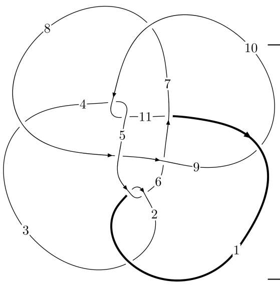
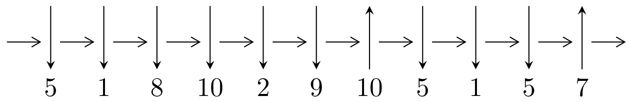
$11n_{118}$ ($K11n_{118}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2u^8 - 6u^7 + u^6 + 3u^5 + 15u^4 - 13u^3 - 10u^2 + b + 3u + 3,\ u^8 - u^7 - 5u^6 + 3u^5 + 7u^4 + 7u^3 - 15u^2 + 2a +$$
$$u^9 - 5u^8 + 7u^7 - u^6 + 5u^5 - 21u^4 + 11u^3 + 8u^2 - 2u - 2\rangle$$
$$I_2^u = \langle -u^3 - u^2 + b + u + 1,\ -u^4 - 2u^3 + u^2 + 2a + u,\ u^5 + 2u^4 - u^3 - 3u^2 + 2\rangle$$
$$I_3^u = \langle -u^2a - au + u^2 + b + u - 1,\ u^2a + a^2 - 5u^2 - 3a - 2u + 11,\ u^3 + u^2 - 2u - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 20 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.

$\boldsymbol{I_1^u = \langle 2u^8 - 6u^7 + \cdots + b + 3,\ u^8 - u^7 + \cdots + 2a + 2,\ u^9 - 5u^8 + \cdots - 2u - 2\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}u^8 + \frac{1}{2}u^7 + \cdots + \frac{15}{2}u^2 - 1 \\ -2u^8 + 6u^7 - u^6 - 3u^5 - 15u^4 + 13u^3 + 10u^2 - 3u - 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{3}{2}u^8 + \frac{11}{2}u^7 + \cdots - 3u - 2 \\ -u^8 + 4u^7 - 3u^6 - u^5 - 8u^4 + 12u^3 + u^2 - u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{2}u^8 - \frac{11}{2}u^7 + \cdots + 3u + 2 \\ -2u^8 + 6u^7 - u^6 - 3u^5 - 15u^4 + 13u^3 + 10u^2 - 3u - 3 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{2}u^8 - \frac{3}{2}u^7 + \cdots + u + 1 \\ -u^8 + 3u^7 - u^6 - u^5 - 7u^4 + 7u^3 + 4u^2 - u - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{2}u^8 + \frac{1}{2}u^7 + \cdots + \frac{15}{2}u^2 - 1 \\ 2u^8 - 6u^7 + 2u^6 + u^5 + 14u^4 - 13u^3 - 4u^2 + 2u + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{2}u^8 - \frac{11}{2}u^7 + \cdots + 3u + 2 \\ u^8 - 5u^7 + 5u^6 + 2u^5 + 8u^4 - 18u^3 - u^2 + 4u + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{2}u^8 - \frac{11}{2}u^7 + \cdots + 3u + 2 \\ u^8 - 5u^7 + 5u^6 + 2u^5 + 8u^4 - 18u^3 - u^2 + 4u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -3u^8 + 13u^7 - 14u^6 + u^5 - 20u^4 + 46u^3 - 14u^2 - 12u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^9 + 5u^8 + 7u^7 + u^6 + 5u^5 + 21u^4 + 11u^3 - 8u^2 - 2u + 2$
