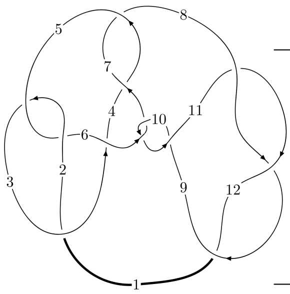
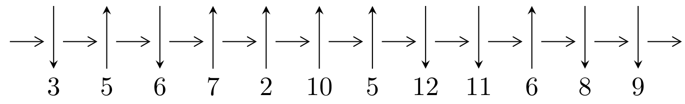
$12n_{0024}$ ($K12n_{0024}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-987290740395u^{33} - 5379029654817u^{32} + \cdots + 837919692176b - 653062691196, \\
&- 1563526467031u^{33} - 8197997634981u^{32} + \cdots + 837919692176a + 1275617520034, \\
&u^{34} + 6u^{33} + \cdots + 5u + 1\rangle \\
I_2^u = \langle &-a^3 - 3au + b + 3a + 1,\ a^5 + a^4u - 2a^4 + 2a^3u - 3a^3 - 5a^2u + 2a^2 - 2au + 4a + u,\ u^2 - u + 1\rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 44 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.

$\boldsymbol{I^u_1 = \langle -9.87\times10^{11}u^{33} - 5.38\times10^{12}u^{32} + \cdots + 8.38\times10^{11}b - 6.53\times10^{11},\ -1.56\times10^{12}u^{33} - 8.20\times10^{12}u^{32} + \cdots + 8.38\times10^{11}a + 1.28\times10^{12},\ u^{34} + 6u^{33} + \cdots + 5u + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1.86596u^{33} + 9.78375u^{32} + \cdots + 1.06021u - 1.52236 \\ 1.17826u^{33} + 6.41951u^{32} + \cdots + 5.45973u + 0.779386 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.687698u^{33} + 3.36425u^{32} + \cdots - 4.39952u - 2.30175 \\ 1.17826u^{33} + 6.41951u^{32} + \cdots + 5.45973u + 0.779386 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1.28785u^{33} - 8.52538u^{32} + \cdots - 21.2336u - 4.29654 \\ 0.361519u^{33} + 2.60589u^{32} + \cdots + 0.591225u - 0.926328 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1.37658u^{33} - 9.45845u^{32} + \cdots - 25.9217u - 6.02116 \\ 1.27771u^{33} + 6.49148u^{32} + \cdots + 2.68331u - 0.525657 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.00960441u^{33} - 1.00925u^{32} + \cdots - 18.8321u - 4.39435 \\ 0.833123u^{33} + 4.09945u^{32} + \cdots - 0.950070u - 1.07697 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.818376u^{33} - 6.54935u^{32} + \cdots - 31.6588u - 7.66755 \\ 1.56035u^{33} + 7.49904u^{32} + \cdots + 0.0306098u - 1.66930 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{1379117222209}{837919692176}u^{33} + \frac{1029169729969}{119702813168}u^{32} + \cdots + \frac{2734506517567}{837919692176}u - \frac{434006716289}{104739961522}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{34} + 6u^{33} + \cdots + 17u + 1$
c_2, c_5	$u^{34} + 6u^{33} + \cdots + 5u + 1$
c_3	$u^{34} - 6u^{33} + \cdots + 10043u + 23377$
