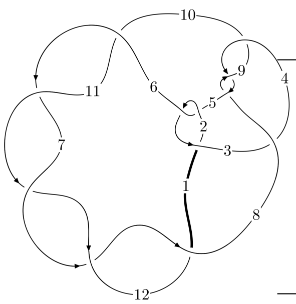
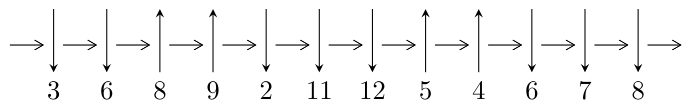
$12n_{0476}$ ($K12n_{0476}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$6{,}11 \xrightarrow[c_6]{} 7 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_7]{} 3{,}8 \xrightarrow[c_3]{} 4 \xrightarrow[c_2]{} 2 \xrightarrow[c_1]{} 1 \xrightarrow[c_5]{} 5 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_9]{} 9 \twoheadrightarrow c_4, c_8, c_{12}$$

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

$$\begin{aligned}
I_1^u = \langle & -399369286162u^{41} - 497609046536u^{40} + \cdots + 7240907177741b - 733512526727, \\
& -1720004901137u^{41} + 81273516863u^{40} + \cdots + 43445443064446a - 9063190310470, \\
& u^{42} + 2u^{41} + \cdots - u + 3\rangle \\
I_2^u = \langle & b - 1,\ a^2 - 2a - 2u + 5,\ u^2 - u - 1\rangle \\
I_3^u = \langle & b + 1,\ a + 1,\ u^2 + u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 48 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.

