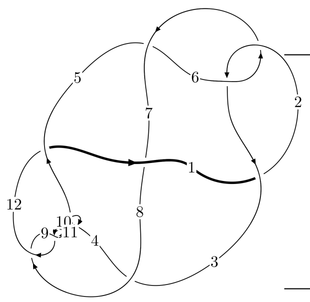
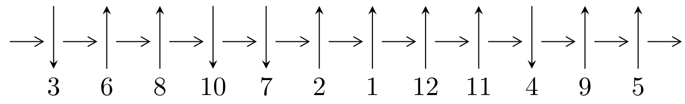
$12a_{0306}$ $(K12a_{0306})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{66} - u^{65} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle u^7 + u^5 + 2u^3 + u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 73 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. $I_1^u = \langle u^{66} - u^{65} + \cdots + 2u + 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^8 + u^6 + 3u^4 + 2u^2 + 1 \\ -u^{10} - 2u^8 - 3u^6 - 4u^4 - u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^6 + u^4 + 2u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^{13} - 2u^{11} - 5u^9 - 6u^7 - 6u^5 - 4u^3 - u \\ u^{13} + u^{11} + 3u^9 + 2u^7 + 2u^5 + u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{36} + 5u^{34} + \cdots + u^2 + 1 \\ -u^{36} - 4u^{34} + \cdots - 12u^8 - u^4 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{24} - 3u^{22} + \cdots + 2u^2 + 1 \\ u^{26} + 4u^{24} + \cdots + 3u^6 - u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^{47} - 6u^{45} + \cdots - 4u^3 - 2u \\ u^{49} + 7u^{47} + \cdots + 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{64} - 4u^{63} + \cdots + 8u^2 + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{66} + 21u^{65} + \cdots + 4u + 1$
c_2, c_6	$u^{66} - u^{65} + \cdots - 2u + 1$
c_3, c_{12}	$u^{66} + 6u^{65} + \cdots + 1260u + 392$
c_4, c_{10}	$u^{66} - u^{65} + \cdots + 2u + 1$
c_7	$u^{66} + 5u^{65} + \cdots - 4u + 37$
c_8, c_9, c_{11}	$u^{66} - 17u^{65} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{66} + 49y^{65} + \cdots + 76y + 1$
c_2, c_6	$y^{66} + 21y^{65} + \cdots + 4y + 1$
c_3, c_{12}	$y^{66} - 42y^{65} + \cdots + 3127376y + 153664$
c_4, c_{10}	$y^{66} + 17y^{65} + \cdots + 4y + 1$
c_7	$y^{66} - 7y^{65} + \cdots - 10820y + 1369$
c_8, c_9, c_{11}	$y^{66} + 65y^{65} + \cdots + 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.276142 + 0.973147I$	$4.50590 - 2.85550I$	$12.05805 + 4.41993I$
$u = 0.276142 - 0.973147I$	$4.50590 + 2.85550I$	$12.05805 - 4.41993I$
$u = -0.311087 + 0.967783I$	$1.20301 + 5.52787I$	$4.00000 - 8.08112I$
$u = -0.311087 - 0.967783I$	$1.20301 - 5.52787I$	$4.00000 + 8.08112I$
$u = -0.225553 + 0.996987I$	$7.62104 - 4.67869I$	$10.89032 + 2.00709I$
$u = -0.225553 - 0.996987I$	$7.62104 + 4.67869I$	$10.89032 - 2.00709I$
$u = 0.236153 + 0.997386I$	$8.32399 - 1.19963I$	$12.16015 + 3.25993I$
$u = 0.236153 - 0.997386I$	$8.32399 + 1.19963I$	$12.16015 - 3.25993I$
$u = 0.304523 + 1.001500I$	$7.92106 - 4.82325I$	$11.07978 + 4.36296I$
$u = 0.304523 - 1.001500I$	$7.92106 + 4.82325I$	$11.07978 - 4.36296I$
$u = -0.312943 + 1.002150I$	$7.10672 + 10.70210I$	$9.44810 - 9.41252I$
