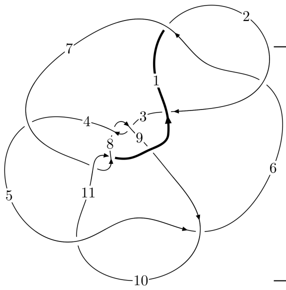
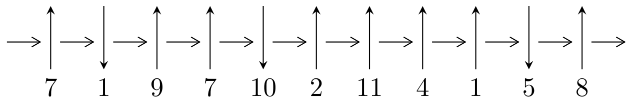
$11n_{122}$ ($K11n_{122}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{15} - u^{14} - 5u^{13} + 5u^{12} + 7u^{11} - 9u^{10} + 7u^9 - u^8 - 25u^7 + 17u^6 + 9u^5 - 7u^4 + 17u^3 - 13u^2 + 4b - 2u - 4$$
$$- u^{15} + 6u^{13} + \cdots + 4a - 4,\ u^{16} - 2u^{15} + \cdots + u + 2\rangle$$
$$I_2^u = \langle -u^4 - u^3 + u^2 + b + u,\ -u^4 + 2u^2 + a - 1,\ u^6 - 3u^4 + 2u^2 + 1\rangle$$
$$I_3^u = \langle a^2 + b,\ a^3 + a - 1,\ u + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 25 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.

$$I_1^u = \langle u^{15} - u^{14} + \cdots + 4b - 4,\ -u^{15} + 6u^{13} + \cdots + 4a - 4,\ u^{16} - 2u^{15} + \cdots + u + 2\rangle$$

