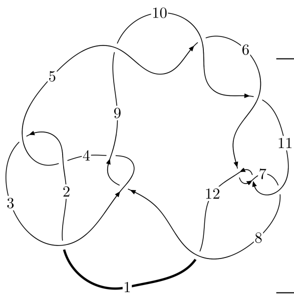
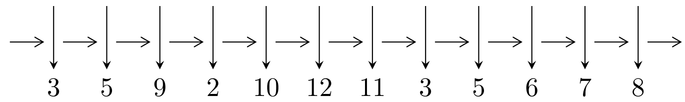
$12n_{0243}$ ($K12n_{0243}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^5+u^4-2u^3+u^2+b-u,\ -u^5+u^4-3u^3+2u^2+a-2u+1,$$
$$u^8-2u^7+5u^6-6u^5+7u^4-7u^3+4u^2-4u+1\rangle$$
$$I_2^u = \langle u^5+u^4+2u^3+u^2+b+u,\ u^5+u^4+3u^3+2u^2+a+2u+1,\ u^6+u^5+3u^4+2u^3+2u^2+u-1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 14 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. $\boldsymbol{I_1^u = \langle -u^5 + u^4 - 2u^3 + u^2 + b - u,\ -u^5 + u^4 - 3u^3 + 2u^2 + a - 2u + 1,\ u^8 - 2u^7 + \cdots - 4u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_{11} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^5 - 2u^3 - u \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^5 - u^4 + 3u^3 - 2u^2 + 2u - 1 \\ u^5 - u^4 + 2u^3 - u^2 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^6 - 3u^4 - 2u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^7 + 8u^5 - 2u^4 + 13u^3 - 3u^2 + 5u - 2 \\ u^7 + 2u^6 + 4u^5 + 3u^4 + 4u^3 + u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 2u^7 + 6u^6 + 11u^5 + 15u^4 + 17u^3 + 8u^2 + 8u - 3 \\ 4u^7 + 7u^6 + 10u^5 + 14u^4 + 8u^3 + 5u^2 - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -3u^7 + 4u^6 - 10u^5 + 7u^4 - 10u^3 + 4u^2 - 4u + 2 \\ -2u^7 + 4u^6 - 8u^5 + 7u^4 - 10u^3 + 4u^2 - 6u + 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^7 - 8u^6 + 16u^5 - 17u^4 + 14u^3 - 15u^2 + 6u - 19$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 + 33u^7 + 402u^6 + 2159u^5 + 4922u^4 + 6895u^3 - 302u^2 + 33u + 1$
c_2, c_4	$u^8 - 7u^7 + 8u^6 + 27u^5 - 20u^4 - 81u^3 + 12u^2 - 3u - 1$
c_3, c_8	$u^8 + 7u^7 - 19u^6 - 256u^5 - 600u^4 - 536u^3 - 32u^2 - 128u - 64$
c_5, c_9, c_{10} c_{12}	$u^8 - 2u^7 - 7u^6 + 12u^5 + 5u^4 + 3u^3 - 2u^2 + 2u + 1$
c_6, c_7, c_{11}	$u^8 + 2u^7 + 5u^6 + 6u^5 + 7u^4 + 7u^3 + 4u^2 + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 285y^7 + \cdots - 1693y + 1$
c_2, c_4	$y^8 - 33y^7 + 402y^6 - 2159y^5 + 4922y^4 - 6895y^3 - 302y^2 - 33y + 1$
c_3, c_8	$y^8 - 87y^7 + \cdots - 12288y + 4096$
c_5, c_9, c_{10} c_{12}	$y^8 - 18y^7 + 107y^6 - 206y^5 - 9y^4 - 91y^3 + 2y^2 - 8y + 1$
c_6, c_7, c_{11}	$y^8 + 6y^7 + 15y^6 + 14y^5 - 9y^4 - 31y^3 - 26y^2 - 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.381025 + 0.877247I$ $a = 1.30622 + 1.00951I$ $b = 1.238510 - 0.243220I$	$-1.28153 + 1.66195I$	$-14.7384 - 2.2086I$
$u = -0.381025 - 0.877247I$ $a = 1.30622 - 1.00951I$ $b = 1.238510 + 0.243220I$	$-1.28153 - 1.66195I$	$-14.7384 + 2.2086I$
$u = 1.11498$ $a = 3.07969$ $b = 2.82176$	9.42637	-17.0560
$u = 0.126694 + 1.193160I$ $a = -0.183567 - 0.143629I$ $b = -0.178784 + 0.606721I$	$2.78716 - 1.62541I$	$-7.16123 + 3.74390I$
$u = 0.126694 - 1.193160I$ $a = -0.183567 + 0.143629I$ $b = -0.178784 - 0.606721I$	$2.78716 + 1.62541I$	$-7.16123 - 3.74390I$
$u = 0.54402 + 1.39007I$ $a = 1.08549 - 1.80102I$ $b = 2.89776 - 0.22684I$	$13.7911 - 5.9041I$	$-14.4329 + 2.5359I$
$u = 0.54402 - 1.39007I$ $a = 1.08549 + 1.80102I$ $b = 2.89776 + 0.22684I$	$13.7911 + 5.9041I$	$-14.4329 - 2.5359I$
$u = 0.305633$ $a = -0.495968$ $b = 0.263262$	-0.541319	-18.2790