c_2	$u^9 + 11u^8 + \cdots + 36u + 4$
c_3, c_4, c_{10}	$u^9 + 7u^7 + 2u^6 + 18u^5 + 8u^4 + 16u^3 + 7u^2 + 2u + 1$
c_6, c_9	$u^9 - 2u^8 - 3u^7 + 8u^6 + 6u^5 - 10u^4 - 10u^3 + 3u^2 + 8u + 1$
c_7	$u^9 + 6u^8 + 19u^7 + 38u^6 + 54u^5 + 56u^4 + 49u^3 + 36u^2 + 16u + 2$
c_8	$u^9 + u^8 - 8u^7 - 4u^6 + 21u^5 + 3u^4 - 3u^3 - 5u^2 + u + 1$
c_{11}	$u^9 - 8u^8 + 30u^7 - 69u^6 + 106u^5 - 109u^4 + 69u^3 - 18u^2 - 8u + 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^9 - 11y^8 + \cdots + 36y - 4$
c_2	$y^9 - 23y^8 + \cdots - 240y - 16$
c_3, c_4, c_{10}	$y^9 + 14y^8 + 85y^7 + 280y^6 + 520y^5 + 512y^4 + 212y^3 - y^2 - 10y - 1$
c_6, c_9	$y^9 - 10y^8 + \cdots + 58y - 1$
c_7	$y^9 + 2y^8 + 13y^7 + 34y^6 + 122y^5 + 4y^4 - 55y^3 + 48y^2 + 112y - 4$
c_8	$y^9 - 17y^8 + \cdots + 11y - 1$
c_{11}	$y^9 - 4y^8 + 8y^7 - 7y^6 + 30y^5 - 89y^4 + 245y^3 + 316y^2 + 352y - 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.827217 + 1.065600I$ $a = 0.127211 + 0.403713I$ $b = 1.189760 - 0.208029I$	$4.50943 + 3.60395I$	$-7.94742 - 3.61538I$
$u = -0.827217 - 1.065600I$ $a = 0.127211 - 0.403713I$ $b = 1.189760 + 0.208029I$	$4.50943 - 3.60395I$	$-7.94742 + 3.61538I$
$u = 0.637971$ $a = 0.581775$ $b = -0.134369$	-0.867730	-11.0840
$u = -0.390331 + 0.211849I$ $a = -0.15178 - 1.44152I$ $b = -0.619342 - 0.660345I$	$-0.58699 - 1.71933I$	$-2.65828 + 4.51037I$
$u = -0.390331 - 0.211849I$ $a = -0.15178 + 1.44152I$ $b = -0.619342 + 0.660345I$	$-0.58699 + 1.71933I$	$-2.65828 - 4.51037I$
$u = 1.60275 + 0.27471I$ $a = -1.057300 + 0.502009I$ $b = -1.245760 - 0.193497I$	$-7.17964 - 0.81901I$	$-9.63369 + 0.38923I$
$u = 1.60275 - 0.27471I$ $a = -1.057300 - 0.502009I$ $b = -1.245760 + 0.193497I$	$-7.17964 + 0.81901I$	$-9.63369 - 0.38923I$
$u = 1.79582 + 0.27938I$ $a = 1.290980 + 0.002356I$ $b = 1.74253 + 0.93792I$	$-4.53360 - 8.88256I$	$-8.21864 + 4.17646I$
$u = 1.79582 - 0.27938I$ $a = 1.290980 - 0.002356I$ $b = 1.74253 - 0.93792I$	$-4.53360 + 8.88256I$	$-8.21864 - 4.17646I$

II.

