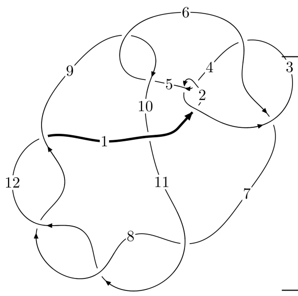
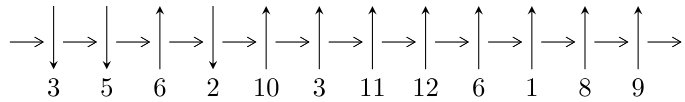
$12n_{0104}$ ($K12n_{0104}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3.59372 \times 10^{41} u^{41} - 5.66142 \times 10^{41} u^{40} + \cdots + 7.73697 \times 10^{41} b - 8.41893 \times 10^{39},$$
$$1.32363 \times 10^{42} u^{41} + 2.48624 \times 10^{42} u^{40} + \cdots + 7.73697 \times 10^{41} a + 6.53537 \times 10^{40},\ u^{42} + 2u^{41} + \cdots + u + 1\rangle$$
$$I_2^u = \langle b + 1,\ u^5 - 2u^4 + 4u^3 - 5u^2 + a + 4u - 3,\ u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u - 1\rangle$$

* 2 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.

$$\boldsymbol{I_1^u = \langle -3.59\times10^{41}u^{41} - 5.66\times10^{41}u^{40} + \cdots + 7.74\times10^{41}b - 8.42\times10^{39},\ 1.32\times10^{42}u^{41} + 2.49\times10^{42}u^{40} + \cdots + 7.74\times10^{41}a + 6.54\times10^{40},\ u^{42} + 2u^{41} + \cdots + u + 1\rangle}$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} -1.71079u^{41} - 3.21345u^{40} + \cdots + 10.5415u - 0.0844693 \\ 0.464486u^{41} + 0.731736u^{40} + \cdots - 1.23542u + 0.0108814 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.20935u^{41} + 1.90913u^{40} + \cdots - 3.32862u + 1.65557 \\ -0.182245u^{41} - 0.291497u^{40} + \cdots + 0.535851u - 0.403264 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.24630u^{41} - 2.48172u^{40} + \cdots + 9.30604u - 0.0735879 \\ 0.464486u^{41} + 0.731736u^{40} + \cdots - 1.23542u + 0.0108814 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.24139u^{41} + 1.95441u^{40} + \cdots - 3.49255u + 1.76187 \\ -0.0320409u^{41} - 0.0452803u^{40} + \cdots + 0.163934u - 0.106300 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.722940u^{41} + 1.09186u^{40} + \cdots - 1.22903u + 1.55759 \\ -0.0729864u^{41} - 0.0536384u^{40} + \cdots + 1.18829u - 0.138312 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.79877u^{41} - 3.35612u^{40} + \cdots + 10.8087u - 0.281705 \\ 0.474629u^{41} + 0.743231u^{40} + \cdots - 1.29010u + 0.0441881 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.986423u^{41} + 1.55821u^{40} + \cdots - 2.67406u + 1.14887 \\ 0.258550u^{41} + 0.408387u^{40} + \cdots - 0.795796u + 0.620421 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.549074u^{41} - 0.889586u^{40} + \cdots + 0.0457032u - 1.27204 \\ -0.183879u^{41} - 0.191517u^{40} + \cdots + 1.29243u - 0.478058 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -7.55767u^{41} - 15.9158u^{40} + \cdots + 73.6479u + 19.0106$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{42} + 13u^{41} + \cdots + 804u + 1$
c_2, c_4	$u^{42} - 7u^{41} + \cdots - 32u + 1$
c_3, c_6	$u^{42} + 5u^{41} + \cdots - 256u + 64$
c_5, c_9	$u^{42} - 2u^{41} + \cdots - u + 1$
c_7, c_8, c_{11} c_{12}	$u^{42} - 2u^{41} + \cdots + u + 1$
c_{10}	$u^{42} + 14u^{41} + \cdots + 5149u + 1583$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{42} + 39y^{41} + \cdots - 608644y + 1$
c_2, c_4	$y^{42} - 13y^{41} + \cdots - 804y + 1$
c_3, c_6	$y^{42} - 39y^{41} + \cdots - 253952y + 4096$
c_5, c_9	$y^{42} + 10y^{41} + \cdots - 7y + 1$
c_7, c_8, c_{11} c_{12}	$y^{42} - 50y^{41} + \cdots - 7y + 1$
c_{10}	$y^{42} - 26y^{41} + \cdots - 65134235y + 2505889$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.01452$		
$a = 0.159707$	7.18041	14.5060
$b = 0.426201$		
$u = 0.501113 + 0.767004I$		
$a = 0.191771 - 1.283310I$	$7.44472 + 4.92121I$	$8.52470 - 6.69865I$
$b = -0.669285 + 1.060730I$		
$u = 0.501113 - 0.767004I$		
$a = 0.191771 + 1.283310I$	$7.44472 - 4.92121I$	$8.52470 + 6.69865I$
$b = -0.669285 - 1.060730I$		
$u = -0.453853 + 0.695369I$		
$a = 0.247010 + 1.284860I$	$-0.28964 - 3.57536I$	$6.37219 + 9.69003I$
$b = -0.719295 - 0.792687I$		
$u = -0.453853 - 0.695369I$		
$a = 0.247010 - 1.284860I$	$-0.28964 + 3.57536I$	$6.37219 - 9.69003I$
$b = -0.719295 + 0.792687I$		
$u = -0.161979 + 0.776395I$		
$a = 0.051090 + 0.752460I$	$4.30541 - 1.84849I$	$3.64107 + 3.02333I$
$b = -1.48780 - 0.42283I$		
$u = -0.161979 - 0.776395I$		
$a = 0.051090 - 0.752460I$	$4.30541 + 1.84849I$	$3.64107 - 3.02333I$
$b = -1.48780 + 0.42283I$		
$u = 0.912511 + 0.794551I$		
$a = -0.419329 - 0.751716I$	$6.12642 + 3.75190I$	$10.63580 - 4.55895I$
$b = 0.631065 + 1.077450I$		
$u = 0.912511 - 0.794551I$		
$a = -0.419329 + 0.751716I$	$6.12642 - 3.75190I$	$10.63580 + 4.55895I$
$b = 0.631065 - 1.077450I$		
$u = -0.891381 + 0.841839I$		
$a = -0.506949 + 0.850686I$	$14.7689 - 5.7297I$	$11.79655 + 3.54668I$
$b = 0.658034 - 1.240570I$		

