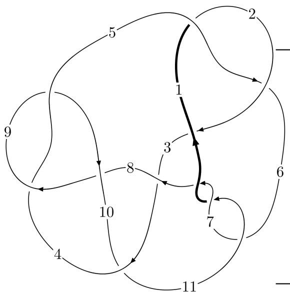
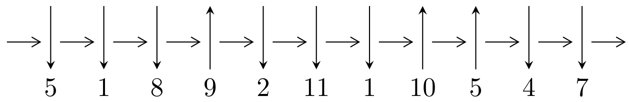
$11n_{107}$ ($K11n_{107}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle &u^9 - u^8 - u^7 + 3u^6 - u^5 - 2u^4 + 3u^3 + u^2 + b - 2u + 1,\\
&-u^{10} + u^9 + 2u^8 - 5u^7 + 6u^5 - 4u^4 - 4u^3 + 4u^2 + 2a - 2,\\
&u^{11} - 3u^{10} + 2u^9 + 5u^8 - 10u^7 + 4u^6 + 8u^5 - 10u^4 + 8u^2 - 6u + 2\rangle\\
I^u_2 = \langle &u^3 + u^2 + b - 2u - 1,\ -u^3 + 2a + 2u,\ u^4 - 2u^2 + 2\rangle\\
I^u_3 = \langle &-u^2 + b + a - u,\ a^2 - au + u^2 - u - 1,\ u^3 + u^2 - 1\rangle
\end{aligned}$$

$$I^v_1 = \langle a,\ b - 1,\ v + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 22 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.

$$\boldsymbol{I_1^u = \langle u^9 - u^8 + \cdots + b + 1,\ -u^{10} + u^9 + \cdots + 2a - 2,\ u^{11} - 3u^{10} + \cdots - 6u + 2\rangle}$$

(i) Arc colorings

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

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

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots - 2u^2 + 1 \\ -u^9 + u^8 + u^7 - 3u^6 + u^5 + 2u^4 - 3u^3 - u^2 + 2u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^7 + 2u^5 - 2u^3 \\ u^9 - u^7 + u^5 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots - 2u^2 + 1 \\ u^{10} - 3u^9 + u^8 + 6u^7 - 9u^6 + 10u^4 - 7u^3 - 5u^2 + 7u - 3 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u^{10} - \frac{3}{2}u^9 + \cdots + 2u - 1 \\ -u^{10} + 2u^9 + u^8 - 5u^7 + 3u^6 + 3u^5 - 5u^4 + u^3 + 3u^2 - 2u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u^{10} - \frac{3}{2}u^9 + \cdots - 3u^2 + 2u \\ u^9 - u^8 - u^7 + 3u^6 - u^5 - 2u^4 + 3u^3 + u^2 - 2u + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^4 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{10} + 6u^8 - 6u^7 - 8u^6 + 12u^5 - 4u^4 - 14u^3 + 8u^2 + 2u - 12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}	$u^{11} + u^{10} - 10u^9 - 9u^8 + 32u^7 + 20u^6 - 30u^5 + 8u^4 + 7u^3 - 5u^2 + 1$