(i) Arc colorings

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

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

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

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

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

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

$$a_5 = \begin{pmatrix} \frac{1}{4}u^{15} - \frac{3}{2}u^{13} + \cdots - \frac{9}{4}u + 1 \\ -\frac{1}{4}u^{15} + \frac{1}{4}u^{14} + \cdots + \frac{1}{2}u + 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{2}u^{15} - \frac{1}{4}u^{14} + \cdots + \frac{1}{4}u^2 - \frac{11}{4}u \\ -\frac{1}{4}u^{15} + \frac{1}{4}u^{14} + \cdots + \frac{1}{2}u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^6 - 3u^4 + 2u^2 + 1 \\ u^6 - 2u^4 + u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{4}u^{13} - \frac{5}{4}u^{11} + \cdots + \frac{3}{4}u + 1 \\ \frac{1}{2}u^{10} - 2u^8 + \cdots - \frac{5}{2}u^2 + \frac{1}{2}u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{15} + \frac{1}{4}u^{14} + \cdots + \frac{7}{4}u + 2 \\ \frac{1}{2}u^{15} - \frac{1}{2}u^{14} + \cdots - \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{15} + \frac{1}{4}u^{14} + \cdots + \frac{7}{4}u + 2 \\ \frac{1}{2}u^{15} - \frac{1}{2}u^{14} + \cdots - \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{15} + 12u^{13} - 2u^{12} - 28u^{11} + 10u^{10} + 20u^9 - 18u^8 + 28u^7 + 10u^6 - 52u^5 + 6u^4 + 10u^3 - 6u^2 + 16u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{16} + 3u^{15} + \cdots - 163u + 62$
c_2	$u^{16} + 29u^{15} + \cdots + 16707u + 3844$
c_3, c_8	$u^{16} - u^{15} + \cdots + 14u + 5$
c_4	$u^{16} + 5u^{15} + \cdots - 6u + 67$
c_5, c_{10}	$u^{16} - u^{15} + \cdots + 8u + 5$
c_7, c_{11}	$u^{16} + 2u^{15} + \cdots - u + 2$
c_9	$u^{16} - u^{15} + \cdots - 2824u + 1117$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{16} + 29y^{15} + \cdots + 16707y + 3844$
c_2	$y^{16} - 75y^{15} + \cdots + 939185823y + 14776336$
c_3, c_8	$y^{16} + 27y^{15} + \cdots - 96y + 25$
c_4	$y^{16} + 19y^{15} + \cdots + 15374y + 4489$
c_5, c_{10}	$y^{16} - y^{15} + \cdots - 64y + 25$
c_7, c_{11}	$y^{16} - 12y^{15} + \cdots + 19y + 4$
c_9	$y^{16} + 51y^{15} + \cdots - 7186374y + 1247689$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.077517 + 1.005540I$ $a = -1.07927 - 1.29543I$ $b = -0.62616 - 1.56703I$	$-15.2325 + 4.4644I$	$1.08918 - 2.21387I$
$u = 0.077517 - 1.005540I$ $a = -1.07927 + 1.29543I$ $b = -0.62616 + 1.56703I$	$-15.2325 - 4.4644I$	$1.08918 + 2.21387I$
$u = 0.170392 + 0.771288I$ $a = -0.408921 + 1.021250I$ $b = -0.482279 + 1.104540I$	$-4.05827 - 0.49300I$	$-0.617664 + 0.214534I$
$u = 0.170392 - 0.771288I$ $a = -0.408921 - 1.021250I$ $b = -0.482279 - 1.104540I$	$-4.05827 + 0.49300I$	$-0.617664 - 0.214534I$
$u = 1.160690 + 0.407151I$ $a = 0.600692 - 0.658208I$ $b = -1.126220 - 0.798721I$	$-1.06445 + 4.80370I$	$3.93778 - 5.08204I$
$u = 1.160690 - 0.407151I$ $a = 0.600692 + 0.658208I$ $b = -1.126220 + 0.798721I$	$-1.06445 - 4.80370I$	$3.93778 + 5.08204I$
$u = 1.293170 + 0.155822I$ $a = -0.056229 + 0.786374I$ $b = 0.86906 + 1.53568I$	$5.01976 + 2.82849I$	$13.14002 - 4.04275I$
$u = 1.293170 - 0.155822I$ $a = -0.056229 - 0.786374I$ $b = 0.86906 - 1.53568I$	$5.01976 - 2.82849I$	$13.14002 + 4.04275I$
$u = 1.269320 + 0.545322I$ $a = -1.162000 - 0.309874I$ $b = -0.241796 + 0.780806I$	$-11.56800 + 1.02407I$	$3.53875 - 0.89724I$
$u = 1.269320 - 0.545322I$ $a = -1.162000 + 0.309874I$ $b = -0.241796 - 0.780806I$	$-11.56800 - 1.02407I$	$3.53875 + 0.89724I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.374820 + 0.254049I$ $a = -0.397419 - 0.220831I$ $b = \quad 0.02694 - 1.60521I$	$0.90149 - 3.13168I$	$3.23299 + 2.68195I$
$u = -1.374820 - 0.254049I$ $a = -0.397419 + 0.220831I$ $b = \quad 0.02694 + 1.60521I$	$0.90149 + 3.13168I$	$3.23299 - 2.68195I$
$u = -1.37116 + 0.47203I$ $a = \quad 0.424287 + 1.067010I$ $b = -1.31943 + 2.03484I$	$-10.6907 - 9.7305I$	$4.40505 + 4.74516I$
$u = -1.37116 - 0.47203I$ $a = \quad 0.424287 - 1.067010I$ $b = -1.31943 - 2.03484I$	$-10.6907 + 9.7305I$	$4.40505 - 4.74516I$
$u = -0.225111 + 0.325313I$ $a = \quad 1.32887 - 1.40325I$ $b = \quad 0.399881 - 0.330960I$	$0.504151 - 0.997325I$	$7.27390 + 6.88407I$
$u = -0.225111 - 0.325313I$ $a = \quad 1.32887 + 1.40325I$ $b = \quad 0.399881 + 0.330960I$	$0.504151 + 0.997325I$	$7.27390 - 6.88407I$

