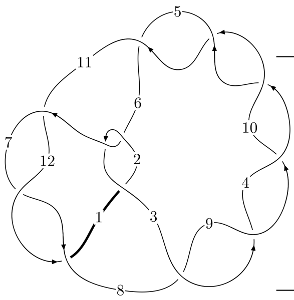
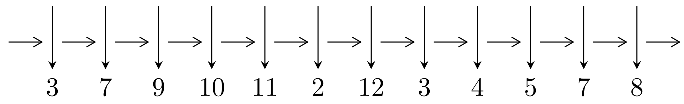
$12n_{0574}$ ($K12n_{0574}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle u^6 + u^5 - 2u^4 + u^3 + 3u^2 + b - 3u - 1,\ u^6 + u^5 - 2u^4 + 3u^2 + 2a - u - 2,\\
&\quad u^7 + 3u^6 - 4u^4 + 3u^3 + 3u^2 - 6u - 2\rangle\\
I_2^u &= \langle b - u + 1,\ 3a - 2u + 3,\ u^2 - 3\rangle\\
I_3^u &= \langle b,\ a + 1,\ u + 1\rangle\\
I_4^u &= \langle b + 2,\ a + 1,\ u - 1\rangle\\
I_5^u &= \langle b + 1,\ a,\ u - 1\rangle\\
I_6^u &= \langle b + 1,\ a + 1,\ u - 1\rangle
\end{aligned}$$

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

* 7 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. $\boldsymbol{I_1^u = \langle u^6 + u^5 - 2u^4 + u^3 + 3u^2 + b - 3u - 1,\ u^6 + u^5 - 2u^4 + 3u^2 + 2a - u - 2,\ u^7 + 3u^6 - 4u^4 + 3u^3 + 3u^2 - 6u - 2\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{1}{2}u^5 + \cdots + \frac{1}{2}u + 1 \\ -u^6 - u^5 + 2u^4 - u^3 - 3u^2 + 3u + 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{3}{2}u^6 + \frac{5}{2}u^5 + \cdots - \frac{9}{2}u - 1 \\ u^6 + 2u^5 - 2u^4 - 2u^3 + 3u^2 - 2u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{1}{2}u^5 + \cdots - \frac{1}{2}u^2 + \frac{3}{2}u \\ -u^6 - u^5 + 3u^4 - 4u^2 + 3u + 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{2}u^6 + \frac{1}{2}u^5 + \cdots + \frac{3}{2}u^2 - \frac{5}{2}u \\ u^6 + 2u^5 - 2u^4 - 2u^3 + 3u^2 - 2u - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^4 + 3u^2 - 1 \\ -u^6 + 4u^4 - 3u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3 - 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^3 + 4u - 20$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^7 - 5u^6 + 17u^5 - 37u^4 + 59u^3 + 73u^2 + 19u + 1$
c_2, c_6, c_7 c_{11}, c_{12}	$u^7 - u^6 + 3u^5 - 3u^4 + 7u^3 + 5u^2 - 3u - 1$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u^7 + 3u^6 - 4u^4 + 3u^3 + 3u^2 - 6u - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^7 + 9y^6 + 37y^5 + 1405y^4 + 9539y^3 - 3013y^2 + 215y - 1$
c_2, c_6, c_7 c_{11}, c_{12}	$y^7 + 5y^6 + 17y^5 + 37y^4 + 59y^3 - 73y^2 + 19y - 1$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y^7 - 9y^6 + 30y^5 - 46y^4 + 45y^3 - 61y^2 + 48y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.08587$ $a = -0.409925$ $b = -0.928471$	-4.90710	-18.2170
$u = 0.650401 + 0.883152I$ $a = 0.010004 - 0.769994I$ $b = 1.56753 - 0.20564I$	$4.08163 - 2.95233I$	$-14.9050 + 2.6687I$
$u = 0.650401 - 0.883152I$ $a = 0.010004 + 0.769994I$ $b = 1.56753 + 0.20564I$	$4.08163 + 2.95233I$	$-14.9050 - 2.6687I$
$u = -1.66573 + 0.28903I$ $a = 0.95395 + 1.19109I$ $b = 1.78081 + 0.57849I$	$-3.67990 + 7.39754I$	$-18.2542 - 3.6074I$
$u = -1.66573 - 0.28903I$ $a = 0.95395 - 1.19109I$ $b = 1.78081 - 0.57849I$	$-3.67990 - 7.39754I$	$-18.2542 + 3.6074I$
$u = -0.306290$ $a = 0.715870$ $b = -0.152106$	-0.466669	-21.1680
$u = -1.74892$ $a = -1.23386$ $b = -1.61611$	-15.1689	-16.2970

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.73205$ $a = 0.154701$ $b = 0.732051$	-16.4493	-24.0000
$u = -1.73205$ $a = -2.15470$ $b = -2.73205$	-16.4493	-24.0000

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

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = 0$	-6.57974	-24.0000

IV. $I_4^u = \langle b+2,\ a+1,\ u-1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

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

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

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

$$a_2 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.00000$ $b = -2.00000$	-6.57974	-24.0000

V. $\boldsymbol{I^u_5 = \langle b+1,\ a,\ u-1 \rangle}$

(i) Arc colorings

$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

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

$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_8 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

$a_{12} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

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

$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ \ 1.00000$ $a = \qquad 0$ $b = -1.00000$	-4.93480	-18.0000

VI. $I_6^u = \langle b+1,\ a+1,\ u-1 \rangle$

(i) Arc colorings

$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

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

$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_8 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

$a_{12} = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$

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

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

$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.00000$ $b = -1.00000$	-4.93480	-18.0000

VII. $I_1^v = \langle a,\ b+1,\ v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = \quad 0$ $b = -1.00000$	-3.28987	-12.0000

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u-1)^5(u+1)(u^7-5u^6+\cdots+19u+1)$
c_2, c_7	$u(u-1)^4(u+1)^2(u^7-u^6+3u^5-3u^4+7u^3+5u^2-3u-1)$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u(u-1)^3(u+1)(u^2-3)(u^7+3u^6-4u^4+3u^3+3u^2-6u-2)$
c_6, c_{11}, c_{12}	$u(u-1)^3(u+1)^3(u^7-u^6+3u^5-3u^4+7u^3+5u^2-3u-1)$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y-1)^6(y^7+9y^6+\cdots+215y-1)$
c_2, c_6, c_7 c_{11}, c_{12}	$y(y-1)^6(y^7+5y^6+17y^5+37y^4+59y^3-73y^2+19y-1)$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y(y-3)^2(y-1)^4(y^7-9y^6+\cdots+48y-4)$