c_2	$u^{11} + 21u^{10} + \cdots + 10u + 1$
c_3	$u^{11} - 3u^{10} + \cdots - 38u - 26$
c_4, c_9	$u^{11} + 3u^{10} + 2u^9 - 5u^8 - 10u^7 - 4u^6 + 8u^5 + 10u^4 - 8u^2 - 6u - 2$
c_8	$u^{11} - 5u^{10} + \cdots + 4u - 4$
c_{10}	$u^{11} + 9u^{10} + \cdots + 82u + 22$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}	$y^{11} - 21y^{10} + \cdots + 10y - 1$
c_2	$y^{11} - 77y^{10} + \cdots + 18y - 1$
c_3	$y^{11} - 53y^{10} + \cdots - 6252y - 676$
c_4, c_9	$y^{11} - 5y^{10} + \cdots + 4y - 4$
c_8	$y^{11} + 3y^{10} + \cdots - 176y - 16$
c_{10}	$y^{11} - y^{10} + \cdots + 740y - 484$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.953935 + 0.430200I$ $a = 0.444004 - 0.346368I$ $b = -0.227630 + 0.840526I$	$1.43107 - 1.62893I$	$-1.305997 + 0.384907I$
$u = -0.953935 - 0.430200I$ $a = 0.444004 + 0.346368I$ $b = -0.227630 - 0.840526I$	$1.43107 + 1.62893I$	$-1.305997 - 0.384907I$
$u = 0.503404 + 1.011810I$ $a = -1.04436 + 1.58062I$ $b = 0.182852 + 0.486960I$	$19.6194 - 2.9792I$	$-10.19163 + 0.32130I$
$u = 0.503404 - 1.011810I$ $a = -1.04436 - 1.58062I$ $b = 0.182852 - 0.486960I$	$19.6194 + 2.9792I$	$-10.19163 - 0.32130I$
$u = 1.058610 + 0.489604I$ $a = -0.342079 + 0.374312I$ $b = 0.360191 - 1.128510I$	$0.85115 + 4.56323I$	$-3.37160 - 8.19390I$
$u = 1.058610 - 0.489604I$ $a = -0.342079 - 0.374312I$ $b = 0.360191 + 1.128510I$	$0.85115 - 4.56323I$	$-3.37160 + 8.19390I$
$u = -1.34731$ $a = -1.44877$ $b = 3.46146$	-12.7233	-6.15860
$u = 0.391067 + 0.508377I$ $a = 0.568725 - 0.454716I$ $b = 0.228216 + 0.200046I$	$-1.063060 - 0.421255I$	$-8.79110 + 2.32258I$
$u = 0.391067 - 0.508377I$ $a = 0.568725 + 0.454716I$ $b = 0.228216 - 0.200046I$	$-1.063060 + 0.421255I$	$-8.79110 - 2.32258I$
$u = 1.174510 + 0.719102I$ $a = 1.09810 - 1.00915I$ $b = -2.77436 + 1.78824I$	$-17.7667 + 9.2729I$	$-8.26036 - 4.31721I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.174510 - 0.719102I$ $a = 1.09810 + 1.00915I$ $b = -2.77436 - 1.78824I$	$-17.7667 - 9.2729I$	$-8.26036 + 4.31721I$

