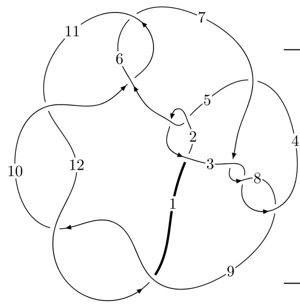
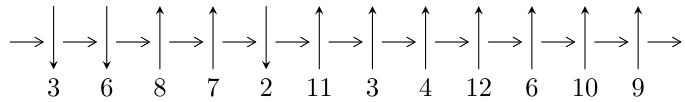
$12n_{0347}$ ($K12n_{0347}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle -90767u^{23} + 130788u^{22} + \cdots + 115958b - 256556, \\
&\quad 78760u^{23} - 139684u^{22} + \cdots + 57979a + 292292,\ u^{24} - 2u^{23} + \cdots + 4u - 1\rangle \\
I_2^u &= \langle -u^2 + b,\ -u^2 + a - u,\ u^3 + u^2 - 1\rangle \\
I_3^u &= \langle -2u^2b + b^2 + u^2 + u - 3,\ -u^2 + a + u,\ u^3 - u^2 + 1\rangle
\end{aligned}
$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 33 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. $\boldsymbol{I_1^u = \langle -9.08 \times 10^4 u^{23} + 1.31 \times 10^5 u^{22} + \cdots + 1.16 \times 10^5 b - 2.57 \times 10^5,\ 78760u^{23} - 139684u^{22} + \cdots + 57979a + 292292,\ u^{24} - 2u^{23} + \cdots + 4u - 1 \rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.35842u^{23} + 2.40922u^{22} + \cdots - 0.463478u - 5.04134 \\ 0.782758u^{23} - 1.12789u^{22} + \cdots - 0.287630u + 2.21249 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 2.13475u^{23} - 3.53621u^{22} + \cdots + 0.957097u + 7.64951 \\ -0.392478u^{23} + 1.12576u^{22} + \cdots - 0.0678349u - 2.52723 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -1.35842u^{23} + 2.40922u^{22} + \cdots - 0.463478u - 5.04134 \\ 0.687568u^{23} - 1.07441u^{22} + \cdots - 0.159722u + 2.52012 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1.53130u^{23} - 2.66924u^{22} + \cdots - 0.730765u + 6.01754 \\ -0.254842u^{23} + 0.829093u^{22} + \cdots + 0.396342u - 2.41867 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1.46724u^{23} - 2.41500u^{22} + \cdots - 0.384769u + 6.42115 \\ -0.745253u^{23} + 1.22722u^{22} + \cdots + 1.31089u - 2.14118 \end{pmatrix}$$

