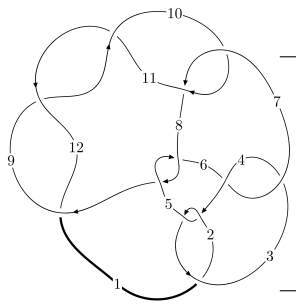
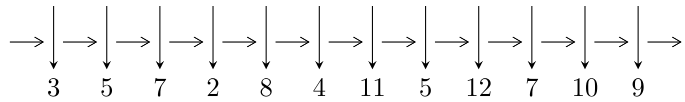
$12n_{0096}$ ($K12n_{0096}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -4915u^{16} + 20254u^{15} + \cdots + 7156b + 9167,\ -123805u^{16} + 530300u^{15} + \cdots + 7156a + 154261,$$
$$u^{17} - 5u^{16} + \cdots - 9u + 1\rangle$$
$$I_2^u = \langle u^2 + b,\ a + u + 2,\ u^3 + u^2 - 1\rangle$$
$$I_3^u = \langle b,\ 3u^4 - u^3 - u^2 + a + 3u + 4,\ u^5 - u^4 + u^2 + u - 1\rangle$$
$$I_4^u = \langle -3u^2a - 2au - 4u^2 + 5b - a - u + 2,\ a^2 + 2u^2 + a + 2u,\ u^3 + u^2 - 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 31 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. $\boldsymbol{I_1^u = \langle -4915u^{16} + 20254u^{15} + \cdots + 7156b + 9167,\ -1.24 \times 10^5 u^{16} + 5.30 \times 10^5 u^{15} + \cdots + 7156a + 1.54 \times 10^5,\ u^{17} - 5u^{16} + \cdots - 9u + 1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 17.3009u^{16} - 74.1056u^{15} + \cdots + 179.512u - 21.5569 \\ 0.686836u^{16} - 2.83035u^{15} + \cdots + 5.34754u - 1.28102 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 17.9877u^{16} - 76.9360u^{15} + \cdots + 184.860u - 22.8379 \\ 0.686836u^{16} - 2.83035u^{15} + \cdots + 5.34754u - 1.28102 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -4.26593u^{16} + 18.3215u^{15} + \cdots - 48.9090u + 8.75545 \\ -0.297652u^{16} + 1.56051u^{15} + \cdots - 5.66867u + 0.378144 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2.46297u^{16} + 10.6539u^{15} + \cdots - 31.7707u + 6.12549 \\ 0.563164u^{16} - 2.41965u^{15} + \cdots + 4.65246u - 0.968977 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 18.8118u^{16} - 80.6283u^{15} + \cdots + 197.318u - 25.5869 \\ 0.563164u^{16} - 2.41965u^{15} + \cdots + 4.65246u - 0.968977 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^7 + 2u^3 \\ u^7 - u^5 + 2u^3 - u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^3 \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^5 + u \\ u^5 - u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{440209}{1789}u^{16} + \frac{7557829}{7156}u^{15} + \cdots - \frac{18828293}{7156}u + \frac{602132}{1789}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} + 25u^{16} + \cdots + 349u + 1$
c_2, c_4	$u^{17} - 9u^{16} + \cdots - 23u - 1$
c_3, c_6	$u^{17} - 4u^{16} + \cdots - 808u^2 + 32$
c_5, c_8	$u^{17} - 9u^{16} + \cdots + 1536u + 512$
c_7, c_{10}	$u^{17} + 5u^{16} + \cdots - 9u - 1$
c_9, c_{11}, c_{12}	$u^{17} + 9u^{16} + \cdots + 19u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} - 57y^{16} + \cdots + 110253y - 1$
c_2, c_4	$y^{17} - 25y^{16} + \cdots + 349y - 1$
c_3, c_6	$y^{17} - 48y^{16} + \cdots + 51712y - 1024$
c_5, c_8	$y^{17} - 49y^{16} + \cdots + 4063232y - 262144$
c_7, c_{10}	$y^{17} - 9y^{16} + \cdots + 19y - 1$
c_9, c_{11}, c_{12}	$y^{17} + 3y^{16} + \cdots - 149y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.838900+0.274006I$ $a=-0.541331+1.242290I$ $b=\ \ 0.022802+1.171600I$	$1.70067+3.40197I$	$-9.83492-9.12548I$
$u=-0.838900-0.274006I$ $a=-0.541331-1.242290I$ $b=\ \ 0.022802-1.171600I$	$1.70067-3.40197I$	$-9.83492+9.12548I$
$u=-0.888050+0.699587I$ $a=\ \ 0.963662+0.607402I$ $b=\ \ 0.599165+0.085043I$	$2.22871+2.69541I$	$-2.36795-0.48316I$
$u=-0.888050-0.699587I$ $a=\ \ 0.963662-0.607402I$ $b=\ \ 0.599165-0.085043I$	$2.22871-2.69541I$	$-2.36795+0.48316I$
$u=\ \ 0.702958$ $a=\ \ 8.08327$ $b=\ \ 0.212168$	-2.60036	-117.690
$u=\ \ 0.638788+1.195210I$ $a=-0.615352+0.257656I$ $b=\ \ 2.18853-1.40547I$	$-10.83360+4.83632I$	$-9.98493-0.99160I$
$u=\ \ 0.638788-1.195210I$ $a=-0.615352-0.257656I$ $b=\ \ 2.18853+1.40547I$	$-10.83360-4.83632I$	$-9.98493+0.99160I$
$u=\ \ 0.932524+0.992733I$ $a=\ \ 0.024900+0.723358I$ $b=-1.316500-0.396988I$	$8.46454-3.58781I$	$-11.43442+3.20089I$
$u=\ \ 0.932524-0.992733I$ $a=\ \ 0.024900-0.723358I$ $b=-1.316500+0.396988I$	$8.46454+3.58781I$	$-11.43442-3.20089I$
$u=\ \ 0.596043$ $a=\ \ 0.723994$ $b=-0.233910$	-0.842519	-11.7040

