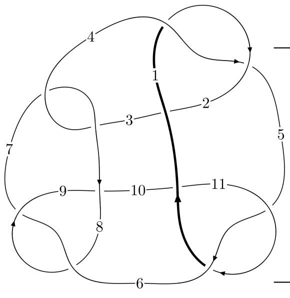
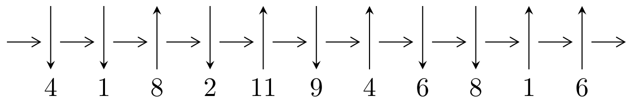
$11n_{74}$ ($K11n_{74}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^4 + 2u^3 - 2u^2 + 2d + 1,\ -u^6 + 3u^5 - 5u^4 + 3u^3 + 2c - 6u - 4,\ u^3 - u^2 + 2b + u + 1,$$
$$-2u^6 + 5u^5 - 7u^4 + 6u^2 + 4a - 13u - 13,\ u^7 - 3u^6 + 5u^5 - 3u^4 - u^3 + 7u^2 + 3u - 1\rangle$$
$$I_2^u = \langle u^3 + 4d - u - 2,\ 3u^3 - 4u^2 + 8c + 9u + 18,\ b + u - 1,\ -u^3 + 8a - 3u - 2,\ u^4 - 2u^3 + 3u^2 + 4u - 4\rangle$$
$$I_3^u = \langle d,\ c + 1,\ b - 1,\ a,\ u + 1\rangle$$
$$I_4^u = \langle d,\ c - 1,\ b,\ a - 1,\ u + 1\rangle$$
$$I_5^u = \langle d,\ cb + 1,\ a - 1,\ u + 1\rangle$$

