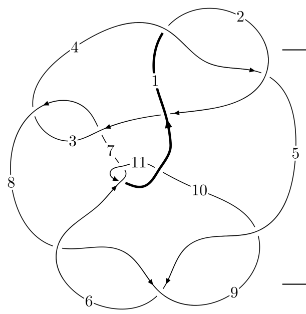
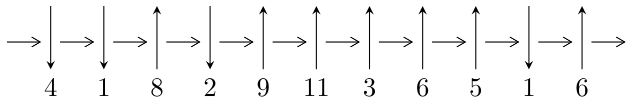
$11n_{65}$ ($K11n_{65}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2666u^{12} - 2811u^{11} + \cdots + 9382b + 3250,\ -1563u^{12} + 2980u^{11} + \cdots + 18764a + 7547,$$
$$u^{13} - 2u^{12} - 2u^{11} + 7u^{10} - u^9 - 9u^8 + 16u^7 - 18u^6 - 2u^5 + 33u^4 - 24u^3 - 10u^2 + 17u - 4\rangle$$
$$I_2^u = \langle -u^4 + u^3 + 2u^2 + b - a - u - 1,\ u^4 - 2u^2a - 2u^3 + a^2 + au + 2a + u + 2,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle$$
$$I_3^u = \langle -u^2a + au - u^2 + b + u - 1,\ 2u^2a + a^2 - 4au + 3u^2 + 2a - 6u + 5,\ u^3 - u^2 + 1\rangle$$
$$I_4^u = \langle 2b + 1,\ 2a - 1,\ u + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 30 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. $\boldsymbol{I_1^u = \langle 2666u^{12} - 2811u^{11} + \cdots + 9382b + 3250,\ -1563u^{12} + 2980u^{11} + \cdots + 18764a + 7547,\ u^{13} - 2u^{12} + \cdots + 17u - 4\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0832978u^{12} - 0.158815u^{11} + \cdots - 2.36613u - 0.402206 \\ -0.284161u^{12} + 0.299616u^{11} + \cdots + 3.21925u - 0.346408 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0329887u^{12} + 0.0405031u^{11} + \cdots + 0.801428u + 1.42640 \\ 0.0613942u^{12} - 0.0681091u^{11} + \cdots - 0.833191u + 0.0125773 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.00314432u^{12} + 0.0551055u^{11} + \cdots + 0.652206u - 0.779738 \\ -0.0254743u^{12} + 0.129823u^{11} + \cdots + 1.98721u - 0.131955 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0853763u^{12} - 0.131848u^{11} + \cdots - 2.30228u - 1.25187 \\ -0.481454u^{12} + 0.401300u^{11} + \cdots + 4.61810u - 0.548284 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -0.168674u^{12} + 0.0269665u^{11} + \cdots + 1.06385u - 0.849659 \\ -0.197293u^{12} + 0.101684u^{11} + \cdots + 2.39885u - 0.201876 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.334683u^{12} - 0.465039u^{11} + \cdots - 4.08719u + 3.28384 \\ 0.169154u^{12} - 0.382967u^{11} + \cdots - 3.37114u + 0.654445 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.334683u^{12} - 0.465039u^{11} + \cdots - 4.08719u + 3.28384 \\ 0.169154u^{12} - 0.382967u^{11} + \cdots - 3.37114u + 0.654445 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{34825}{18764}u^{12} - \frac{68759}{18764}u^{11} + \cdots - \frac{496503}{18764}u + \frac{97945}{4691}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{13} - 2u^{12} + \cdots + 17u - 4$
c_2	$u^{13} + 8u^{12} + \cdots + 209u + 16$
c_3, c_7	$u^{13} + 3u^{12} + \cdots - 2u - 8$
c_5, c_6, c_8 c_9, c_{11}	$u^{13} - u^{12} + \cdots + u - 1$
c_{10}	$u^{13} + 19u^{12} + \cdots - 13u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{13} - 8y^{12} + \cdots + 209y - 16$
c_2	$y^{13} - 4y^{12} + \cdots + 22817y - 256$
c_3, c_7	$y^{13} - 3y^{12} + \cdots + 180y - 64$
c_5, c_6, c_8 c_9, c_{11}	$y^{13} + 19y^{12} + \cdots - 13y - 1$
c_{10}	$y^{13} - 49y^{12} + \cdots - 61y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.955186 + 0.433947I$ $a = -0.471198 - 0.436221I$ $b = 0.755123 - 0.031476I$	$0.903643 - 0.585016I$	$4.40140 + 1.35233I$
$u = 0.955186 - 0.433947I$ $a = -0.471198 + 0.436221I$ $b = 0.755123 + 0.031476I$	$0.903643 + 0.585016I$	$4.40140 - 1.35233I$
$u = -0.933504 + 0.177892I$ $a = -0.617558 + 0.567691I$ $b = -0.473971 + 0.403774I$	$-1.65953 + 0.62739I$	$-3.40176 - 1.52650I$
$u = -0.933504 - 0.177892I$ $a = -0.617558 - 0.567691I$ $b = -0.473971 - 0.403774I$	$-1.65953 - 0.62739I$	$-3.40176 + 1.52650I$
$u = 0.869334 + 0.624757I$ $a = 0.420041 + 0.925939I$ $b = -0.581132 + 0.140274I$	$1.00399 - 3.84064I$	$5.54977 + 8.01840I$
$u = 0.869334 - 0.624757I$ $a = 0.420041 - 0.925939I$ $b = -0.581132 - 0.140274I$	$1.00399 + 3.84064I$	$5.54977 - 8.01840I$
$u = -0.028967 + 1.273930I$ $a = -0.158932 + 0.197003I$ $b = 0.05120 - 2.05742I$	$-12.48260 + 4.81706I$	$-0.19074 - 2.27482I$
$u = -0.028967 - 1.273930I$ $a = -0.158932 - 0.197003I$ $b = 0.05120 + 2.05742I$	$-12.48260 - 4.81706I$	$-0.19074 + 2.27482I$
$u = 1.46956 + 0.59251I$ $a = -0.85770 - 1.47458I$ $b = 0.52077 - 2.38909I$	$-17.2166 - 11.4167I$	$-1.78764 + 5.02800I$
$u = 1.46956 - 0.59251I$ $a = -0.85770 + 1.47458I$ $b = 0.52077 + 2.38909I$	$-17.2166 + 11.4167I$	$-1.78764 - 5.02800I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.49484 + 0.63529I$ $a = 0.82284 - 1.22627I$ $b = -0.74959 - 1.95511I$	$-17.0497 + 2.0233I$	$-2.18781 - 0.87077I$
$u = -1.49484 - 0.63529I$ $a = 0.82284 + 1.22627I$ $b = -0.74959 + 1.95511I$	$-17.0497 - 2.0233I$	$-2.18781 + 0.87077I$
$u = 0.326480$ $a = -1.02499$ $b = 0.455205$	0.885241	11.4840