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.18905 + 0.84637I$ $a = 1.44006 - 1.34507I$ $b = 1.69244 + 1.67258I$	$-12.6169 - 12.0697I$	$-10.79554 + 4.97668I$
$u = 1.18905 - 0.84637I$ $a = 1.44006 + 1.34507I$ $b = 1.69244 - 1.67258I$	$-12.6169 + 12.0697I$	$-10.79554 - 4.97668I$
$u = 1.45050 + 0.33561I$ $a = -1.67908 + 1.23512I$ $b = -2.95952 + 0.58336I$	$-4.97113 - 2.77667I$	$-12.19520 + 1.72835I$
$u = 1.45050 - 0.33561I$ $a = -1.67908 - 1.23512I$ $b = -2.95952 - 0.58336I$	$-4.97113 + 2.77667I$	$-12.19520 - 1.72835I$
$u = 0.248594 + 0.150644I$ $a = 1.39946 - 0.69681I$ $b = -0.634067 + 0.017100I$	$-0.943827 + 0.013133I$	$-9.47910 + 0.58994I$
$u = 0.248594 - 0.150644I$ $a = 1.39946 + 0.69681I$ $b = -0.634067 - 0.017100I$	$-0.943827 - 0.013133I$	$-9.47910 - 0.58994I$
$u = -1.76401$ $a = 2.20808$ $b = 4.83602$	19.2915	-12.4240

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

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u - 2 \\ -u^2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u^2 - u - 2 \\ -u^2 \end{pmatrix}$$

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

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

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

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2u^2 - 5u - 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -1.122560 - 0.744862I$ $b = -0.215080 + 1.307140I$	$6.04826 + 5.65624I$	$-9.18265 - 6.33859I$
$u = -0.877439 - 0.744862I$ $a = -1.122560 + 0.744862I$ $b = -0.215080 - 1.307140I$	$6.04826 - 5.65624I$	$-9.18265 + 6.33859I$
$u = \quad 0.754878$ $a = -2.75488$ $b = -0.569840$	-2.22691	-16.6350

III. $I_3^u = \langle b,\ 3u^4 - u^3 - u^2 + a + 3u + 4,\ u^5 - u^4 + u^2 + u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 10u^4 - 7u^3 + u^2 + 10u + 7$

(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^u_3	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.758138 + 0.584034I$ $a = 1.036940 - 0.588205I$ $b = 0$	$0.17487 + 2.21397I$	$-10.02401 - 4.83884I$
$u = -0.758138 - 0.584034I$ $a = 1.036940 + 0.588205I$ $b = 0$	$0.17487 - 2.21397I$	$-10.02401 + 4.83884I$
$u = 0.935538 + 0.903908I$ $a = 0.348360 + 0.023996I$ $b = 0$	$9.31336 - 3.33174I$	$-1.83654 + 1.25445I$
$u = 0.935538 - 0.903908I$ $a = 0.348360 - 0.023996I$ $b = 0$	$9.31336 + 3.33174I$	$-1.83654 - 1.25445I$
$u = 0.645200$ $a = -5.77061$ $b = 0$	-2.52712	13.7210