$$\boldsymbol{I^u_2 = \langle -u^3 - u^2 + b + u + 1,\ -u^4 - 2u^3 + u^2 + 2a + u,\ u^5 + 2u^4 - u^3 - 3u^2 + 2\rangle}$$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^4 - 2u^3 + u^2 - 2u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^5 + 2u^4 - u^3 - 3u^2 + 2$
c_2	$u^5 + 6u^4 + 13u^3 + 17u^2 + 12u + 4$
c_3, c_{10}	$u^5 + 2u^3 + u^2 - 3u + 1$
c_4	$u^5 + 2u^3 - u^2 - 3u - 1$
c_5	$u^5 - 2u^4 - u^3 + 3u^2 - 2$
c_6, c_9	$u^5 - 2u^4 + u^2 - u - 1$
c_7	$u^5 + 3u^4 + 2u^3 - u^2 - 2u - 2$
c_8	$u^5 - u^4 - u^3 - 4u^2 - 2u - 1$
c_{11}	$u^5 + u^4 - u^3 + 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^5 - 6y^4 + 13y^3 - 17y^2 + 12y - 4$
c_2	$y^5 - 10y^4 - 11y^3 - 25y^2 + 8y - 16$
c_3, c_4, c_{10}	$y^5 + 4y^4 - 2y^3 - 13y^2 + 7y - 1$
c_6, c_9	$y^5 - 4y^4 + 2y^3 - 5y^2 + 3y - 1$
c_7	$y^5 - 5y^4 + 6y^3 + 3y^2 - 4$
c_8	$y^5 - 3y^4 - 11y^3 - 14y^2 - 4y - 1$
c_{11}	$y^5 - 3y^4 + 5y^3 - 2y^2 + 4y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.886428 + 0.266186I$ $a = -0.148382 + 0.576930I$ $b = -0.663438 + 0.814334I$	$-1.42879 + 1.52428I$	$-12.65090 - 2.62716I$
$u = 0.886428 - 0.266186I$ $a = -0.148382 - 0.576930I$ $b = -0.663438 - 0.814334I$	$-1.42879 - 1.52428I$	$-12.65090 + 2.62716I$
$u = -0.972160 + 0.575992I$ $a = -0.210793 + 1.027090I$ $b = 0.634295 - 0.253899I$	$6.00798 + 2.19755I$	$-5.78391 - 2.40841I$
$u = -0.972160 - 0.575992I$ $a = -0.210793 - 1.027090I$ $b = 0.634295 + 0.253899I$	$6.00798 - 2.19755I$	$-5.78391 + 2.40841I$
$u = -1.82854$ $a = -1.28165$ $b = -1.94171$	-12.4482	-13.1300

III.

$$I_3^u = \langle -u^2a - au + u^2 + b + u - 1,\ u^2a + a^2 - 5u^2 - 3a - 2u + 11,\ u^3 + u^2 - 2u - 1\rangle$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ u^2 - u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ u^2a + au - u^2 - u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2a - au + u^2 + a + u - 2 \\ 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^2a - au + u^2 + a + u - 1 \\ u^2a + au - u^2 - u + 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -au - 3u^2 - a - u + 7 \\ au + u^2 + u - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a \\ au - u^2 - u + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2a - au + u^2 + a + u - 1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2a - au + u^2 + a + u - 1 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7	$(u^3 - u^2 - 2u + 1)^2$
c_2	$(u^3 + 5u^2 + 6u + 1)^2$
c_3, c_4, c_{10}	$u^6 - u^5 + 2u^4 - 4u^3 - 2u^2 - 8u - 1$
c_6, c_9	$u^6 - u^5 - 2u^4 + 8u^3 - 14u^2 + 14u - 7$
c_8	$u^6 + u^5 - 4u^4 - 2u^2 - 12u - 13$
c_{11}	$(u + 1)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7	$(y^3 - 5y^2 + 6y - 1)^2$
c_2	$(y^3 - 13y^2 + 26y - 1)^2$