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{202771}{57979}u^{23} + \frac{271376}{57979}u^{22} + \cdots - \frac{44531}{57979}u + \frac{50669}{57979}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} + 38u^{23} + \cdots + 19329u + 529$
c_2, c_5	$u^{24} + 4u^{23} + \cdots + 187u - 23$
c_3, c_7, c_8	$u^{24} - u^{23} + \cdots + 40u - 8$
c_4	$u^{24} + 3u^{23} + \cdots + 1848u - 392$
c_6, c_{10}	$u^{24} + 2u^{23} + \cdots - 4u - 1$
c_9, c_{11}, c_{12}	$u^{24} - 4u^{23} + \cdots - 22u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} - 94y^{23} + \cdots - 151108609y + 279841$
c_2, c_5	$y^{24} - 38y^{23} + \cdots - 19329y + 529$
c_3, c_7, c_8	$y^{24} - 17y^{23} + \cdots - 704y + 64$
c_4	$y^{24} + 67y^{23} + \cdots - 4042304y + 153664$
c_6, c_{10}	$y^{24} - 4y^{23} + \cdots - 22y + 1$
c_9, c_{11}, c_{12}	$y^{24} + 36y^{23} + \cdots - 238y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.835116 + 0.528467I$ $a = 0.069686 + 0.738784I$ $b = 0.547462 + 1.048480I$	$2.94268 - 4.01681I$	$9.35710 + 7.00457I$
$u = -0.835116 - 0.528467I$ $a = 0.069686 - 0.738784I$ $b = 0.547462 - 1.048480I$	$2.94268 + 4.01681I$	$9.35710 - 7.00457I$
$u = 0.963205$ $a = 1.31465$ $b = 0.839556$	0.222515	11.2950
$u = -0.597222 + 0.889562I$ $a = -0.58903 - 1.37270I$ $b = 0.50973 - 1.55938I$	$-5.52645 + 0.12674I$	$2.10877 - 0.40561I$
$u = -0.597222 - 0.889562I$ $a = -0.58903 + 1.37270I$ $b = 0.50973 + 1.55938I$	$-5.52645 - 0.12674I$	$2.10877 + 0.40561I$
$u = 0.864539$ $a = -0.402491$ $b = -1.66775$	5.76082	17.2780
$u = -1.060560 + 0.611058I$ $a = -1.131470 - 0.597921I$ $b = -0.47456 - 1.66985I$	$-3.87887 - 5.71265I$	$4.95306 + 5.47972I$
$u = -1.060560 - 0.611058I$ $a = -1.131470 + 0.597921I$ $b = -0.47456 + 1.66985I$	$-3.87887 + 5.71265I$	$4.95306 - 5.47972I$
$u = 0.862448 + 0.906754I$ $a = -0.104076 + 1.054660I$ $b = 0.67129 + 1.47789I$	$-5.38835 + 5.03722I$	$3.61138 - 5.42024I$
$u = 0.862448 - 0.906754I$ $a = -0.104076 - 1.054660I$ $b = 0.67129 - 1.47789I$	$-5.38835 - 5.03722I$	$3.61138 + 5.42024I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.513421 + 0.536855I$ $a = 1.139640 + 0.211368I$ $b = -0.097677 - 0.235228I$	$2.07401 + 0.04231I$	$5.83295 + 0.03083I$
$u = -0.513421 - 0.536855I$ $a = 1.139640 - 0.211368I$ $b = -0.097677 + 0.235228I$	$2.07401 - 0.04231I$	$5.83295 - 0.03083I$
$u = 0.967380 + 0.818919I$ $a = -0.960942 + 0.174387I$ $b = -0.274739 + 0.939682I$	$-4.99363 + 1.35928I$	$3.66855 + 1.22776I$
$u = 0.967380 - 0.818919I$ $a = -0.960942 - 0.174387I$ $b = -0.274739 - 0.939682I$	$-4.99363 - 1.35928I$	$3.66855 - 1.22776I$
$u = 0.506125 + 0.470764I$ $a = 0.180480 - 1.065620I$ $b = 0.251752 - 0.534035I$	$-1.13375 + 1.36766I$	$0.54938 - 4.80618I$
$u = 0.506125 - 0.470764I$ $a = 0.180480 + 1.065620I$ $b = 0.251752 + 0.534035I$	$-1.13375 - 1.36766I$	$0.54938 + 4.80618I$
$u = 0.890899 + 1.015170I$ $a = 1.11515 - 0.92750I$ $b = -0.64029 - 1.99328I$	$-15.6478 - 3.5499I$	$3.29333 + 0.72039I$
$u = 0.890899 - 1.015170I$ $a = 1.11515 + 0.92750I$ $b = -0.64029 + 1.99328I$	$-15.6478 + 3.5499I$	$3.29333 - 0.72039I$
$u = -0.616175$ $a = 0.345774$ $b = -0.317535$	0.783360	13.8780
$u = 1.042290 + 0.914631I$ $a = 0.827306 - 1.092810I$ $b = -0.33967 - 2.78227I$	$-15.1291 + 10.6100I$	$3.94704 - 4.98017I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.042290 - 0.914631I$ $a = 0.827306 + 1.092810I$ $b = -0.33967 + 2.78227I$	$-15.1291 - 10.6100I$	$3.94704 + 4.98017I$
$u = -0.994437 + 0.996281I$ $a = 1.00204 + 1.07454I$ $b = -0.42318 + 2.42093I$	$19.4048 - 3.6460I$	$1.66218 + 2.14478I$
$u = -0.994437 - 0.996281I$ $a = 1.00204 - 1.07454I$ $b = -0.42318 - 2.42093I$	$19.4048 + 3.6460I$	$1.66218 - 2.14478I$
$u = 0.251655$ $a = -4.35547$ $b = 1.68547$	3.37303	1.58050