c_4, c_7	$u^{34} + 3u^{33} + \cdots + 4096u + 1024$
c_6, c_{10}	$u^{34} - 3u^{33} + \cdots - 2u + 1$
c_8, c_{11}, c_{12}	$u^{34} - 3u^{33} + \cdots - 2u + 1$
c_9	$u^{34} + 3u^{33} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{34} + 50y^{33} + \cdots + 17y + 1$
c_2, c_5	$y^{34} + 6y^{33} + \cdots + 17y + 1$
c_3	$y^{34} + 94y^{33} + \cdots + 17344598433y + 546484129$
c_4, c_7	$y^{34} - 55y^{33} + \cdots - 6291456y + 1048576$
c_6, c_{10}	$y^{34} + 3y^{33} + \cdots - 2y + 1$
c_8, c_{11}, c_{12}	$y^{34} - 25y^{33} + \cdots - 2y + 1$
c_9	$y^{34} + 59y^{33} + \cdots + 6y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.460595 + 0.926013I$ $a = 1.65664 + 1.65921I$ $b = 0.408796 - 0.306002I$	$-1.92220 + 2.39604I$	$9.18658 + 7.54131I$
$u = 0.460595 - 0.926013I$ $a = 1.65664 - 1.65921I$ $b = 0.408796 + 0.306002I$	$-1.92220 - 2.39604I$	$9.18658 - 7.54131I$
$u = 0.916388 + 0.231859I$ $a = 0.575411 + 0.072095I$ $b = 0.740585 + 0.042237I$	$1.77655 + 0.14759I$	$6.63914 + 0.92800I$
$u = 0.916388 - 0.231859I$ $a = 0.575411 - 0.072095I$ $b = 0.740585 - 0.042237I$	$1.77655 - 0.14759I$	$6.63914 - 0.92800I$
$u = -0.139053 + 0.917478I$ $a = 0.883284 + 0.335732I$ $b = -0.309625 - 1.098890I$	$-6.97147 + 2.86372I$	$-9.65845 - 4.16249I$
$u = -0.139053 - 0.917478I$ $a = 0.883284 - 0.335732I$ $b = -0.309625 + 1.098890I$	$-6.97147 - 2.86372I$	$-9.65845 + 4.16249I$
$u = 0.615154 + 0.975680I$ $a = -0.929833 + 0.597421I$ $b = -0.525453 - 0.313759I$	$0.54741 + 2.67952I$	$3.39595 - 1.50494I$
$u = 0.615154 - 0.975680I$ $a = -0.929833 - 0.597421I$ $b = -0.525453 + 0.313759I$	$0.54741 - 2.67952I$	$3.39595 + 1.50494I$
$u = 0.429644 + 0.715588I$ $a = -0.53311 - 2.00244I$ $b = 0.036081 + 0.595902I$	$-1.17601 + 1.39012I$	$-7.01664 - 5.97525I$
$u = 0.429644 - 0.715588I$ $a = -0.53311 + 2.00244I$ $b = 0.036081 - 0.595902I$	$-1.17601 - 1.39012I$	$-7.01664 + 5.97525I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.523759 + 0.558320I$ $a = -1.97777 - 0.12112I$ $b = -0.563128 + 1.220590I$	$-5.45470 - 5.60091I$	$-2.61064 + 1.17728I$
$u = -0.523759 - 0.558320I$ $a = -1.97777 + 0.12112I$ $b = -0.563128 - 1.220590I$	$-5.45470 + 5.60091I$	$-2.61064 - 1.17728I$
$u = 0.976795 + 0.800627I$ $a = -0.742471 + 0.095802I$ $b = -0.726847 - 0.193549I$	$1.16029 + 3.25320I$	$4.65048 - 6.79539I$
$u = 0.976795 - 0.800627I$ $a = -0.742471 - 0.095802I$ $b = -0.726847 + 0.193549I$	$1.16029 - 3.25320I$	$4.65048 + 6.79539I$