II. $\boldsymbol{I^u_2 = \langle u^5+u^4+2u^3+u^2+b+u,\ u^5+u^4+3u^3+2u^2+a+2u+1,\ u^6+u^5+3u^4+2u^3+2u^2+u-1\rangle}$

(i) Arc colorings

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

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

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

$$a_{11} = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^5-2u^3-u \\ -u^5-u^4-2u^3-u^2-u+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^3+2u \\ u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^5-u^4-3u^3-2u^2-2u-1 \\ -u^5-u^4-2u^3-u^2-u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^5+2u^3+u \\ u^5+u^4+2u^3+u^2+u-1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2u^5-u^4-5u^3-2u^2-3u-1 \\ -2u^5-2u^4-4u^3-2u^2-2u+1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^5-u^4-3u^3-2u^2-2u-1 \\ -u^5-u^4-2u^3-u^2-u \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^4-2u^3-5u^2-2u-15$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.873214$ $a = \quad 1.14519$ $b = \quad 1.36865$	-9.30502	-17.4790
$u = \quad 0.138835 + 1.234450I$ $a = -0.089969 + 0.799962I$ $b = -1.087730 + 0.567441I$	$1.31531 - 1.97241I$	$-12.92955 + 2.53106I$
$u = \quad 0.138835 - 1.234450I$ $a = -0.089969 - 0.799962I$ $b = -1.087730 - 0.567441I$	$1.31531 + 1.97241I$	$-12.92955 - 2.53106I$
$u = -0.408802 + 1.276380I$ $a = \quad 0.227586 + 0.710576I$ $b = \quad 1.286430 - 0.496092I$	$-5.34051 + 4.59213I$	$-13.8770 - 3.6103I$
$u = -0.408802 - 1.276380I$ $a = \quad 0.227586 - 0.710576I$ $b = \quad 1.286430 + 0.496092I$	$-5.34051 - 4.59213I$	$-13.8770 + 3.6103I$
$u = \quad 0.413150$ $a = -2.42043$ $b = -0.766061$	-2.38379	-16.9080

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^6$ $\cdot\,(u^8+33u^7+402u^6+2159u^5+4922u^4+6895u^3-302u^2+33u+1)$
c_2	$(u-1)^6(u^8-7u^7+8u^6+27u^5-20u^4-81u^3+12u^2-3u-1)$
c_3, c_8	$u^6(u^8+7u^7-19u^6-256u^5-600u^4-536u^3-32u^2-128u-64)$
c_4	$(u+1)^6(u^8-7u^7+8u^6+27u^5-20u^4-81u^3+12u^2-3u-1)$
c_5	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)$ $\cdot\,(u^8-2u^7-7u^6+12u^5+5u^4+3u^3-2u^2+2u+1)$
c_6, c_7	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)$ $\cdot\,(u^8+2u^7+5u^6+6u^5+7u^4+7u^3+4u^2+4u+1)$
c_9, c_{10}, c_{12}	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)$ $\cdot\,(u^8-2u^7-7u^6+12u^5+5u^4+3u^3-2u^2+2u+1)$
c_{11}	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)$ $\cdot\,(u^8+2u^7+5u^6+6u^5+7u^4+7u^3+4u^2+4u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^8 - 285y^7 + \cdots - 1693y + 1)$
c_2, c_4	$(y-1)^6$ $\cdot\,(y^8 - 33y^7 + 402y^6 - 2159y^5 + 4922y^4 - 6895y^3 - 302y^2 - 33y + 1)$
c_3, c_8	$y^6(y^8 - 87y^7 + \cdots - 12288y + 4096)$
c_5, c_9, c_{10} c_{12}	$(y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1)$ $\cdot\,(y^8 - 18y^7 + 107y^6 - 206y^5 - 9y^4 - 91y^3 + 2y^2 - 8y + 1)$
c_6, c_7, c_{11}	$(y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1)$ $\cdot\,(y^8 + 6y^7 + 15y^6 + 14y^5 - 9y^4 - 31y^3 - 26y^2 - 8y + 1)$