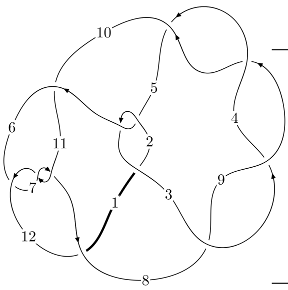
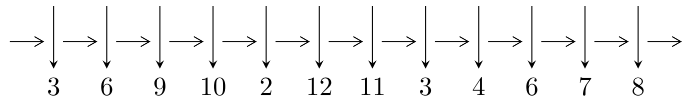
$12n_{0473}$ ($K12n_{0473}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 5447u^8 - 4753u^7 + \cdots + 46532b + 23300,\ -461u^8 - 3128u^7 + \cdots + 93064a - 27096, \\ & u^9 - 18u^7 - 36u^6 + 12u^5 + 68u^4 + 36u^3 + 8u^2 + 24u + 8\rangle \end{aligned}$$

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

$$I_1^v = \langle a,\ v^2 + b - 1,\ v^3 - v + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 18 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. $\boldsymbol{I_1^u = \langle 5447u^8 - 4753u^7 + \cdots + 46532b + 23300,\ -461u^8 - 3128u^7 + \cdots + 93064a - 27096,\ u^9 - 18u^7 + \cdots + 24u + 8\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.00495358u^8 + 0.0336113u^7 + \cdots - 1.27001u + 0.291154 \\ -0.117059u^8 + 0.102145u^7 + \cdots - 0.727843u - 0.500731 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.0289801u^8 - 0.0392633u^7 + \cdots - 0.182670u + 0.813977 \\ 0.0609903u^8 - 0.0503739u^7 + \cdots + 1.76017u + 0.788705 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0267235u^8 - 0.0442706u^7 + \cdots + 0.191954u - 0.199347 \\ 0.0998238u^8 - 0.159439u^7 + \cdots + 1.80830u + 0.494198 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0267235u^8 - 0.0442706u^7 + \cdots + 0.191954u - 0.199347 \\ 0.00758618u^8 - 0.00221353u^7 + \cdots + 0.959598u + 0.140033 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^3 - 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.0326442u^8 - 0.0442276u^7 + \cdots - 0.952893u + 0.526090 \\ -0.0316341u^8 - 0.0297215u^7 + \cdots - 0.338606u - 0.139173 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0343097u^8 - 0.0464841u^7 + \cdots + 1.15155u - 0.0593140 \\ 0.00758618u^8 - 0.00221353u^7 + \cdots + 0.959598u + 0.140033 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{20957}{46532}u^8 + \frac{5941}{23266}u^7 + \frac{185067}{23266}u^6 + \frac{274717}{23266}u^5 - \frac{139019}{11633}u^4 - \frac{299261}{11633}u^3 - \frac{57101}{11633}u^2 + \frac{28694}{11633}u - \frac{223158}{11633}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9 + 73u^8 + \cdots + 729u + 49$
c_2, c_5	$u^9 + 13u^8 + 48u^7 + 72u^6 + 18u^5 - 14u^4 - 40u^3 - 27u - 7$
c_3, c_4, c_8 c_9	$u^9 - 18u^7 - 36u^6 + 12u^5 + 68u^4 + 36u^3 + 8u^2 + 24u + 8$
c_6, c_7, c_{11}	$u^9 + 3u^8 + 7u^7 + 14u^6 + 14u^5 + 25u^4 + 11u^3 + 15u^2 - 1$
c_{10}, c_{12}	$u^9 + 9u^8 - 73u^7 + 56u^6 + 430u^5 - 75u^4 - 417u^3 + 173u^2 + 36u - 13$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^9 - 4393y^8 + \cdots + 723913y - 2401$
c_2, c_5	$y^9 - 73y^8 + \cdots + 729y - 49$
c_3, c_4, c_8 c_9	$y^9 - 36y^8 + \cdots + 448y - 64$
c_6, c_7, c_{11}	$y^9 + 5y^8 - 7y^7 - 128y^6 - 440y^5 - 731y^4 - 601y^3 - 175y^2 + 30y - 1$
c_{10}, c_{12}	$y^9 - 227y^8 + \cdots + 5794y - 169$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.186450 + 0.424170I$ $a = 0.251161 + 0.846300I$ $b = 1.76218 + 0.93575I$	$-1.02910 - 2.89378I$	$-13.46616 + 2.37667I$
$u = -1.186450 - 0.424170I$ $a = 0.251161 - 0.846300I$ $b = 1.76218 - 0.93575I$	$-1.02910 + 2.89378I$	$-13.46616 - 2.37667I$
$u = 0.273011 + 0.580428I$ $a = -0.750166 - 0.744053I$ $b = 1.201410 + 0.238186I$	$2.44926 - 1.76826I$	$-8.73509 + 3.07632I$
$u = 0.273011 - 0.580428I$ $a = -0.750166 + 0.744053I$ $b = 1.201410 - 0.238186I$	$2.44926 + 1.76826I$	$-8.73509 - 3.07632I$
$u = 1.44806$ $a = 0.605279$ $b = -0.107770$	-6.65928	-13.3420
$u = -0.347212$ $a = 0.692622$ $b = -0.151972$	-0.501693	-19.7740
$u = -2.09595 + 0.74847I$ $a = 1.180400 - 0.226493I$ $b = 1.57561 - 4.87250I$	$13.5998 + 8.3082I$	$-13.79311 - 2.86755I$
$u = -2.09595 - 0.74847I$ $a = 1.180400 + 0.226493I$ $b = 1.57561 + 4.87250I$	$13.5998 - 8.3082I$	$-13.79311 + 2.86755I$
$u = 4.91794$ $a = -1.66068$ $b = -37.8186$	6.72995	-14.8960