II. $\boldsymbol{I_2^u = \langle -u^4+u^3+2u^2+b-a-u-1,\ u^4-2u^2a-2u^3+a^2+au+2a+u+2,\ u^5-u^4-2u^3+u^2+u+1\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} u^4-u^2a-u^3-2u^2+2a+u+1 \\ -u^4a+u^4+u^2a-u^3-2u^2+a+1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2u^4+3u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} u^4a+u^3a+u^4-2u^2a-2au-2u^2+a+u+1 \\ u^3a+u^4-2au-2u^2+1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 4u^4-6u^2-2u-2 \\ 2u^4-4u^2-u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 4u^4-6u^2-2u-2 \\ 2u^4-4u^2-u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^3-8u-2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^2$
c_2	$(u^5 + 5u^4 + 8u^3 + 3u^2 - u + 1)^2$
c_3, c_7	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)^2$
c_5, c_6, c_8 c_9, c_{11}	$u^{10} + 3u^9 + \cdots + 32u + 17$
c_{10}	$u^{10} + 11u^9 + \cdots + 1016u + 289$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^2$
c_2	$(y^5 - 9y^4 + 32y^3 - 35y^2 - 5y - 1)^2$
c_3, c_7	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^2$
c_5, c_6, c_8 c_9, c_{11}	$y^{10} + 11y^9 + \cdots + 1016y + 289$
c_{10}	$y^{10} - 25y^9 + \cdots + 78660y + 83521$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.21774$ $a=\ \ 1.09175+2.32396I$ $b=\ \ 1.91295+2.32396I$	-5.69095	0.518860
$u=-1.21774$ $a=\ \ 1.09175-2.32396I$ $b=\ \ 1.91295-2.32396I$	-5.69095	0.518860
$u=-0.309916+0.549911I$ $a=-0.653120+0.123189I$ $b=\ \ 0.12468+1.50332I$	$-3.61897+1.53058I$	$1.48489-4.43065I$
$u=-0.309916+0.549911I$ $a=-1.44967-1.35480I$ $b=-0.671868+0.025324I$	$-3.61897+1.53058I$	$1.48489-4.43065I$
$u=-0.309916-0.549911I$ $a=-0.653120-0.123189I$ $b=\ \ 0.12468-1.50332I$	$-3.61897-1.53058I$	$1.48489+4.43065I$
$u=-0.309916-0.549911I$ $a=-1.44967+1.35480I$ $b=-0.671868-0.025324I$	$-3.61897-1.53058I$	$1.48489+4.43065I$
$u=\ \ 1.41878+0.21917I$ $a=\ \ 0.171660-0.827142I$ $b=-0.516743-0.720802I$	$-9.16243-4.40083I$	$-2.74431+3.49859I$
$u=\ \ 1.41878+0.21917I$ $a=\ \ 0.33938+1.85177I$ $b=-0.34902+1.95811I$	$-9.16243-4.40083I$	$-2.74431+3.49859I$
$u=\ \ 1.41878-0.21917I$ $a=\ \ 0.171660+0.827142I$ $b=-0.516743+0.720802I$	$-9.16243+4.40083I$	$-2.74431-3.49859I$
$u=\ \ 1.41878-0.21917I$ $a=\ \ 0.33938-1.85177I$ $b=-0.34902-1.95811I$	$-9.16243+4.40083I$	$-2.74431-3.49859I$