$\boldsymbol{I^u_1 = \langle -3.99\times10^{11}u^{41} - 4.98\times10^{11}u^{40} + \cdots + 7.24\times10^{11}b - 7.34\times10^{11},\ -1.72\times10^{12}u^{41} + 8.13\times10^{10}u^{40} + \cdots + 4.34\times10^{12}a - 9.06\times10^{12},\ u^{42} + 2u^{41} + \cdots - u + 3\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.395900u^{41} - 0.0187070u^{40} + \cdots - 2.07593u + 2.08611 \\ 0.551546u^{41} + 0.687219u^{40} + \cdots - 1.66740u + 1.01301 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.816087u^{41} + 0.338018u^{40} + \cdots - 4.06896u + 3.36970 \\ 0.759348u^{41} + 0.839252u^{40} + \cdots - 2.61706u + 1.37583 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.947446u^{41} + 0.668512u^{40} + \cdots - 3.74333u + 3.09912 \\ 0.551546u^{41} + 0.687219u^{40} + \cdots - 1.66740u + 1.01301 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 - 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.835547u^{41} + 0.380630u^{40} + \cdots + 6.27378u + 0.289814 \\ 0.900701u^{41} + 0.654885u^{40} + \cdots + 0.388683u + 1.42313 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.988524u^{41} + 0.535525u^{40} + \cdots - 1.74947u + 4.21201 \\ 0.136440u^{41} + 0.143354u^{40} + \cdots + 0.793437u + 1.35900 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{784004418607}{724090717741}u^{41} + \frac{2116932802003}{724090717741}u^{40} + \cdots - \frac{5911721578314}{724090717741}u - \frac{3580528018791}{724090717741}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{42} + 17u^{41} + \cdots + 1720u + 121$
c_2, c_5	$u^{42} + 3u^{41} + \cdots + 24u + 11$
c_3	$u^{42} + u^{41} + \cdots - 160u + 100$
c_4, c_8, c_9	$u^{42} - u^{41} + \cdots - 32u^2 + 4$
c_6, c_7, c_{10} c_{11}, c_{12}	$u^{42} - 2u^{41} + \cdots + u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{42} + 23y^{41} + \cdots + 258748y + 14641$
c_2, c_5	$y^{42} - 17y^{41} + \cdots - 1720y + 121$
c_3	$y^{42} - 23y^{41} + \cdots - 179200y + 10000$
c_4, c_8, c_9	$y^{42} + 37y^{41} + \cdots - 256y + 16$
c_6, c_7, c_{10} c_{11}, c_{12}	$y^{42} - 48y^{41} + \cdots - 115y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.049280 + 0.091551I$ $a = 0.412704 - 0.129591I$ $b = 0.776169 + 0.605347I$	$-4.77432 - 2.23397I$	$-10.46787 + 3.24456I$
$u = -1.049280 - 0.091551I$ $a = 0.412704 + 0.129591I$ $b = 0.776169 - 0.605347I$	$-4.77432 + 2.23397I$	$-10.46787 - 3.24456I$
$u = 0.673657 + 0.613325I$ $a = 0.46793 - 1.91116I$ $b = 1.100550 + 0.724909I$	$-1.23257 - 9.56169I$	$-8.38946 + 7.95988I$
$u = 0.673657 - 0.613325I$ $a = 0.46793 + 1.91116I$ $b = 1.100550 - 0.724909I$	$-1.23257 + 9.56169I$	$-8.38946 - 7.95988I$
$u = -0.576900 + 0.629034I$ $a = -0.25109 - 1.86774I$ $b = -0.957258 + 0.776390I$	$3.58322 + 5.14982I$	$-3.56640 - 6.23803I$
$u = -0.576900 - 0.629034I$ $a = -0.25109 + 1.86774I$ $b = -0.957258 - 0.776390I$	$3.58322 - 5.14982I$	$-3.56640 + 6.23803I$
$u = 0.553857 + 0.616758I$ $a = -0.988096 + 0.680405I$ $b = 0.572226 - 0.890720I$	$0.35890 - 3.56775I$	$-5.83599 + 3.90838I$
$u = 0.553857 - 0.616758I$ $a = -0.988096 - 0.680405I$ $b = 0.572226 + 0.890720I$	$0.35890 + 3.56775I$	$-5.83599 - 3.90838I$
$u = 0.786427$ $a = -0.785424$ $b = -0.488406$	-1.56406	-3.83480
$u = -0.415353 + 0.654172I$ $a = 0.983300 + 0.831773I$ $b = -0.801220 - 0.815689I$	$4.05957 - 0.81400I$	$-1.93866 - 0.14480I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.415353 - 0.654172I$ $a = 0.983300 - 0.831773I$ $b = -0.801220 + 0.815689I$	$4.05957 + 0.81400I$	$-1.93866 + 0.14480I$
$u = 0.430526 + 0.624525I$ $a = -0.00031 - 1.73658I$ $b = 0.721316 + 0.800712I$	$0.718852 - 0.648201I$	$-5.19720 + 2.33460I$
$u = 0.430526 - 0.624525I$ $a = -0.00031 + 1.73658I$ $b = 0.721316 - 0.800712I$	$0.718852 + 0.648201I$	$-5.19720 - 2.33460I$
$u = 0.289860 + 0.689463I$ $a = -0.902818 + 0.978781I$ $b = 0.995362 - 0.745920I$	$-0.10093 + 5.18138I$	$-5.92756 - 3.03712I$
$u = 0.289860 - 0.689463I$ $a = -0.902818 - 0.978781I$ $b = 0.995362 + 0.745920I$	$-0.10093 - 5.18138I$	$-5.92756 + 3.03712I$
$u = -1.333380 + 0.055601I$ $a = 0.083600 - 0.453941I$ $b = 0.713786 + 0.763955I$	$-4.90307 - 2.25991I$	0
$u = -1.333380 - 0.055601I$ $a = 0.083600 + 0.453941I$ $b = 0.713786 - 0.763955I$	$-4.90307 + 2.25991I$	0
$u = 0.476375 + 0.392459I$ $a = -0.604894 + 0.926643I$ $b = -1.261030 + 0.067596I$	$-6.08478 - 1.41154I$	$-9.66825 + 4.90149I$
$u = 0.476375 - 0.392459I$ $a = -0.604894 - 0.926643I$ $b = -1.261030 - 0.067596I$	$-6.08478 + 1.41154I$	$-9.66825 - 4.90149I$
$u = -0.475739 + 0.258622I$ $a = 1.77841 - 2.91372I$ $b = -0.798648 + 0.217030I$	$-6.83314 + 0.96606I$	$-8.00205 - 7.45219I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.475739 - 0.258622I$ $a = 1.77841 + 2.91372I$ $b = -0.798648 - 0.217030I$	$-6.83314 - 0.96606I$	$-8.00205 + 7.45219I$
$u = 1.45883 + 0.17891I$ $a = 0.245004 - 0.259927I$ $b = -0.587321 + 0.900636I$	$-1.96643 - 2.13199I$	0
$u = 1.45883 - 0.17891I$ $a = 0.245004 + 0.259927I$ $b = -0.587321 - 0.900636I$	$-1.96643 + 2.13199I$	0
$u = -1.48695 + 0.16260I$ $a = 0.560834 + 1.090920I$ $b = 0.940796 - 0.731217I$	$-5.49810 + 3.38316I$	0
$u = -1.48695 - 0.16260I$ $a = 0.560834 - 1.090920I$ $b = 0.940796 + 0.731217I$	$-5.49810 - 3.38316I$	0
$u = 1.51893$ $a = 1.19880$ $b = 1.30296$	-8.88024	0
$u = -1.53094 + 0.09497I$ $a = -1.171830 - 0.180431I$ $b = -1.351610 - 0.153172I$	$-12.84770 + 3.06597I$	0
$u = -1.53094 - 0.09497I$ $a = -1.171830 + 0.180431I$ $b = -1.351610 + 0.153172I$	$-12.84770 - 3.06597I$	0
$u = 1.53459 + 0.05929I$ $a = 0.06391 + 1.58702I$ $b = -0.843652 - 0.499599I$	$-13.66930 - 2.02433I$	0
$u = 1.53459 - 0.05929I$ $a = 0.06391 - 1.58702I$ $b = -0.843652 + 0.499599I$	$-13.66930 + 2.02433I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.53944+0.19194I$ $a=-0.385692-0.184391I$ $b=\ 0.433918+0.972193I$	$-6.56394+6.51432I$	0
$u=-1.53944-0.19194I$ $a=-0.385692+0.184391I$ $b=\ 0.433918-0.972193I$	$-6.56394-6.51432I$	0
$u=\ 1.55140+0.19874I$ $a=-0.84494+1.14482I$ $b=-1.088960-0.737531I$	$-3.47009-8.18357I$	0
$u=\ 1.55140-0.19874I$ $a=-0.84494-1.14482I$ $b=-1.088960+0.737531I$	$-3.47009+8.18357I$	0
$u=-0.425520$ $a=\ 1.66207$ $b=\ 1.09128$	-2.26322	5.01380
$u=\ 0.242324+0.345213I$ $a=-0.599361-1.192230I$ $b=\ 0.361519+0.367349I$	$-0.227692-0.948273I$	$-4.31648+7.21437I$
$u=\ 0.242324-0.345213I$ $a=-0.599361+1.192230I$ $b=\ 0.361519-0.367349I$	$-0.227692+0.948273I$	$-4.31648-7.21437I$
$u=-1.59476+0.19372I$ $a=\ 1.02426+1.19954I$ $b=\ 1.179170-0.691260I$	$-8.8337+12.5829I$	0
$u=-1.59476-0.19372I$ $a=\ 1.02426-1.19954I$ $b=\ 1.179170+0.691260I$	$-8.8337-12.5829I$	0
$u=-1.64206$ $a=-0.939257$ $b=-0.789120$	-10.0738	0

	Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$1.67244+0.02610I$		
$a=$	$0.894316-0.090456I$	$-14.0854+1.7540I$	0
$b=$	$0.836517-0.423614I$		
$u=$	$1.67244-0.02610I$		
$a=$	$0.894316+0.090456I$	$-14.0854-1.7540I$	0
$b=$	$0.836517+0.423614I$		

II. $I_2^u = \langle b-1,\ a^2-2a-2u+5,\ u^2-u-1\rangle$

(i) Arc colorings

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

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

$$a_7 = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u \\ -u-1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -au+u+1 \\ -au-a+u+2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} a+1 \\ 1 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 1.00000 + 2.28825I$ $b = 1.00000$	-7.56670	-16.0000
$u = -0.618034$ $a = 1.00000 - 2.28825I$ $b = 1.00000$	-7.56670	-16.0000
$u = 1.61803$ $a = 1.000000 + 0.874032I$ $b = 1.00000$	-15.4624	-16.0000
$u = 1.61803$ $a = 1.000000 - 0.874032I$ $b = 1.00000$	-15.4624	-16.0000

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

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} -u \\ -u+1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -1.00000$ $b = -1.00000$	-2.63189	-18.0000
$u = -1.61803$ $a = -1.00000$ $b = -1.00000$	-10.5276	-18.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{42}+17u^{41}+\cdots+1720u+121)$
c_2	$((u-1)^2)(u+1)^4(u^{42}+3u^{41}+\cdots+24u+11)$
c_3	$u^2(u^2+2)^2(u^{42}+u^{41}+\cdots-160u+100)$
c_4, c_8, c_9	$u^2(u^2+2)^2(u^{42}-u^{41}+\cdots-32u^2+4)$
c_5	$((u-1)^4)(u+1)^2(u^{42}+3u^{41}+\cdots+24u+11)$
c_6, c_7	$((u^2-u-1)^2)(u^2+u-1)(u^{42}-2u^{41}+\cdots+u+3)$
c_{10}, c_{11}, c_{12}	$(u^2-u-1)(u^2+u-1)^2(u^{42}-2u^{41}+\cdots+u+3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{42}+23y^{41}+\cdots+258748y+14641)$
c_2, c_5	$((y-1)^6)(y^{42}-17y^{41}+\cdots-1720y+121)$
c_3	$y^2(y+2)^4(y^{42}-23y^{41}+\cdots-179200y+10000)$
c_4, c_8, c_9	$y^2(y+2)^4(y^{42}+37y^{41}+\cdots-256y+16)$
c_6, c_7, c_{10} c_{11}, c_{12}	$((y^2-3y+1)^3)(y^{42}-48y^{41}+\cdots-115y+9)$