$u = -1.089890 + 0.830630I$ $a = 0.725849 + 0.611806I$ $b = 1.11344 + 0.97215I$	$9.51601 + 5.95991I$	$0.51921 - 2.93310I$
$u = -1.089890 - 0.830630I$ $a = 0.725849 - 0.611806I$ $b = 1.11344 - 0.97215I$	$9.51601 - 5.95991I$	$0.51921 + 2.93310I$
$u = -0.982318 + 0.958357I$ $a = 1.53840 + 0.41969I$ $b = 1.00540 - 1.12383I$	$8.99044 - 1.80322I$	$0. + 1.42178I$
$u = -0.982318 - 0.958357I$ $a = 1.53840 - 0.41969I$ $b = 1.00540 + 1.12383I$	$8.99044 + 1.80322I$	$0. - 1.42178I$
$u = 0.502370 + 1.284930I$ $a = 0.386591 - 0.485376I$ $b = 0.637032 + 0.537211I$	$-1.85905 + 5.40081I$	$-1.55683 - 8.82721I$
$u = 0.502370 - 1.284930I$ $a = 0.386591 + 0.485376I$ $b = 0.637032 - 0.537211I$	$-1.85905 - 5.40081I$	$-1.55683 + 8.82721I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.957231+0.999067I$ $a=\ 0.518277+0.648716I$ $b=\ 1.11992+1.01734I$	$8.85325-5.31381I$	$0.+2.92536I$
$u=-0.957231-0.999067I$ $a=\ 0.518277-0.648716I$ $b=\ 1.11992-1.01734I$	$8.85325+5.31381I$	$0.-2.92536I$
$u=-1.046170+0.937050I$ $a=-0.620076-0.611485I$ $b=-1.11562-0.99302I$	$13.38330+0.23885I$	$2.96282+0.I$
$u=-1.046170-0.937050I$ $a=-0.620076+0.611485I$ $b=-1.11562+0.99302I$	$13.38330-0.23885I$	$2.96282+0.I$
$u=\ 0.198700+0.560261I$ $a=-1.17033-1.74922I$ $b=\ 0.007937+0.744382I$	$-1.29654+1.36041I$	$-5.30238-4.63375I$
$u=\ 0.198700-0.560261I$ $a=-1.17033+1.74922I$ $b=\ 0.007937-0.744382I$	$-1.29654-1.36041I$	$-5.30238+4.63375I$
$u=-0.96143+1.05476I$ $a=-1.50621-0.49472I$ $b=-1.02274+1.10646I$	$12.9727-7.5739I$	$2.34047+4.26054I$
$u=-0.96143-1.05476I$ $a=-1.50621+0.49472I$ $b=-1.02274-1.10646I$	$12.9727+7.5739I$	$2.34047-4.26054I$
$u=-0.90074+1.11269I$ $a=\ 1.50810+0.56457I$ $b=\ 1.04148-1.09306I$	$8.5560-13.1935I$	$0.+6.90026I$
$u=-0.90074-1.11269I$ $a=\ 1.50810-0.56457I$ $b=\ 1.04148+1.09306I$	$8.5560+13.1935I$	$0.-6.90026I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.373509 + 0.310679I$ $a = 2.41143 + 0.07043I$ $b = 0.482363 - 0.901628I$	$-0.05073 - 2.05660I$	$0.17254 + 2.58405I$
$u = -0.373509 - 0.310679I$ $a = 2.41143 - 0.07043I$ $b = 0.482363 + 0.901628I$	$-0.05073 + 2.05660I$	$0.17254 - 2.58405I$
$u = -0.125550 + 0.377744I$ $a = -1.22419 - 1.84916I$ $b = -0.829608 - 0.231361I$	$-2.61203 - 0.40815I$	$-2.95865 - 1.32770I$
$u = -0.125550 - 0.377744I$ $a = -1.22419 + 1.84916I$ $b = -0.829608 + 0.231361I$	$-2.61203 + 0.40815I$	$-2.95865 + 1.32770I$