c_3, c_4, c_{10}	$y^6 + 3y^5 - 8y^4 - 42y^3 - 64y^2 - 60y + 1$
c_6, c_9	$y^6 - 5y^5 - 8y^4 + 6y^3 + 49$
c_8	$y^6 - 9y^5 + 12y^4 + 14y^3 + 108y^2 - 92y + 169$
c_{11}	$(y - 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.24698$ $a = 0.722521 + 0.457399I$ $b = 0.222521 + 1.281600I$	0.234991	−6.00000
$u = 1.24698$ $a = 0.722521 - 0.457399I$ $b = 0.222521 - 1.281600I$	0.234991	−6.00000
$u = -0.445042$ $a = 1.40097 + 2.98949I$ $b = 0.900969 - 0.738343I$	5.87476	−6.00000
$u = -0.445042$ $a = 1.40097 - 2.98949I$ $b = 0.900969 + 0.738343I$	5.87476	−6.00000
$u = -1.80194$ $a = 1.15958$ $b = 1.23060$	−11.0446	−6.00000
$u = -1.80194$ $a = -1.40656$ $b = -2.47758$	−11.0446	−6.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^3 - u^2 - 2u + 1)^2(u^5 + 2u^4 - u^3 - 3u^2 + 2)$ $\cdot (u^9 + 5u^8 + 7u^7 + u^6 + 5u^5 + 21u^4 + 11u^3 - 8u^2 - 2u + 2)$
c_2	$(u^3 + 5u^2 + 6u + 1)^2(u^5 + 6u^4 + 13u^3 + 17u^2 + 12u + 4)$ $\cdot (u^9 + 11u^8 + \cdots + 36u + 4)$
c_3, c_{10}	$(u^5 + 2u^3 + u^2 - 3u + 1)(u^6 - u^5 + 2u^4 - 4u^3 - 2u^2 - 8u - 1)$ $\cdot (u^9 + 7u^7 + 2u^6 + 18u^5 + 8u^4 + 16u^3 + 7u^2 + 2u + 1)$
c_4	$(u^5 + 2u^3 - u^2 - 3u - 1)(u^6 - u^5 + 2u^4 - 4u^3 - 2u^2 - 8u - 1)$ $\cdot (u^9 + 7u^7 + 2u^6 + 18u^5 + 8u^4 + 16u^3 + 7u^2 + 2u + 1)$
c_5	$(u^3 - u^2 - 2u + 1)^2(u^5 - 2u^4 - u^3 + 3u^2 - 2)$ $\cdot (u^9 + 5u^8 + 7u^7 + u^6 + 5u^5 + 21u^4 + 11u^3 - 8u^2 - 2u + 2)$
c_6, c_9	$(u^5 - 2u^4 + u^2 - u - 1)(u^6 - u^5 - 2u^4 + 8u^3 - 14u^2 + 14u - 7)$ $\cdot (u^9 - 2u^8 - 3u^7 + 8u^6 + 6u^5 - 10u^4 - 10u^3 + 3u^2 + 8u + 1)$
c_7	$(u^3 - u^2 - 2u + 1)^2(u^5 + 3u^4 + 2u^3 - u^2 - 2u - 2)$ $\cdot (u^9 + 6u^8 + 19u^7 + 38u^6 + 54u^5 + 56u^4 + 49u^3 + 36u^2 + 16u + 2)$
c_8	$(u^5 - u^4 - u^3 - 4u^2 - 2u - 1)(u^6 + u^5 - 4u^4 - 2u^2 - 12u - 13)$ $\cdot (u^9 + u^8 - 8u^7 - 4u^6 + 21u^5 + 3u^4 - 3u^3 - 5u^2 + u + 1)$
c_{11}	$(u + 1)^6(u^5 + u^4 - u^3 + 2u - 1)$ $\cdot (u^9 - 8u^8 + 30u^7 - 69u^6 + 106u^5 - 109u^4 + 69u^3 - 18u^2 - 8u + 8)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^3-5y^2+6y-1)^2(y^5-6y^4+13y^3-17y^2+12y-4)$ $\cdot(y^9-11y^8+\cdots+36y-4)$
c_2	$(y^3-13y^2+26y-1)^2(y^5-10y^4-11y^3-25y^2+8y-16)$ $\cdot(y^9-23y^8+\cdots-240y-16)$
c_3, c_4, c_{10}	$(y^5+4y^4-2y^3-13y^2+7y-1)$ $\cdot(y^6+3y^5-8y^4-42y^3-64y^2-60y+1)$ $\cdot(y^9+14y^8+85y^7+280y^6+520y^5+512y^4+212y^3-y^2-10y-1)$
c_6, c_9	$(y^5-4y^4+2y^3-5y^2+3y-1)(y^6-5y^5-8y^4+6y^3+49)$ $\cdot(y^9-10y^8+\cdots+58y-1)$
c_7	$(y^3-5y^2+6y-1)^2(y^5-5y^4+6y^3+3y^2-4)$ $\cdot(y^9+2y^8+13y^7+34y^6+122y^5+4y^4-55y^3+48y^2+112y-4)$
c_8	$(y^5-3y^4-11y^3-14y^2-4y-1)$ $\cdot(y^6-9y^5+12y^4+14y^3+108y^2-92y+169)$ $\cdot(y^9-17y^8+\cdots+11y-1)$
c_{11}	$(y-1)^6(y^5-3y^4+5y^3-2y^2+4y-1)$ $\cdot(y^9-4y^8+8y^7-7y^6+30y^5-89y^4+245y^3+316y^2+352y-64)$