$u = -0.312943 - 1.002150I$	$7.10672 - 10.70210I$	$9.44810 + 9.41252I$
$u = 0.456777 + 0.785683I$	$1.23819 - 6.54922I$	$4.17677 + 9.67765I$
$u = 0.456777 - 0.785683I$	$1.23819 + 6.54922I$	$4.17677 - 9.67765I$
$u = -0.397793 + 0.800537I$	$1.82221 + 1.25981I$	$6.09781 - 4.41931I$
$u = -0.397793 - 0.800537I$	$1.82221 - 1.25981I$	$6.09781 + 4.41931I$
$u = 0.784027 + 0.781220I$	$1.10586 - 5.81643I$	0
$u = 0.784027 - 0.781220I$	$1.10586 + 5.81643I$	0
$u = -0.023490 + 0.865695I$	$3.89741 + 2.71211I$	$12.15997 - 3.32953I$
$u = -0.023490 - 0.865695I$	$3.89741 - 2.71211I$	$12.15997 + 3.32953I$
$u = -0.836827 + 0.807352I$	$-2.60329 - 1.13595I$	0
$u = -0.836827 - 0.807352I$	$-2.60329 + 1.13595I$	0
$u = -0.858606 + 0.795301I$	$0.37310 - 3.30299I$	0
$u = -0.858606 - 0.795301I$	$0.37310 + 3.30299I$	0
$u = 0.863434 + 0.797395I$	$-0.53580 + 9.14737I$	0
$u = 0.863434 - 0.797395I$	$-0.53580 - 9.14737I$	0
$u = 0.827585 + 0.837312I$	$-4.93871 - 2.14028I$	0
$u = 0.827585 - 0.837312I$	$-4.93871 + 2.14028I$	0
$u = 0.854921 + 0.812716I$	$-6.26873 + 3.63660I$	0
$u = 0.854921 - 0.812716I$	$-6.26873 - 3.63660I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.827211 + 0.875814I$	$-5.15023 - 2.33627I$	0
$u = 0.827211 - 0.875814I$	$-5.15023 + 2.33627I$	0
$u = -0.845186 + 0.880793I$	$-6.18098 - 2.57775I$	0
$u = -0.845186 - 0.880793I$	$-6.18098 + 2.57775I$	0
$u = 0.459757 + 0.623778I$	$-3.05863 - 1.75367I$	$-4.05356 + 5.04373I$
$u = 0.459757 - 0.623778I$	$-3.05863 + 1.75367I$	$-4.05356 - 5.04373I$
$u = 0.815789 + 0.918639I$	$-5.01899 - 3.79645I$	0
$u = 0.815789 - 0.918639I$	$-5.01899 + 3.79645I$	0
$u = -0.761181 + 0.966217I$	$2.20192 + 5.87663I$	0
$u = -0.761181 - 0.966217I$	$2.20192 - 5.87663I$	0
$u = -0.837522 + 0.902945I$	$-9.94428 + 3.11601I$	0
$u = -0.837522 - 0.902945I$	$-9.94428 - 3.11601I$	0
$u = 0.791445 + 0.947693I$	$-4.59364 - 3.91730I$	0
$u = 0.791445 - 0.947693I$	$-4.59364 + 3.91730I$	0
$u = -0.830031 + 0.923795I$	$-6.04701 + 8.80946I$	0
$u = -0.830031 - 0.923795I$	$-6.04701 - 8.80946I$	0
$u = -0.787054 + 0.967827I$	$-2.10788 + 7.20390I$	0
$u = -0.787054 - 0.967827I$	$-2.10788 - 7.20390I$	0
$u = 0.798774 + 0.972679I$	$-5.77098 - 9.79547I$	0
$u = 0.798774 - 0.972679I$	$-5.77098 + 9.79547I$	0
$u = -0.792645 + 0.983270I$	$0.95662 + 9.45046I$	0
$u = -0.792645 - 0.983270I$	$0.95662 - 9.45046I$	0
$u = 0.795929 + 0.984558I$	$0.0466 - 15.3200I$	0
$u = 0.795929 - 0.984558I$	$0.0466 + 15.3200I$	0
$u = -0.223454 + 0.622794I$	$0.329896 + 0.949161I$	$5.93547 - 7.10571I$
$u = -0.223454 - 0.622794I$	$0.329896 - 0.949161I$	$5.93547 + 7.10571I$
$u = 0.487684 + 0.434861I$	$0.22976 + 2.99529I$	$0.08554 - 2.50316I$