IV. $\boldsymbol{I_4^u = \langle -3u^2a - 2au - 4u^2 + 5b - a - u + 2,\ a^2 + 2u^2 + a + 2u,\ u^3 + u^2 - 1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

$$a_3 = \begin{pmatrix} \frac{3}{5}u^2a + \frac{4}{5}u^2 + \cdots + \frac{6}{5}a - \frac{2}{5} \\ \frac{3}{5}u^2a + \frac{4}{5}u^2 + \cdots + \frac{1}{5}a - \frac{2}{5} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{5}u^2a + \frac{2}{5}u^2 + \cdots + \frac{3}{5}a + \frac{9}{5} \\ \frac{1}{5}u^2a + \frac{3}{5}u^2 + \cdots + \frac{2}{5}a + \frac{6}{5} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{5}u^2a + \frac{2}{5}u^2 + \cdots + \frac{3}{5}a + \frac{9}{5} \\ \frac{1}{5}u^2a + \frac{3}{5}u^2 + \cdots + \frac{2}{5}a + \frac{6}{5} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^2 + a + 2u + 1 \\ \frac{1}{5}u^2a + \frac{3}{5}u^2 + \cdots + \frac{2}{5}a + \frac{6}{5} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{13}{5}u^2a - \frac{17}{5}au + \frac{26}{5}u^2 + \frac{29}{5}a + \frac{24}{5}u - \frac{58}{5}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.824718 + 0.424452I$ $b = -0.215080 - 1.307140I$	6.04826	$-8.27833 + 0.98317I$
$u = -0.877439 + 0.744862I$ $a = -1.82472 - 0.42445I$ $b = -0.569840$	$1.91067 + 2.82812I$	$-29.3323 - 8.2928I$
$u = -0.877439 - 0.744862I$ $a = 0.824718 - 0.424452I$ $b = -0.215080 + 1.307140I$	6.04826	$-8.27833 - 0.98317I$
$u = -0.877439 - 0.744862I$ $a = -1.82472 + 0.42445I$ $b = -0.569840$	$1.91067 - 2.82812I$	$-29.3323 + 8.2928I$
$u = 0.754878$ $a = -0.50000 + 1.54901I$ $b = -0.215080 + 1.307140I$	$1.91067 + 2.82812I$	$-5.88933 + 2.71361I$
$u = 0.754878$ $a = -0.50000 - 1.54901I$ $b = -0.215080 - 1.307140I$	$1.91067 - 2.82812I$	$-5.88933 - 2.71361I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^3-u^2+2u-1)^3(u^{17}+25u^{16}+\cdots+349u+1)$
c_2	$((u-1)^5)(u^3+u^2-1)^3(u^{17}-9u^{16}+\cdots-23u-1)$
c_3	$u^5(u^3-u^2+2u-1)^3(u^{17}-4u^{16}+\cdots-808u^2+32)$
c_4	$((u+1)^5)(u^3-u^2+1)^3(u^{17}-9u^{16}+\cdots-23u-1)$
c_5	$u^9(u^5-u^4+\cdots+3u-1)(u^{17}-9u^{16}+\cdots+1536u+512)$
c_6	$u^5(u^3+u^2+2u+1)^3(u^{17}-4u^{16}+\cdots-808u^2+32)$
c_7	$((u^3+u^2-1)^3)(u^5-u^4+u^2+u-1)(u^{17}+5u^{16}+\cdots-9u-1)$
c_8	$u^9(u^5+u^4+\cdots+3u+1)(u^{17}-9u^{16}+\cdots+1536u+512)$
c_9	$(u^3-u^2+2u-1)^3(u^5-u^4+4u^3-3u^2+3u-1)$ $\cdot(u^{17}+9u^{16}+\cdots+19u+1)$
c_{10}	$((u^3-u^2+1)^3)(u^5+u^4-u^2+u+1)(u^{17}+5u^{16}+\cdots-9u-1)$
c_{11}, c_{12}	$(u^3+u^2+2u+1)^3(u^5+u^4+4u^3+3u^2+3u+1)$ $\cdot(u^{17}+9u^{16}+\cdots+19u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^5)(y^3+3y^2+2y-1)^3(y^{17}-57y^{16}+\cdots+110253y-1)$
c_2, c_4	$((y-1)^5)(y^3-y^2+2y-1)^3(y^{17}-25y^{16}+\cdots+349y-1)$
c_3, c_6	$y^5(y^3+3y^2+2y-1)^3(y^{17}-48y^{16}+\cdots+51712y-1024)$
c_5, c_8	$y^9(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot\,(y^{17}-49y^{16}+\cdots+4063232y-262144)$
c_7, c_{10}	$(y^3-y^2+2y-1)^3(y^5-y^4+4y^3-3y^2+3y-1)$ $\cdot\,(y^{17}-9y^{16}+\cdots+19y-1)$
c_9, c_{11}, c_{12}	$(y^3+3y^2+2y-1)^3(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot\,(y^{17}+3y^{16}+\cdots-149y-1)$