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4b - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = 0.707107$ $b = 0.877439 + 0.744862I$	$-3.55561 - 2.82812I$	$-16.4902 + 2.9794I$
$u = 1.41421$ $a = 0.707107$ $b = 0.877439 - 0.744862I$	$-3.55561 + 2.82812I$	$-16.4902 - 2.9794I$
$u = 1.41421$ $a = 0.707107$ $b = -0.754878$	-7.69319	-23.0200
$u = -1.41421$ $a = -0.707107$ $b = 0.877439 + 0.744862I$	$-3.55561 - 2.82812I$	$-16.4902 + 2.9794I$
$u = -1.41421$ $a = -0.707107$ $b = 0.877439 - 0.744862I$	$-3.55561 + 2.82812I$	$-16.4902 - 2.9794I$
$u = -1.41421$ $a = -0.707107$ $b = -0.754878$	-7.69319	-23.0200

III. $I_1^v = \langle a,\ v^2 + b - 1,\ v^3 - v + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v^2 - 2v - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.662359 + 0.562280I$ $a = 0$ $b = 0.877439 - 0.744862I$	$1.37919 + 2.82812I$	$-11.81496 - 4.10401I$
$v = 0.662359 - 0.562280I$ $a = 0$ $b = 0.877439 + 0.744862I$	$1.37919 - 2.82812I$	$-11.81496 + 4.10401I$
$v = -1.32472$ $a = 0$ $b = -0.754878$	-2.75839	-14.3700

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^9+73u^8+\cdots+729u+49)$
c_2	$(u-1)^3(u+1)^6$ $\cdot(u^9+13u^8+48u^7+72u^6+18u^5-14u^4-40u^3-27u-7)$
c_3, c_4, c_8 c_9	$u^3(u^2-2)^3(u^9-18u^7+\cdots+24u+8)$
c_5	$(u-1)^6(u+1)^3$ $\cdot(u^9+13u^8+48u^7+72u^6+18u^5-14u^4-40u^3-27u-7)$
c_6, c_7	$(u^3-u^2+2u-1)(u^3+u^2+2u+1)^2$ $\cdot(u^9+3u^8+7u^7+14u^6+14u^5+25u^4+11u^3+15u^2-1)$
c_{10}, c_{12}	$(u^3-u^2+1)(u^3+u^2-1)^2$ $\cdot(u^9+9u^8-73u^7+56u^6+430u^5-75u^4-417u^3+173u^2+36u-13)$
c_{11}	$(u^3-u^2+2u-1)^2(u^3+u^2+2u+1)$ $\cdot(u^9+3u^8+7u^7+14u^6+14u^5+25u^4+11u^3+15u^2-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^9-4393y^8+\cdots+723913y-2401)$
c_2, c_5	$((y-1)^9)(y^9-73y^8+\cdots+729y-49)$
c_3, c_4, c_8 c_9	$y^3(y-2)^6(y^9-36y^8+\cdots+448y-64)$
c_6, c_7, c_{11}	$(y^3+3y^2+2y-1)^3$ $\cdot\,(y^9+5y^8-7y^7-128y^6-440y^5-731y^4-601y^3-175y^2+30y-1)$
c_{10}, c_{12}	$((y^3-y^2+2y-1)^3)(y^9-227y^8+\cdots+5794y-169)$