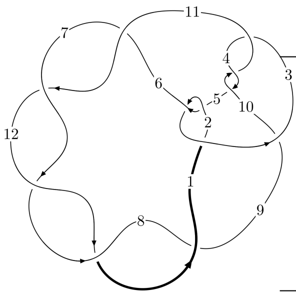
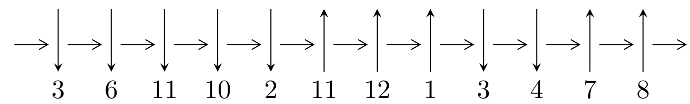
$12n_{0475}$ ($K12n_{0475}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^7 - u^6 + 6u^5 - 3u^4 + 8u^3 - 6u^2 + 2b + 2u - 2,\ -u^7 + 2u^6 - 7u^5 + 7u^4 - 9u^3 + 4u^2 + 4a - 6u - 2,$$
$$u^9 - u^8 + 10u^7 - 3u^6 + 30u^5 + 4u^4 + 36u^3 + 8u - 4\rangle$$
$$I_2^u = \langle b + 1,\ 2a^2 - au + 1,\ u^2 + 2\rangle$$

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

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 15 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. $\boldsymbol{I_1^u = \langle u^7 - u^6 + 6u^5 - 3u^4 + 8u^3 - 6u^2 + 2b + 2u - 2,\ -u^7 + 2u^6 + \cdots + 4a - 2,\ u^9 - u^8 + \cdots + 8u - 4\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{4}u^7 - \frac{1}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \\ -\frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{4}u^7 - \frac{1}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \\ \frac{1}{4}u^8 + \frac{1}{4}u^7 + \cdots + \frac{5}{2}u^2 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{4}u^7 + \frac{7}{4}u^5 + \cdots + \frac{3}{2}u - \frac{1}{2} \\ \frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots + 2u^3 + \frac{3}{2}u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{4}u^8 - 2u^6 + \cdots + \frac{1}{2}u + \frac{1}{2} \\ u^7 + 5u^5 + 3u^4 + 6u^3 - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{4}u^8 + u^7 + \cdots + \frac{1}{2}u - \frac{1}{2} \\ u^7 + 5u^5 + 3u^4 + 6u^3 - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{4}u^8 - \frac{3}{2}u^6 + \cdots + \frac{3}{2}u + \frac{1}{2} \\ -\frac{1}{4}u^8 - \frac{5}{4}u^6 + \cdots + \frac{1}{2}u^2 + \frac{3}{2}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^8 + u^7 - 10u^6 + 4u^5 - 31u^4 - 37u^2 - 2u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9 - 5u^8 + \cdots + 20u + 121$
c_2, c_5	$u^9 + 3u^8 + 7u^7 + 8u^6 + 9u^5 - 14u^4 + 29u^3 + 8u^2 - 14u + 11$
c_3, c_4, c_{10}	$u^9 + u^8 + 10u^7 + 3u^6 + 30u^5 - 4u^4 + 36u^3 + 8u + 4$
c_6, c_7, c_8 c_{11}, c_{12}	$u^9 + 2u^8 - 7u^7 - 14u^6 + 16u^5 + 33u^4 - 5u^3 - 13u^2 + 7u + 3$
c_9	$u^9 - 19u^8 + \cdots + 1064u + 212$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^9 + 13y^8 + \cdots - 137056y - 14641$
c_2, c_5	$y^9 + 5y^8 + \cdots + 20y - 121$
c_3, c_4, c_{10}	$y^9 + 19y^8 + \cdots + 64y - 16$
c_6, c_7, c_8 c_{11}, c_{12}	$y^9 - 18y^8 + \cdots + 127y - 9$
c_9	$y^9 + 7y^8 + \cdots + 50048y - 44944$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.356661+1.085780I$ $a=-0.402756-1.012080I$ $b=-0.703349+0.767146I$	$6.51508+2.26295I$	$5.26586-3.19513I$
$u=-0.356661-1.085780I$ $a=-0.402756+1.012080I$ $b=-0.703349-0.767146I$	$6.51508-2.26295I$	$5.26586+3.19513I$
$u=-0.218744+0.648601I$ $a=0.771686+0.526493I$ $b=-0.432002-0.509023I$	$1.07917-0.96089I$	$3.53169+3.58492I$
$u=-0.218744-0.648601I$ $a=0.771686-0.526493I$ $b=-0.432002+0.509023I$	$1.07917+0.96089I$	$3.53169-3.58492I$
$u=0.325488$ $a=0.946130$ $b=0.860684$	-1.12741	-12.9160
$u=0.47728+2.04979I$ $a=-0.410722+0.825671I$ $b=0.27104-2.15157I$	$17.8250+0.9503I$	$4.58159-0.40162I$
$u=0.47728-2.04979I$ $a=-0.410722-0.825671I$ $b=0.27104+2.15157I$	$17.8250-0.9503I$	$4.58159+0.40162I$
$u=0.43538+2.08426I$ $a=0.068727-0.946296I$ $b=1.93397+1.37424I$	$-7.58379-6.45137I$	$4.07876+2.00413I$
$u=0.43538-2.08426I$ $a=0.068727+0.946296I$ $b=1.93397-1.37424I$	$-7.58379+6.45137I$	$4.07876-2.00413I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y-1)^4$
c_3, c_4, c_9 c_{10}	$(y+2)^4$
c_6, c_7, c_8 c_{11}, c_{12}	$(y^2-3y+1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = 1.144120I$ $b = -1.00000$	12.1725	4.00000
$u = 1.414210I$ $a = -0.437016I$ $b = -1.00000$	4.27683	4.00000
$u = -1.414210I$ $a = -1.144120I$ $b = -1.00000$	12.1725	4.00000
$u = -1.414210I$ $a = 0.437016I$ $b = -1.00000$	4.27683	4.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$ 0.618034 $a =$ 0 $b =$ 1.00000	−0.657974	6.00000
$v =$ −1.61803 $a =$ 0 $b =$ 1.00000	7.23771	6.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^9-5u^8+\cdots+20u+121)$
c_2	$(u-1)^2(u+1)^4$ $\cdot(u^9+3u^8+7u^7+8u^6+9u^5-14u^4+29u^3+8u^2-14u+11)$
c_3, c_4, c_{10}	$u^2(u^2+2)^2(u^9+u^8+10u^7+3u^6+30u^5-4u^4+36u^3+8u+4)$
c_5	$(u-1)^4(u+1)^2$ $\cdot(u^9+3u^8+7u^7+8u^6+9u^5-14u^4+29u^3+8u^2-14u+11)$
c_6, c_7, c_8	$(u^2-u-1)(u^2+u-1)^2$ $\cdot(u^9+2u^8-7u^7-14u^6+16u^5+33u^4-5u^3-13u^2+7u+3)$
c_9	$u^2(u^2+2)^2(u^9-19u^8+\cdots+1064u+212)$
c_{11}, c_{12}	$(u^2-u-1)^2(u^2+u-1)$ $\cdot(u^9+2u^8-7u^7-14u^6+16u^5+33u^4-5u^3-13u^2+7u+3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^9+13y^8+\cdots-137056y-14641)$
c_2, c_5	$((y-1)^6)(y^9+5y^8+\cdots+20y-121)$
c_3, c_4, c_{10}	$y^2(y+2)^4(y^9+19y^8+\cdots+64y-16)$
c_6, c_7, c_8 c_{11}, c_{12}	$((y^2-3y+1)^3)(y^9-18y^8+\cdots+127y-9)$
c_9	$y^2(y+2)^4(y^9+7y^8+\cdots+50048y-44944)$