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.891381 - 0.841839I$ $a = -0.506949 - 0.850686I$ $b = 0.658034 + 1.240570I$	$14.7689 + 5.7297I$	$11.79655 - 3.54668I$
$u = -0.985080 + 0.753794I$ $a = -0.386102 + 0.573806I$ $b = 0.715924 - 0.874389I$	$3.30789 - 0.29459I$	$6.00000 + 0.I$
$u = -0.985080 - 0.753794I$ $a = -0.386102 - 0.573806I$ $b = 0.715924 + 0.874389I$	$3.30789 + 0.29459I$	$6.00000 + 0.I$
$u = -0.803175 + 1.000510I$ $a = 0.83087 - 1.30330I$ $b = 0.831506 + 0.932621I$	$14.2431 - 0.5975I$	$11.31138 + 0.I$
$u = -0.803175 - 1.000510I$ $a = 0.83087 + 1.30330I$ $b = 0.831506 - 0.932621I$	$14.2431 + 0.5975I$	$11.31138 + 0.I$
$u = 0.538055 + 0.454086I$ $a = 2.48988 - 0.58955I$ $b = -0.551064 - 0.378134I$	$8.24921 - 1.23307I$	$10.61321 - 2.35997I$
$u = 0.538055 - 0.454086I$ $a = 2.48988 + 0.58955I$ $b = -0.551064 + 0.378134I$	$8.24921 + 1.23307I$	$10.61321 + 2.35997I$
$u = 0.347293 + 0.590519I$ $a = 0.19395 - 1.58608I$ $b = -0.859706 + 0.416440I$	$-1.72808 + 1.17860I$	$-0.84051 - 1.97476I$
$u = 0.347293 - 0.590519I$ $a = 0.19395 + 1.58608I$ $b = -0.859706 - 0.416440I$	$-1.72808 - 1.17860I$	$-0.84051 + 1.97476I$
$u = 1.043690 + 0.800779I$ $a = -0.495482 - 0.469030I$ $b = 0.892411 + 0.841271I$	$5.39547 - 3.53826I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.043690 - 0.800779I$ $a = -0.495482 + 0.469030I$ $b = 0.892411 - 0.841271I$	$5.39547 + 3.53826I$	0
$u = 0.087517 + 0.669029I$ $a = -0.577668 - 0.564351I$ $b = -1.323170 + 0.163226I$	$-2.60028 + 1.10335I$	$0.72944 - 5.14975I$
$u = 0.087517 - 0.669029I$ $a = -0.577668 + 0.564351I$ $b = -1.323170 - 0.163226I$	$-2.60028 - 1.10335I$	$0.72944 + 5.14975I$
$u = 0.807134 + 1.059990I$ $a = 0.655895 + 1.196400I$ $b = 0.925887 - 0.815812I$	$5.27984 + 2.65601I$	0
$u = 0.807134 - 1.059990I$ $a = 0.655895 - 1.196400I$ $b = 0.925887 + 0.815812I$	$5.27984 - 2.65601I$	0
$u = -0.118669 + 1.352730I$ $a = 0.692604 - 0.095605I$ $b = 0.673600 + 0.068678I$	$-3.90139 - 2.12133I$	0
$u = -0.118669 - 1.352730I$ $a = 0.692604 + 0.095605I$ $b = 0.673600 - 0.068678I$	$-3.90139 + 2.12133I$	0
$u = -1.061870 + 0.848054I$ $a = -0.596141 + 0.421898I$ $b = 1.020730 - 0.858173I$	$13.6503 + 6.0084I$	0
$u = -1.061870 - 0.848054I$ $a = -0.596141 - 0.421898I$ $b = 1.020730 + 0.858173I$	$13.6503 - 6.0084I$	0
$u = -0.453110 + 0.434147I$ $a = 1.81325 + 1.42213I$ $b = -0.588284 + 0.063513I$	$0.308257 + 0.438585I$	$7.79318 - 0.39703I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.453110 - 0.434147I$ $a = 1.81325 - 1.42213I$ $b = -0.588284 - 0.063513I$	$0.308257 - 0.438585I$	$7.79318 + 0.39703I$
$u = -0.851980 + 1.097830I$ $a = 0.462368 - 1.207420I$ $b = 1.062440 + 0.773956I$	$2.23629 - 6.46162I$	0
$u = -0.851980 - 1.097830I$ $a = 0.462368 + 1.207420I$ $b = 1.062440 - 0.773956I$	$2.23629 + 6.46162I$	0
$u = 0.890810 + 1.092080I$ $a = 0.358382 + 1.303470I$ $b = 1.16024 - 0.81354I$	$4.46235 + 10.57810I$	0
$u = 0.890810 - 1.092080I$ $a = 0.358382 - 1.303470I$ $b = 1.16024 + 0.81354I$	$4.46235 - 10.57810I$	0
$u = 0.369530 + 1.364470I$ $a = 0.633928 + 0.303473I$ $b = 0.736491 - 0.206857I$	$2.62006 + 5.04142I$	0
$u = 0.369530 - 1.364470I$ $a = 0.633928 - 0.303473I$ $b = 0.736491 + 0.206857I$	$2.62006 - 5.04142I$	0
$u = -0.91555 + 1.08098I$ $a = 0.29416 - 1.39483I$ $b = 1.22988 + 0.86093I$	$12.8768 - 13.1889I$	0
$u = -0.91555 - 1.08098I$ $a = 0.29416 + 1.39483I$ $b = 1.22988 - 0.86093I$	$12.8768 + 13.1889I$	0
$u = -0.500346$ $a = 6.58730$ $b = -1.11870$	6.69758	29.8650