III.

$$\boldsymbol{I_3^u = \langle -u^2a+au-u^2+b+u-1,\ 2u^2a+a^2-4au+3u^2+2a-6u+5,\ u^3-u^2+1\rangle}$$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ u^2a - au + u^2 - u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2a - au + 3u^2 + a - 5u + 4 \\ u^2a - au + 2u^2 - 3u + 3 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

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

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

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 1.102080 + 0.844941I$ $b = -0.867423 + 0.622301I$	$-0.26574 - 2.82812I$	$-0.49024 + 2.97945I$
$u = 0.877439 + 0.744862I$ $a = -0.022482 - 0.479777I$ $b = 0.622301 + 0.867423I$	$-0.26574 - 2.82812I$	$-0.49024 + 2.97945I$
$u = 0.877439 - 0.744862I$ $a = 1.102080 - 0.844941I$ $b = -0.867423 - 0.622301I$	$-0.26574 + 2.82812I$	$-0.49024 - 2.97945I$
$u = 0.877439 - 0.744862I$ $a = -0.022482 + 0.479777I$ $b = 0.622301 - 0.867423I$	$-0.26574 + 2.82812I$	$-0.49024 - 2.97945I$
$u = -0.754878$ $a = -3.07960 + 1.32472I$ $b = -1.75488 + 1.75488I$	-4.40332	-7.01950
$u = -0.754878$ $a = -3.07960 - 1.32472I$ $b = -1.75488 - 1.75488I$	-4.40332	-7.01950

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.5 \\ -0.5 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1.5 \\ 0.5 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.5 \\ -1.5 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.5 \\ -0.5 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2.25$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.500000$ $b = -0.500000$	0	-2.25000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)(u^3+u^2-1)^2(u^5-u^4-2u^3+u^2+u+1)^2$ $\cdot(u^{13}-2u^{12}+\cdots+17u-4)$
c_2	$(u+1)(u^3+u^2+2u+1)^2(u^5+5u^4+8u^3+3u^2-u+1)^2$ $\cdot(u^{13}+8u^{12}+\cdots+209u+16)$
c_3, c_7	$u(u^5-u^4+2u^3-u^2+u-1)^2(u^6-3u^4+2u^2+1)$ $\cdot(u^{13}+3u^{12}+\cdots-2u-8)$
c_4	$(u+1)(u^3-u^2+1)^2(u^5-u^4-2u^3+u^2+u+1)^2$ $\cdot(u^{13}-2u^{12}+\cdots+17u-4)$
c_5, c_6	$(u+1)(u^2+1)^3(u^{10}+3u^9+\cdots+32u+17)(u^{13}-u^{12}+\cdots+u-1)$
c_8, c_9, c_{11}	$(u-1)(u^2+1)^3(u^{10}+3u^9+\cdots+32u+17)(u^{13}-u^{12}+\cdots+u-1)$
c_{10}	$((u-1)^6)(u+1)(u^{10}+11u^9+\cdots+1016u+289)$ $\cdot(u^{13}+19u^{12}+\cdots-13u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y-1)(y^3-y^2+2y-1)^2(y^5-5y^4+8y^3-3y^2-y-1)^2$ $\cdot\,(y^{13}-8y^{12}+\cdots+209y-16)$
c_2	$(y-1)(y^3+3y^2+2y-1)^2(y^5-9y^4+32y^3-35y^2-5y-1)^2$ $\cdot\,(y^{13}-4y^{12}+\cdots+22817y-256)$
c_3, c_7	$y(y^3-3y^2+2y+1)^2(y^5+3y^4+4y^3+y^2-y-1)^2$ $\cdot\,(y^{13}-3y^{12}+\cdots+180y-64)$
c_5, c_6, c_8 c_9, c_{11}	$(y-1)(y+1)^6(y^{10}+11y^9+\cdots+1016y+289)$ $\cdot\,(y^{13}+19y^{12}+\cdots-13y-1)$
c_{10}	$((y-1)^7)(y^{10}-25y^9+\cdots+78660y+83521)$ $\cdot\,(y^{13}-49y^{12}+\cdots-61y-1)$