II. $\boldsymbol{I^u_2 = \langle -u^4 - u^3 + u^2 + b + u,\ -u^4 + 2u^2 + a - 1,\ u^6 - 3u^4 + 2u^2 + 1\rangle}$

(i) Arc colorings

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

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

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

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

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

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

$$a_5 = \begin{pmatrix} u^4 - 2u^2 + 1 \\ u^4 + u^3 - u^2 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^3 - u^2 + u + 1 \\ u^4 + u^3 - u^2 - u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ u^4 - u^2 - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^5 - 3u^3 + 2u \\ u^5 + u^4 - 2u^3 - 2u^2 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^4 - u^3 + 2u^2 + 2u + 1 \\ u^5 + u^4 - 2u^3 - 3u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^4 - u^3 + 2u^2 + 2u + 1 \\ u^5 + u^4 - 2u^3 - 3u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^4 + 8u^2 + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^6 + u^4 + 2u^2 + 1$
c_2	$(u^3 + u^2 + 2u + 1)^2$
c_3, c_5, c_8 c_{10}	$(u^2 + 1)^3$
c_4	$u^6 + 4u^5 + 11u^4 + 10u^3 + 8u^2 + 2u + 1$
c_7, c_{11}	$u^6 - 3u^4 + 2u^2 + 1$
c_9	$u^6 - 2u^5 - u^4 + 8u^3 + 12u^2 + 6u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$(y^3 + y^2 + 2y + 1)^2$
c_2	$(y^3 + 3y^2 + 2y - 1)^2$
c_3, c_5, c_8 c_{10}	$(y + 1)^6$
c_4	$y^6 + 6y^5 + 57y^4 + 62y^3 + 46y^2 + 12y + 1$
c_7, c_{11}	$(y^3 - 3y^2 + 2y + 1)^2$
c_9	$y^6 - 6y^5 + 57y^4 - 62y^3 + 46y^2 - 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.307140 + 0.215080I$ $a = 0.122561 + 0.744862I$ $b = 1.52978 + 2.18458I$	$3.02413 + 2.82812I$	$7.50976 - 2.97945I$
$u = 1.307140 - 0.215080I$ $a = 0.122561 - 0.744862I$ $b = 1.52978 - 2.18458I$	$3.02413 - 2.82812I$	$7.50976 + 2.97945I$
$u = -1.307140 + 0.215080I$ $a = 0.122561 - 0.744862I$ $b = 0.040058 - 0.429702I$	$3.02413 - 2.82812I$	$7.50976 + 2.97945I$
$u = -1.307140 - 0.215080I$ $a = 0.122561 + 0.744862I$ $b = 0.040058 + 0.429702I$	$3.02413 + 2.82812I$	$7.50976 - 2.97945I$
$u = 0.569840I$ $a = 1.75488$ $b = 0.430160 - 0.754878I$	-1.11345	0.980490
$u = -0.569840I$ $a = 1.75488$ $b = 0.430160 + 0.754878I$	-1.11345	0.980490

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6	y^3
c_3, c_5, c_8 c_9, c_{10}	$y^3 + 2y^2 + y - 1$
c_4	$y^3 - 2y^2 + 5y - 1$
c_7, c_{11}	$(y-1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -0.341164 + 1.161540I$ $b = \quad 1.23279 + 0.79255I$	1.64493	6.00000
$u = -1.00000$ $a = -0.341164 - 1.161540I$ $b = \quad 1.23279 - 0.79255I$	1.64493	6.00000
$u = -1.00000$ $a = \quad 0.682328$ $b = -0.465571$	1.64493	6.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^3(u^6+u^4+2u^2+1)(u^{16}+3u^{15}+\cdots-163u+62)$
c_2	$u^3(u^3+u^2+2u+1)^2(u^{16}+29u^{15}+\cdots+16707u+3844)$
c_3, c_8	$((u^2+1)^3)(u^3+u-1)(u^{16}-u^{15}+\cdots+14u+5)$
c_4	$(u^3-2u^2+u+1)(u^6+4u^5+11u^4+10u^3+8u^2+2u+1)$ $\cdot(u^{16}+5u^{15}+\cdots-6u+67)$
c_5, c_{10}	$((u^2+1)^3)(u^3+u-1)(u^{16}-u^{15}+\cdots+8u+5)$
c_7, c_{11}	$((u-1)^3)(u^6-3u^4+2u^2+1)(u^{16}+2u^{15}+\cdots-u+2)$
c_9	$(u^3+u-1)(u^6-2u^5-u^4+8u^3+12u^2+6u+1)$ $\cdot(u^{16}-u^{15}+\cdots-2824u+1117)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^3(y^3+y^2+2y+1)^2(y^{16}+29y^{15}+\cdots+16707y+3844)$
c_2	$y^3(y^3+3y^2+2y-1)^2$ $\cdot(y^{16}-75y^{15}+\cdots+939185823y+14776336)$
c_3, c_8	$((y+1)^6)(y^3+2y^2+y-1)(y^{16}+27y^{15}+\cdots-96y+25)$
c_4	$(y^3-2y^2+5y-1)(y^6+6y^5+57y^4+62y^3+46y^2+12y+1)$ $\cdot(y^{16}+19y^{15}+\cdots+15374y+4489)$
c_5, c_{10}	$((y+1)^6)(y^3+2y^2+y-1)(y^{16}-y^{15}+\cdots-64y+25)$
c_7, c_{11}	$((y-1)^3)(y^3-3y^2+2y+1)^2(y^{16}-12y^{15}+\cdots+19y+4)$
c_9	$(y^3+2y^2+y-1)(y^6-6y^5+57y^4-62y^3+46y^2-12y+1)$ $\cdot(y^{16}+51y^{15}+\cdots-7186374y+1247689)$