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

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^3$
c_3, c_4, c_7 c_8	u^3
c_5	$(u+1)^3$
c_6	$u^3 - u^2 + 1$
c_9	$u^3 + u^2 + 2u + 1$
c_{10}	$u^3 + u^2 - 1$
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_2, c_5	$(y-1)^3$
c_3, c_4, c_7 c_8	y^3
c_6, c_{10}	$y^3 - y^2 + 2y - 1$
c_9, c_{11}, c_{12}	$y^3 + 3y^2 + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -0.662359 - 0.562280I$ $b = 0.215080 - 1.307140I$	$-4.66906 - 2.82812I$	$4.89456 + 3.73884I$
$u = -0.877439 - 0.744862I$ $a = -0.662359 + 0.562280I$ $b = 0.215080 + 1.307140I$	$-4.66906 + 2.82812I$	$4.89456 - 3.73884I$
$u = 0.754878$ $a = 1.32472$ $b = 0.569840$	-0.531480	0.210880

III. $\boldsymbol{I_3^u = \langle -2u^2b + b^2 + u^2 + u - 3,\ -u^2 + a + u,\ u^3 - u^2 + 1 \rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -u^2 + b + u \\ -u^2b + u^2 + b - 2u \end{pmatrix}$$

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

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

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^2b - 2u^2 + 2u + 1 \\ bu - 2u^2 + 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u + 8$

(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_7 c_8	$(u^2-2)^3$
c_6	$(u^3+u^2-1)^2$
c_9	$(u^3+u^2+2u+1)^2$
c_{10}	$(u^3-u^2+1)^2$
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_2, c_5	$(y-1)^6$
c_3, c_4, c_7 c_8	$(y-2)^6$
c_6, c_{10}	$(y^3-y^2+2y-1)^2$
c_9, c_{11}, c_{12}	$(y^3+3y^2+2y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.662359 + 0.562280I$ $b = 1.151800 + 0.511958I$	$0.26574 + 2.82812I$	$4.49024 - 2.97945I$
$u = 0.877439 + 0.744862I$ $a = -0.662359 + 0.562280I$ $b = -0.72164 + 2.10232I$	$0.26574 + 2.82812I$	$4.49024 - 2.97945I$
$u = 0.877439 - 0.744862I$ $a = -0.662359 - 0.562280I$ $b = 1.151800 - 0.511958I$	$0.26574 - 2.82812I$	$4.49024 + 2.97945I$
$u = 0.877439 - 0.744862I$ $a = -0.662359 - 0.562280I$ $b = -0.72164 - 2.10232I$	$0.26574 - 2.82812I$	$4.49024 + 2.97945I$
$u = -0.754878$ $a = 1.32472$ $b = -1.30359$	4.40332	11.0200
$u = -0.754878$ $a = 1.32472$ $b = 2.44327$	4.40332	11.0200

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{24}+38u^{23}+\cdots+19329u+529)$
c_2	$((u-1)^3)(u+1)^6(u^{24}+4u^{23}+\cdots+187u-23)$
c_3, c_7, c_8	$u^3(u^2-2)^3(u^{24}-u^{23}+\cdots+40u-8)$
c_4	$u^3(u^2-2)^3(u^{24}+3u^{23}+\cdots+1848u-392)$
c_5	$((u-1)^6)(u+1)^3(u^{24}+4u^{23}+\cdots+187u-23)$
c_6	$(u^3-u^2+1)(u^3+u^2-1)^2(u^{24}+2u^{23}+\cdots-4u-1)$
c_9	$((u^3+u^2+2u+1)^3)(u^{24}-4u^{23}+\cdots-22u+1)$
c_{10}	$((u^3-u^2+1)^2)(u^3+u^2-1)(u^{24}+2u^{23}+\cdots-4u-1)$
c_{11}, c_{12}	$((u^3-u^2+2u-1)^3)(u^{24}-4u^{23}+\cdots-22u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{24} - 94y^{23} + \cdots - 1.51109 \times 10^8 y + 279841)$
c_2, c_5	$((y-1)^9)(y^{24} - 38y^{23} + \cdots - 19329y + 529)$
c_3, c_7, c_8	$y^3(y-2)^6(y^{24} - 17y^{23} + \cdots - 704y + 64)$
c_4	$y^3(y-2)^6(y^{24} + 67y^{23} + \cdots - 4042304y + 153664)$
c_6, c_{10}	$((y^3 - y^2 + 2y - 1)^3)(y^{24} - 4y^{23} + \cdots - 22y + 1)$
c_9, c_{11}, c_{12}	$((y^3 + 3y^2 + 2y - 1)^3)(y^{24} + 36y^{23} + \cdots - 238y + 1)$