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

(i) Arc colorings

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

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

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

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

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

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

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

$$a_7 = \begin{pmatrix} a^4u - a^4 - 3a^2u - au + a - u + 1 \\ -a^4u + 3a^2 + au + u \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} a^4u + a^4 + a^3u - 2a^3 + 2a^2u - 5a^2 - 6au + 2a - u + 2 \\ 2a^4u - a^4 - a^3u - 3a^2u - 2a^2 - 2au + 3a + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} a^4u - a^4 + a^3 - 3a^2u + au - a - u \\ -a^4u + a^3u + 3a^2 + au - 2a \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6a^4u - 6a^4 - 3a^3u - 2a^3 - 19a^2u + 5a^2 - 11au + 17a + 4u + 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = -0.535003 - 0.266485I$ $b = 0.455697 - 1.200150I$	$-5.87256 - 2.37095I$	$-1.90884 + 0.95814I$
$u = 0.500000 + 0.866025I$ $a = -1.31030 + 0.92177I$ $b = -0.339110 - 0.822375I$	$-0.32910 + 3.56046I$	$-2.43337 - 7.40396I$
$u = 0.500000 + 0.866025I$ $a = 1.54372 - 0.52281I$ $b = 0.455697 + 1.200150I$	$-5.87256 + 6.43072I$	$-7.21285 - 8.37016I$
$u = 0.500000 + 0.866025I$ $a = 0.114093 - 0.334410I$ $b = -0.339110 + 0.822375I$	$-0.329100 + 0.499304I$	$1.41726 + 0.48644I$
$u = 0.500000 + 0.866025I$ $a = 1.68749 - 0.66409I$ $b = 0.766826$	$-2.40108 + 2.02988I$	$0.137791 - 1.258916I$
$u = 0.500000 - 0.866025I$ $a = -0.535003 + 0.266485I$ $b = 0.455697 + 1.200150I$	$-5.87256 + 2.37095I$	$-1.90884 - 0.95814I$
$u = 0.500000 - 0.866025I$ $a = -1.31030 - 0.92177I$ $b = -0.339110 + 0.822375I$	$-0.32910 - 3.56046I$	$-2.43337 + 7.40396I$
$u = 0.500000 - 0.866025I$ $a = 1.54372 + 0.52281I$ $b = 0.455697 - 1.200150I$	$-5.87256 - 6.43072I$	$-7.21285 + 8.37016I$
$u = 0.500000 - 0.866025I$ $a = 0.114093 + 0.334410I$ $b = -0.339110 - 0.822375I$	$-0.329100 - 0.499304I$	$1.41726 - 0.48644I$
$u = 0.500000 - 0.866025I$ $a = 1.68749 + 0.66409I$ $b = 0.766826$	$-2.40108 - 2.02988I$	$0.137791 + 1.258916I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2 - u + 1)^5)(u^{34} + 6u^{33} + \cdots + 17u + 1)$
c_2	$((u^2 + u + 1)^5)(u^{34} + 6u^{33} + \cdots + 5u + 1)$
c_3	$((u^2 - u + 1)^5)(u^{34} - 6u^{33} + \cdots + 10043u + 23377)$
c_4, c_7	$u^{10}(u^{34} + 3u^{33} + \cdots + 4096u + 1024)$
c_5	$((u^2 - u + 1)^5)(u^{34} + 6u^{33} + \cdots + 5u + 1)$
c_6	$((u^5 - u^4 + 2u^3 - u^2 + u - 1)^2)(u^{34} - 3u^{33} + \cdots - 2u + 1)$
c_8	$((u^5 + u^4 - 2u^3 - u^2 + u - 1)^2)(u^{34} - 3u^{33} + \cdots - 2u + 1)$
c_9	$((u^5 - 3u^4 + 4u^3 - u^2 - u + 1)^2)(u^{34} + 3u^{33} + \cdots - 2u + 1)$
c_{10}	$((u^5 + u^4 + 2u^3 + u^2 + u + 1)^2)(u^{34} - 3u^{33} + \cdots - 2u + 1)$
c_{11}, c_{12}	$((u^5 - u^4 - 2u^3 + u^2 + u + 1)^2)(u^{34} - 3u^{33} + \cdots - 2u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^5)(y^{34}+50y^{33}+\cdots+17y+1)$
c_2, c_5	$((y^2+y+1)^5)(y^{34}+6y^{33}+\cdots+17y+1)$
c_3	$((y^2+y+1)^5)(y^{34}+94y^{33}+\cdots+1.73446\times 10^{10}y+5.46484\times 10^8)$
c_4, c_7	$y^{10}(y^{34}-55y^{33}+\cdots-6291456y+1048576)$
c_6, c_{10}	$((y^5+3y^4+4y^3+y^2-y-1)^2)(y^{34}+3y^{33}+\cdots-2y+1)$
c_8, c_{11}, c_{12}	$((y^5-5y^4+8y^3-3y^2-y-1)^2)(y^{34}-25y^{33}+\cdots-2y+1)$
c_9	$((y^5-y^4+8y^3-3y^2+3y-1)^2)(y^{34}+59y^{33}+\cdots+6y+1)$