$u = 0.487684 - 0.434861I$	$0.22976 - 2.99529I$	$0.08554 + 2.50316I$
$u = -0.643478 + 0.086667I$	$4.24877 - 7.37536I$	$3.63430 + 5.60307I$
$u = -0.643478 - 0.086667I$	$4.24877 + 7.37536I$	$3.63430 - 5.60307I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.638810 + 0.068850I$	$5.02009 + 1.56359I$	$5.22655 - 0.46859I$
$u = \quad 0.638810 - 0.068850I$	$5.02009 - 1.56359I$	$5.22655 + 0.46859I$
$u = -0.565065 + 0.112376I$	$-1.37963 - 2.39285I$	$-2.15770 + 3.99262I$
$u = -0.565065 - 0.112376I$	$-1.37963 + 2.39285I$	$-2.15770 - 3.99262I$
$u = -0.467047 + 0.336383I$	$0.51184 + 1.97273I$	$0.43404 - 3.18104I$
$u = -0.467047 - 0.336383I$	$0.51184 - 1.97273I$	$0.43404 + 3.18104I$

II. $I_2^u = \langle u^7 + u^5 + 2u^3 + u - 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_{12} = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^4 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^6 + u^4 + 2u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^6 - u^4 - 2u^2 - 1 \\ u^6 + u^2 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^3 \\ -u^5 - u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^5 - u \\ -2u^3 + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_8 c_9, c_{11}	$y^7 + 6y^6 + 13y^5 + 10y^4 + 2y^3 + 8y^2 + 9y - 1$
c_2, c_4, c_6 c_{10}	$y^7 + 2y^6 + 5y^5 + 6y^4 + 6y^3 + 4y^2 + y - 1$
c_3, c_{12}	$(y - 1)^7$
c_7	$y^7 - 6y^6 + 25y^5 - 54y^4 + 78y^3 - 32y^2 + 13y - 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.237779 + 0.943997I$	1.64493	6.00000
$u = -0.237779 - 0.943997I$	1.64493	6.00000
$u = -0.799839 + 0.781167I$	1.64493	6.00000
$u = -0.799839 - 0.781167I$	1.64493	6.00000
$u = \quad 0.755347 + 0.961681I$	1.64493	6.00000
$u = \quad 0.755347 - 0.961681I$	1.64493	6.00000
$u = \quad 0.564540$	1.64493	6.00000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u^7+2u^6+\cdots+u-1)(u^{66}+21u^{65}+\cdots+4u+1)$
c_2, c_6	$(u^7+u^5+2u^3+u-1)(u^{66}-u^{65}+\cdots-2u+1)$
c_3, c_{12}	$((u-1)^7)(u^{66}+6u^{65}+\cdots+1260u+392)$
c_4, c_{10}	$(u^7+u^5+2u^3+u-1)(u^{66}-u^{65}+\cdots+2u+1)$
c_7	$(u^7-3u^5-2u^4+8u^3+2u^2-u-3)(u^{66}+5u^{65}+\cdots-4u+37)$
c_8, c_9, c_{11}	$(u^7-2u^6+\cdots+u+1)(u^{66}-17u^{65}+\cdots-4u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^7+6y^6+13y^5+10y^4+2y^3+8y^2+9y-1)$ $\cdot(y^{66}+49y^{65}+\cdots+76y+1)$
c_2, c_6	$(y^7+2y^6+\cdots+y-1)(y^{66}+21y^{65}+\cdots+4y+1)$
c_3, c_{12}	$((y-1)^7)(y^{66}-42y^{65}+\cdots+3127376y+153664)$
c_4, c_{10}	$(y^7+2y^6+\cdots+y-1)(y^{66}+17y^{65}+\cdots+4y+1)$
c_7	$(y^7-6y^6+25y^5-54y^4+78y^3-32y^2+13y-9)$ $\cdot(y^{66}-7y^{65}+\cdots-10820y+1369)$
c_8, c_9, c_{11}	$(y^7+6y^6+13y^5+10y^4+2y^3+8y^2+9y-1)$ $\cdot(y^{66}+65y^{65}+\cdots+4y+1)$