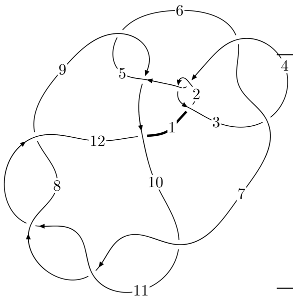
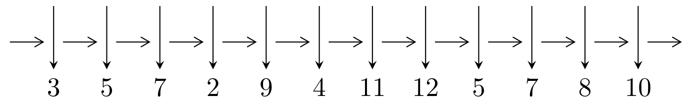
$12n_{0105}$ ($K12n_{0105}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 22873134u^{26} - 91748515u^{25} + \cdots + 37746988b - 44822939, \\
&\quad 63338341u^{26} - 295194910u^{25} + \cdots + 37746988a - 66189548,\ u^{27} - 5u^{26} + \cdots - 6u + 1\rangle \\
I_2^u &= \langle b,\ 2u^5 - u^4 - 7u^3 + u^2 + a + 5u + 4,\ u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1\rangle \\
I_3^u &= \langle -a^2 + b - 3a - 1,\ a^3 + 3a^2 + 2a + 1,\ u^2 + u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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. $\boldsymbol{I_1^u = \langle 2.29 \times 10^7 u^{26} - 9.17 \times 10^7 u^{25} + \cdots + 3.77 \times 10^7 b - 4.48 \times 10^7,\ 6.33 \times 10^7 u^{26} - 2.95 \times 10^8 u^{25} + \cdots + 3.77 \times 10^7 a - 6.62 \times 10^7,\ u^{27} - 5u^{26} + \cdots - 6u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.67797u^{26} + 7.82036u^{25} + \cdots - 8.45077u + 1.75351 \\ -0.605959u^{26} + 2.43062u^{25} + \cdots - 2.79918u + 1.18746 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -2.28393u^{26} + 10.2510u^{25} + \cdots - 11.2499u + 2.94096 \\ -0.605959u^{26} + 2.43062u^{25} + \cdots - 2.79918u + 1.18746 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.101693u^{26} + 0.926944u^{25} + \cdots - 7.17642u + 3.14845 \\ 1.45363u^{26} - 5.69060u^{25} + \cdots + 5.80702u - 1.50691 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.758454u^{26} - 2.47127u^{25} + \cdots - 3.68028u + 1.91598 \\ 0.144041u^{26} - 0.819382u^{25} + \cdots + 0.700822u - 0.562543 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.05084u^{26} + 5.94352u^{25} + \cdots - 11.3894u + 3.35900 \\ -0.144041u^{26} + 0.819382u^{25} + \cdots - 0.700822u + 0.562543 \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{725958293}{18873494}u^{26} + \frac{3202886145}{18873494}u^{25} + \cdots - \frac{5326606613}{18873494}u + \frac{1076937225}{18873494}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{27} + u^{26} + \cdots + 514u + 1$
c_2, c_4	$u^{27} - 9u^{26} + \cdots + 20u + 1$
c_3, c_6	$u^{27} - 3u^{26} + \cdots + 128u + 64$
c_5, c_9	$u^{27} + 2u^{26} + \cdots - 352u - 64$
c_7, c_8, c_{10} c_{11}	$u^{27} + 5u^{26} + \cdots - 6u - 1$
c_{12}	$u^{27} + u^{26} + \cdots + 500u - 89$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{27}+59y^{26}+\cdots+262978y-1$
c_2, c_4	$y^{27}-y^{26}+\cdots+514y-1$
c_3, c_6	$y^{27}+45y^{26}+\cdots+180224y-4096$
c_5, c_9	$y^{27}+40y^{26}+\cdots+103424y-4096$