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

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 14 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[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. $\boldsymbol{I_1^u = \langle -u^4+2u^3-2u^2+2d+1,\ -u^6+3u^5+\cdots+2c-4,\ u^3-u^2+2b+u+1,\ -2u^6+5u^5+\cdots+4a-13,\ u^7-3u^6+\cdots+3u-1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} \frac{1}{2}u^6 - \frac{3}{2}u^5 + \cdots + 3u + 2 \\ \frac{1}{2}u^4 - u^3 + u^2 - \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{2}u^6 - \frac{5}{4}u^5 + \cdots + \frac{13}{4}u + \frac{13}{4} \\ -\frac{1}{2}u^3 + \frac{1}{2}u^2 - \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{2}u^6 - \frac{3}{2}u^5 + \cdots + 3u + \frac{5}{2} \\ \frac{1}{2}u^4 - u^3 + u^2 - \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^6 - \frac{5}{4}u^5 + \cdots + \frac{11}{4}u + \frac{11}{4} \\ -\frac{1}{2}u^5 + u^4 - \frac{3}{2}u^3 + \frac{1}{2}u^2 - \frac{1}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{3}{4}u^6 - \frac{9}{4}u^5 + \cdots + \frac{17}{4}u + \frac{5}{2} \\ -\frac{1}{2}u^6 + u^5 + \cdots - \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} \frac{1}{2}u^6 - \frac{5}{4}u^5 + \cdots + \frac{13}{4}u + \frac{13}{4} \\ \frac{1}{4}u^5 - \frac{1}{4}u^4 + \cdots - \frac{3}{4}u - \frac{1}{4} \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3u^6 - \frac{19}{2}u^5 + \frac{35}{2}u^4 - 14u^3 + 3u^2 + \frac{39}{2}u + \frac{9}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6 c_8	$u^7 - 3u^6 + 5u^5 - 3u^4 - u^3 + 7u^2 + 3u - 1$
c_2, c_9	$u^7 - u^6 + 5u^5 - 29u^4 + 67u^3 + 61u^2 + 23u + 1$
c_3, c_7	$u^7 - 6u^5 + 4u^4 + 32u^3 - 12u^2 + 16u - 8$
c_5, c_{11}	$u^7 + u^6 - 4u^5 + 15u^3 + 3u^2 - 8u - 4$
c_{10}	$u^7 - 9u^6 + 46u^5 - 142u^4 + 297u^3 - 249u^2 + 88u - 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$y^7 + y^6 + 5y^5 + 29y^4 + 67y^3 - 61y^2 + 23y - 1$
c_2, c_9	$y^7 + 9y^6 + 101y^5 - 3y^4 + 8259y^3 - 581y^2 + 407y - 1$
c_3, c_7	$y^7 - 12y^6 + 100y^5 - 368y^4 + 928y^3 + 944y^2 + 64y - 64$
c_5, c_{11}	$y^7 - 9y^6 + 46y^5 - 142y^4 + 297y^3 - 249y^2 + 88y - 16$
c_{10}	$y^7 + 11y^6 + 154y^5 + 2854y^4 + 25301y^3 - 14273y^2 - 224y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.643564 + 0.238013I$ $a = 0.616252 + 0.619029I$ $b = 0.079132 - 0.413310I$ $c = 0.317102 - 0.524945I$ $d = 0.031685 - 0.698136I$	$-1.11796 + 1.29283I$	$-4.63450 - 5.74515I$
$u = -0.643564 - 0.238013I$ $a = 0.616252 - 0.619029I$ $b = 0.079132 + 0.413310I$ $c = 0.317102 + 0.524945I$ $d = 0.031685 + 0.698136I$	$-1.11796 - 1.29283I$	$-4.63450 + 5.74515I$
$u = 0.46828 + 1.59550I$ $a = -0.405220 - 1.031160I$ $b = -0.16054 + 1.45536I$ $c = -0.812628 - 0.339128I$ $d = 2.23667 + 1.02998I$	$5.28066 - 2.46552I$	$0.37200 + 1.61165I$
$u = 0.46828 - 1.59550I$ $a = -0.405220 + 1.031160I$ $b = -0.16054 - 1.45536I$ $c = -0.812628 + 0.339128I$ $d = 2.23667 - 1.02998I$	$5.28066 + 2.46552I$	$0.37200 - 1.61165I$
$u = 0.222829$ $a = 3.90340$ $b = -0.592120$ $c = 2.65729$ $d = -0.460179$	1.26042	8.87750
$u = 1.56387 + 1.00084I$ $a = -0.662734 + 0.809308I$ $b = -0.12253 - 2.10558I$ $c = 0.666881 + 0.919602I$ $d = -2.03826 + 1.30990I$	$14.9463 - 10.4045I$	$-1.17625 + 4.09895I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.56387 - 1.00084I$		
$a = -0.662734 - 0.809308I$		
$b = -0.12253 + 2.10558I$	$14.9463 + 10.4045I$	$-1.17625 - 4.09895I$
$c = 0.666881 - 0.919602I$		
$d = -2.03826 - 1.30990I$		

II. $\boldsymbol{I_2^u = \langle u^3 + 4d - u - 2,\ 3u^3 - 4u^2 + 8c + 9u + 18,\ b + u - 1,\ -u^3 + 8a - 3u - 2,\ u^4 - 2u^3 + 3u^2 + 4u - 4\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -\frac{3}{8}u^3 + \frac{1}{2}u^2 - \frac{9}{8}u - \frac{9}{4} \\ -\frac{1}{4}u^3 + \frac{1}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{8}u^3 + \frac{3}{8}u + \frac{1}{4} \\ -u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{1}{8}u^3 + \frac{1}{2}u^2 - \frac{11}{8}u - \frac{11}{4} \\ -\frac{1}{4}u^3 + \frac{1}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^3 + \frac{1}{2}u^2 - \frac{1}{2}u - \frac{5}{2} \\ \frac{1}{4}u^3 + u^2 - \frac{1}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{2}u^2 + \frac{1}{2} \\ -\frac{5}{4}u^3 + 3u^2 + \frac{5}{4}u - \frac{5}{2} \end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6 c_8	$u^4 - 2u^3 + 3u^2 + 4u - 4$
c_2, c_9	$u^4 - 2u^3 + 17u^2 + 40u + 16$
c_3, c_7	$(u^2 + 4u + 2)^2$
c_5, c_{11}	$(u^2 + 2u - 1)^2$
c_{10}	$(u^2 - 6u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$y^4 + 2y^3 + 17y^2 - 40y + 16$
c_2, c_9	$y^4 + 30y^3 + 481y^2 - 1056y + 256$
c_3, c_7	$(y^2 - 12y + 4)^2$
c_5, c_{11}	$(y^2 - 6y + 1)^2$
c_{10}	$(y^2 - 34y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.14055$ $a = -0.363169$ $b = 2.14055$ $c = 0.239938$ $d = 0.585786$	-2.46740	0
$u = 0.726339$ $a = 0.570276$ $b = 0.273661$ $c = -2.94704$ $d = 0.585786$	-2.46740	0
$u = 1.20711 + 1.83612I$ $a = -0.603553 + 0.918058I$ $b = -0.20711 - 1.83612I$ $c = -0.646447 - 0.537786I$ $d = 3.41421$	17.2718	0
$u = 1.20711 - 1.83612I$ $a = -0.603553 - 0.918058I$ $b = -0.20711 + 1.83612I$ $c = -0.646447 + 0.537786I$ $d = 3.41421$	17.2718	0

