645284 + 0.801205I$ $b = 1.00000$	$2.05064 - 4.59213I$	$1.87701 + 3.61028I$
$u = -0.408802 - 1.276380I$ $a = 0.645284 - 0.801205I$ $b = 1.00000$	$2.05064 + 4.59213I$	$1.87701 - 3.61028I$
$u = 0.413150$ $a = 1.85419$ $b = 1.00000$	-0.906083	4.90820

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{60}+25u^{59}+\cdots+71u+1)$
c_2	$((u-1)^6)(u^{60}-7u^{59}+\cdots-15u+1)$
c_3, c_9	$u^6(u^{60}-u^{59}+\cdots-128u+64)$
c_4	$((u+1)^6)(u^{60}-7u^{59}+\cdots-15u+1)$
c_5, c_6, c_8	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)(u^{60}+2u^{59}+\cdots-22u+17)$
c_7	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{60}-2u^{59}+\cdots-2u+1)$
c_{10}	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{60}+2u^{59}+\cdots-22u+17)$
c_{11}, c_{12}	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)(u^{60}-2u^{59}+\cdots-2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{60}+27y^{59}+\cdots-5339y+1)$
c_2, c_4	$((y-1)^6)(y^{60}-25y^{59}+\cdots-71y+1)$
c_3, c_9	$y^6(y^{60}-39y^{59}+\cdots-102400y+4096)$
c_5, c_6, c_8 c_{10}	$(y^6-7y^5+17y^4-16y^3+6y^2-5y+1)$ $\cdot(y^{60}-74y^{59}+\cdots-246y+289)$
c_7, c_{11}, c_{12}	$(y^6+5y^5+\cdots-5y+1)(y^{60}+46y^{59}+\cdots+2y+1)$