c_7, c_8, c_{10} c_{11}	$y^{27}-29y^{26}+\cdots-14y-1$
c_{12}	$y^{27}+67y^{26}+\cdots-314794y-7921$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.514269 + 0.943772I$ $a = 0.96114 + 1.49139I$ $b = -0.33697 - 2.32589I$	$15.0681 - 1.4972I$	$-9.94344 - 0.11775I$
$u = -0.514269 - 0.943772I$ $a = 0.96114 - 1.49139I$ $b = -0.33697 + 2.32589I$	$15.0681 + 1.4972I$	$-9.94344 + 0.11775I$
$u = -0.664233 + 0.874955I$ $a = -1.06704 - 1.64357I$ $b = -0.62816 + 2.16426I$	$14.6013 + 7.4637I$	$-10.63048 - 4.31713I$
$u = -0.664233 - 0.874955I$ $a = -1.06704 + 1.64357I$ $b = -0.62816 - 2.16426I$	$14.6013 - 7.4637I$	$-10.63048 + 4.31713I$
$u = -1.182480 + 0.163891I$ $a = 0.485579 + 0.426627I$ $b = 0.14520 - 1.74397I$	$1.12392 + 3.54626I$	$-14.5183 - 3.2040I$
$u = -1.182480 - 0.163891I$ $a = 0.485579 - 0.426627I$ $b = 0.14520 + 1.74397I$	$1.12392 - 3.54626I$	$-14.5183 + 3.2040I$
$u = 1.261340 + 0.096236I$ $a = 0.969318 + 0.141624I$ $b = 0.808086 - 0.842084I$	$-4.50481 - 1.41612I$	$-14.8457 + 0.7290I$
$u = 1.261340 - 0.096236I$ $a = 0.969318 - 0.141624I$ $b = 0.808086 + 0.842084I$	$-4.50481 + 1.41612I$	$-14.8457 - 0.7290I$
$u = -0.153216 + 0.715283I$ $a = -0.15544 - 1.50896I$ $b = -0.68505 + 1.29368I$	$3.93766 - 0.32566I$	$-7.68828 - 0.01937I$
$u = -0.153216 - 0.715283I$ $a = -0.15544 + 1.50896I$ $b = -0.68505 - 1.29368I$	$3.93766 + 0.32566I$	$-7.68828 + 0.01937I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.543053 + 0.346105I$ $a = 0.952357 - 0.112943I$ $b = 0.116929 - 1.071230I$	$2.02138 + 3.53683I$	$-8.00351 - 9.60393I$
$u = -0.543053 - 0.346105I$ $a = 0.952357 + 0.112943I$ $b = 0.116929 + 1.071230I$	$2.02138 - 3.53683I$	$-8.00351 + 9.60393I$
$u = 1.348160 + 0.304621I$ $a = -0.990189 + 0.519594I$ $b = -1.27433 - 0.79621I$	$-0.78811 - 3.39068I$	$-12.00000 + 2.97054I$
$u = 1.348160 - 0.304621I$ $a = -0.990189 - 0.519594I$ $b = -1.27433 + 0.79621I$	$-0.78811 + 3.39068I$	$-12.00000 - 2.97054I$
$u = 0.552139$ $a = -7.52398$ $b = -0.222467$	-2.46059	-111.160
$u = 1.53250 + 0.12438I$ $a = 0.477076 + 0.429045I$ $b = 0.181555 + 0.768118I$	$-4.88486 - 5.37353I$	$-12.0000 + 7.7726I$
$u = 1.53250 - 0.12438I$ $a = 0.477076 - 0.429045I$ $b = 0.181555 - 0.768118I$	$-4.88486 + 5.37353I$	$-12.0000 - 7.7726I$
$u = -1.55351 + 0.07692I$ $a = -0.278760 + 0.128293I$ $b = 0.464875 + 0.727258I$	$-7.33821 + 0.72358I$	$-12.00000 + 0.I$
$u = -1.55351 - 0.07692I$ $a = -0.278760 - 0.128293I$ $b = 0.464875 - 0.727258I$	$-7.33821 - 0.72358I$	$-12.00000 + 0.I$
$u = 0.440522$ $a = -0.842102$ $b = 0.209937$	-0.703245	-13.8830