III. $\boldsymbol{I_3^u = \langle d,\ c+1,\ b-1,\ a,\ u+1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0$ $b = 1.00000$ $c = -1.00000$ $d = 0$	-3.28987	-12.0000

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

(i) Arc colorings

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

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

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

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

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

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

$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 1.00000$ $b = 0$ $c = 1.00000$ $d = 0$	0	0

V. $I_5^u = \langle d,\ cb+1,\ a-1,\ u+1 \rangle$

(i) Arc colorings

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

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

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

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

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

$$a_3 = \begin{pmatrix} c \\ 0 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} c+1 \\ b \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} 1 \\ b+1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -c^2 - b^2 - 4$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$		
$a = \cdots$		
$b = \cdots$	-1.64493	$-1.58105 + 0.82889I$
$c = \cdots$		
$d = \cdots$		

VI. $I_1^v = \langle a,\ d,\ c-1,\ b+1,\ v-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$		
$a = 0$		
$b = -1.00000$	0	0
$c = 1.00000$		
$d = 0$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$u(u-1)^2(u^4-2u^3+3u^2+4u-4)$ $\cdot(u^7-3u^6+5u^5-3u^4-u^3+7u^2+3u-1)$
c_2, c_9	$u(u+1)^2(u^4-2u^3+17u^2+40u+16)$ $\cdot(u^7-u^6+5u^5-29u^4+67u^3+61u^2+23u+1)$
c_3, c_7	$u^3(u^2+4u+2)^2(u^7-6u^5+4u^4+32u^3-12u^2+16u-8)$
c_4, c_8	$u(u+1)^2(u^4-2u^3+3u^2+4u-4)$ $\cdot(u^7-3u^6+5u^5-3u^4-u^3+7u^2+3u-1)$
c_5, c_{11}	$u(u-1)(u+1)(u^2+2u-1)^2(u^7+u^6+\cdots-8u-4)$
c_{10}	$u(u+1)^2(u^2-6u+1)^2$ $\cdot(u^7-9u^6+46u^5-142u^4+297u^3-249u^2+88u-16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_8	$y(y-1)^2(y^4+2y^3+17y^2-40y+16)$ $\cdot(y^7+y^6+5y^5+29y^4+67y^3-61y^2+23y-1)$
c_2, c_9	$y(y-1)^2(y^4+30y^3+481y^2-1056y+256)$ $\cdot(y^7+9y^6+101y^5-3y^4+8259y^3-581y^2+407y-1)$
c_3, c_7	$y^3(y^2-12y+4)^2$ $\cdot(y^7-12y^6+100y^5-368y^4+928y^3+944y^2+64y-64)$
c_5, c_{11}	$y(y-1)^2(y^2-6y+1)^2$ $\cdot(y^7-9y^6+46y^5-142y^4+297y^3-249y^2+88y-16)$
c_{10}	$y(y-1)^2(y^2-34y+1)^2$ $\cdot(y^7+11y^6+154y^5+2854y^4+25301y^3-14273y^2-224y-256)$