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

(i) Arc colorings

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

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

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} \frac{1}{2}u^3 - u \\ -u^3 - u^2 + 2u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^3 - u \\ -u^3 - u^2 + u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u^3 - u \\ -u^3 - u^2 + 2u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u^3 - u^2 - u + 1 \\ -u^3 + u^2 + 2u - 1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.098680 + 0.455090I$ $a = -0.776887 + 0.321797I$ $b = 1.55377 - 1.64359I$	$-0.82247 + 3.66386I$	$-8.00000 - 4.00000I$
$u = 1.098680 - 0.455090I$ $a = -0.776887 - 0.321797I$ $b = 1.55377 + 1.64359I$	$-0.82247 - 3.66386I$	$-8.00000 + 4.00000I$
$u = -1.098680 + 0.455090I$ $a = 0.776887 + 0.321797I$ $b = -1.55377 + 0.35641I$	$-0.82247 - 3.66386I$	$-8.00000 + 4.00000I$
$u = -1.098680 - 0.455090I$ $a = 0.776887 - 0.321797I$ $b = -1.55377 - 0.35641I$	$-0.82247 + 3.66386I$	$-8.00000 - 4.00000I$

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

(i) Arc colorings

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

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

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -2u + 1 \\ -u^2 + 2u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -u^2 a - 2u^2 - u + 1 \\ -au + 2u^2 \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}	$u^6 + u^5 - 4u^4 - 2u^3 + 10u^2 + 4u - 5$
c_2	$u^6 + 9u^5 + 40u^4 + 102u^3 + 156u^2 + 116u + 25$
c_3	$(u^3 + u^2 + 2u + 1)^2$
c_4, c_9	$(u^3 - u^2 + 1)^2$
c_8	$(u^3 - u^2 + 2u - 1)^2$
c_{10}	$(u^3 - 3u^2 + 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}	$y^6 - 9y^5 + 40y^4 - 102y^3 + 156y^2 - 116y + 25$
c_2	$y^6 - y^5 + 76y^4 + 38y^3 + 2672y^2 - 5656y + 625$
c_3, c_8	$(y^3 + 3y^2 + 2y - 1)^2$
c_4, c_9	$(y^3 - y^2 + 2y - 1)^2$
c_{10}	$(y^3 - 5y^2 + 10y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.479677 + 1.311690I$ $b = -1.14204 - 1.87397I$	$-6.31400 - 2.82812I$	$-9.50976 + 2.97945I$
$u = -0.877439 + 0.744862I$ $a = -1.35712 - 0.56682I$ $b = 0.694757 + 0.004545I$	$-6.31400 - 2.82812I$	$-9.50976 + 2.97945I$
$u = -0.877439 - 0.744862I$ $a = 0.479677 - 1.311690I$ $b = -1.14204 + 1.87397I$	$-6.31400 + 2.82812I$	$-9.50976 - 2.97945I$
$u = -0.877439 - 0.744862I$ $a = -1.35712 + 0.56682I$ $b = 0.694757 - 0.004545I$	$-6.31400 + 2.82812I$	$-9.50976 - 2.97945I$
$u = 0.754878$ $a = -0.774732$ $b = 2.09945$	-2.17641	-2.98050
$u = 0.754878$ $a = 1.52961$ $b = -0.204892$	-2.17641	-2.98050

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

(i) Arc colorings

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

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

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

$$a_4 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

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

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6, c_7, c_{11}	$y - 1$
c_3, c_4, 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
$v = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6, c_7	$(u-1)(u+1)^4(u^6+u^5-4u^4-2u^3+10u^2+4u-5)$ $\cdot(u^{11}+u^{10}-10u^9-9u^8+32u^7+20u^6-30u^5+8u^4+7u^3-5u^2+1)$
c_2	$(u+1)^5(u^6+9u^5+40u^4+102u^3+156u^2+116u+25)$ $\cdot(u^{11}+21u^{10}+\cdots+10u+1)$
c_3	$u(u^3+u^2+2u+1)^2(u^4+2u^2+2)(u^{11}-3u^{10}+\cdots-38u-26)$
c_4, c_9	$u(u^3-u^2+1)^2(u^4-2u^2+2)$ $\cdot(u^{11}+3u^{10}+2u^9-5u^8-10u^7-4u^6+8u^5+10u^4-8u^2-6u-2)$
c_5, c_{11}	$(u-1)^4(u+1)(u^6+u^5-4u^4-2u^3+10u^2+4u-5)$ $\cdot(u^{11}+u^{10}-10u^9-9u^8+32u^7+20u^6-30u^5+8u^4+7u^3-5u^2+1)$
c_8	$u(u^2+2u+2)^2(u^3-u^2+2u-1)^2(u^{11}-5u^{10}+\cdots+4u-4)$
c_{10}	$u(u^3-3u^2+2u+1)^2(u^4+2u^2+2)(u^{11}+9u^{10}+\cdots+82u+22)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}	$(y-1)^5(y^6-9y^5+40y^4-102y^3+156y^2-116y+25)$ $\cdot(y^{11}-21y^{10}+\cdots+10y-1)$
c_2	$(y-1)^5(y^6-y^5+76y^4+38y^3+2672y^2-5656y+625)$ $\cdot(y^{11}-77y^{10}+\cdots+18y-1)$
c_3	$y(y^2+2y+2)^2(y^3+3y^2+2y-1)^2$ $\cdot(y^{11}-53y^{10}+\cdots-6252y-676)$
c_4, c_9	$y(y^2-2y+2)^2(y^3-y^2+2y-1)^2(y^{11}-5y^{10}+\cdots+4y-4)$
c_8	$y(y^2+4)^2(y^3+3y^2+2y-1)^2(y^{11}+3y^{10}+\cdots-176y-16)$
c_{10}	$y(y^2+2y+2)^2(y^3-5y^2+10y-1)^2(y^{11}-y^{10}+\cdots+740y-484)$