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.60962$ $a=-3.04132$ $b=-0.471477$	-10.1232	-65.7520
$u=\ 1.56503+0.38318I$ $a=\ 0.979548-0.112812I$ $b=\ 0.04694+2.26665I$	$8.39568-3.40964I$	$-12.00000+0.I$
$u=\ 1.56503-0.38318I$ $a=\ 0.979548+0.112812I$ $b=\ 0.04694-2.26665I$	$8.39568+3.40964I$	$-12.00000+0.I$
$u=\ 1.61847+0.30353I$ $a=-1.37457+0.38272I$ $b=-0.75828-1.91136I$	$7.09877-11.89130I$	$-12.00000+0.I$
$u=\ 1.61847-0.30353I$ $a=-1.37457-0.38272I$ $b=-0.75828+1.91136I$	$7.09877+11.89130I$	$-12.00000+0.I$
$u=\ 0.093749+0.195668I$ $a=-1.25531+1.76548I$ $b=\ 0.661199+0.033436I$	$-0.945949+0.075456I$	$-9.99859+1.12534I$
$u=\ 0.093749-0.195668I$ $a=-1.25531-1.76548I$ $b=\ 0.661199-0.033436I$	$-0.945949-0.075456I$	$-9.99859-1.12534I$

II.

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

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -2u^5 + u^4 + 7u^3 - u^2 - 5u - 4 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -2u^5 + u^4 + 7u^3 - u^2 - 5u - 4 \\ 0 \end{pmatrix}$$

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 10u^5 - 6u^4 - 30u^3 + 5u^2 + 17u + 7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^6$
c_3, c_6	u^6
c_4	$(u+1)^6$
c_5	$u^6 + u^5 + 3u^4 + 2u^3 + 2u^2 + u - 1$
c_7, c_8	$u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1$
c_9, c_{12}	$u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u - 1$
c_{10}, 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_6	y^6
c_5, c_9, c_{12}	$y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1$
c_7, c_8, c_{10} c_{11}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.493180 + 0.575288I$ $a = 0.631845 - 0.143944I$ $b = 0$	$1.31531 + 1.97241I$	$-10.05095 - 2.83524I$
$u = -0.493180 - 0.575288I$ $a = 0.631845 + 0.143944I$ $b = 0$	$1.31531 - 1.97241I$	$-10.05095 + 2.83524I$
$u = 0.483672$ $a = -5.85846$ $b = 0$	-2.38379	12.9340
$u = 1.52087 + 0.16310I$ $a = 0.453123 + 0.323434I$ $b = 0$	$-5.34051 - 4.59213I$	$-15.4320 + 0.4465I$
$u = 1.52087 - 0.16310I$ $a = 0.453123 - 0.323434I$ $b = 0$	$-5.34051 + 4.59213I$	$-15.4320 - 0.4465I$
$u = -1.53904$ $a = -1.31147$ $b = 0$	-9.30502	-17.9680

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -a^2u + 3au + a + 3u - 9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -0.337641 + 0.562280I$ $b = -0.215080 + 1.307140I$	$2.03717 + 2.82812I$	$-7.98462 + 1.83947I$
$u = 0.618034$ $a = -0.337641 - 0.562280I$ $b = -0.215080 - 1.307140I$	$2.03717 - 2.82812I$	$-7.98462 - 1.83947I$
$u = 0.618034$ $a = -2.32472$ $b = -0.569840$	-2.10041	-17.1210
$u = -1.61803$ $a = -0.337641 + 0.562280I$ $b = -0.215080 + 1.307140I$	$-5.85852 + 2.82812I$	$-12.87990 - 2.78145I$
$u = -1.61803$ $a = -0.337641 - 0.562280I$ $b = -0.215080 - 1.307140I$	$-5.85852 - 2.82812I$	$-12.87990 + 2.78145I$
$u = -1.61803$ $a = -2.32472$ $b = -0.569840$	-9.99610	3.85000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^3-u^2+2u-1)^2(u^{27}+u^{26}+\cdots+514u+1)$
c_2	$((u-1)^6)(u^3+u^2-1)^2(u^{27}-9u^{26}+\cdots+20u+1)$
c_3	$u^6(u^3-u^2+2u-1)^2(u^{27}-3u^{26}+\cdots+128u+64)$
c_4	$((u+1)^6)(u^3-u^2+1)^2(u^{27}-9u^{26}+\cdots+20u+1)$
c_5	$u^6(u^6+u^5+\cdots+u-1)(u^{27}+2u^{26}+\cdots-352u-64)$
c_6	$u^6(u^3+u^2+2u+1)^2(u^{27}-3u^{26}+\cdots+128u+64)$
c_7, c_8	$(u^2+u-1)^3(u^6-u^5-3u^4+2u^3+2u^2+u-1)$ $\cdot(u^{27}+5u^{26}+\cdots-6u-1)$
c_9	$u^6(u^6-u^5+\cdots-u-1)(u^{27}+2u^{26}+\cdots-352u-64)$
c_{10}, c_{11}	$(u^2-u-1)^3(u^6+u^5-3u^4-2u^3+2u^2-u-1)$ $\cdot(u^{27}+5u^{26}+\cdots-6u-1)$
c_{12}	$(u^2-u-1)^3(u^6-u^5+3u^4-2u^3+2u^2-u-1)$ $\cdot(u^{27}+u^{26}+\cdots+500u-89)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^3+3y^2+2y-1)^2(y^{27}+59y^{26}+\cdots+262978y-1)$
c_2, c_4	$((y-1)^6)(y^3-y^2+2y-1)^2(y^{27}-y^{26}+\cdots+514y-1)$
c_3, c_6	$y^6(y^3+3y^2+2y-1)^2(y^{27}+45y^{26}+\cdots+180224y-4096)$
c_5, c_9	$y^6(y^6+5y^5+9y^4+4y^3-6y^2-5y+1)$ $\cdot(y^{27}+40y^{26}+\cdots+103424y-4096)$
c_7, c_8, c_{10} c_{11}	$(y^2-3y+1)^3(y^6-7y^5+17y^4-16y^3+6y^2-5y+1)$ $\cdot(y^{27}-29y^{26}+\cdots-14y-1)$
c_{12}	$(y^2-3y+1)^3(y^6+5y^5+9y^4+4y^3-6y^2-5y+1)$ $\cdot(y^{27}+67y^{26}+\cdots-314794y-7921)$