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.442850$ $a=\ \ 0.781638$ $b=\ \ 0.0358028$	0.706374	14.0900
$u=\ \ 0.326673$ $a=\ \ 11.6043$ $b=-1.02253$	-0.833901	102.450

II.

$$\boldsymbol{I_2^u = \langle b+1,\ u^5-2u^4+4u^3-5u^2+a+4u-3,\ u^6-u^5+3u^4-2u^3+2u^2-u-1\rangle}$$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$

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

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

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

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

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

$$a_9 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}u^4+u^2-1\\-u^5+u^4-2u^3+u^2-u-1\end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7u^5-7u^4+21u^3-17u^2+20u-12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_6	y^6
c_5, c_9, c_{10}	$y^6+5y^5+9y^4+4y^3-6y^2-5y+1$
c_7, c_8, c_{11} c_{12}	$y^6-7y^5+17y^4-16y^3+6y^2-5y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.873214$ $a = 1.31147$ $b = -1.00000$	6.01515	5.96810
$u = -0.138835 + 1.234450I$ $a = -0.631845 + 0.143944I$ $b = -1.00000$	$-4.60518 - 1.97241I$	$-1.94905 + 2.83524I$
$u = -0.138835 - 1.234450I$ $a = -0.631845 - 0.143944I$ $b = -1.00000$	$-4.60518 + 1.97241I$	$-1.94905 - 2.83524I$
$u = 0.408802 + 1.276380I$ $a = -0.453123 - 0.323434I$ $b = -1.00000$	$2.05064 + 4.59213I$	$3.43197 - 0.44648I$
$u = 0.408802 - 1.276380I$ $a = -0.453123 + 0.323434I$ $b = -1.00000$	$2.05064 - 4.59213I$	$3.43197 + 0.44648I$
$u = -0.413150$ $a = 5.85846$ $b = -1.00000$	-0.906083	-24.9340

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{42}+13u^{41}+\cdots+804u+1)$
c_2	$((u-1)^6)(u^{42}-7u^{41}+\cdots-32u+1)$
c_3, c_6	$u^6(u^{42}+5u^{41}+\cdots-256u+64)$
c_4	$((u+1)^6)(u^{42}-7u^{41}+\cdots-32u+1)$
c_5	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{42}-2u^{41}+\cdots-u+1)$
c_7, c_8	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)(u^{42}-2u^{41}+\cdots+u+1)$
c_9	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)(u^{42}-2u^{41}+\cdots-u+1)$
c_{10}	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{42}+14u^{41}+\cdots+5149u+1583)$
c_{11}, c_{12}	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{42}-2u^{41}+\cdots+u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{42}+39y^{41}+\cdots-608644y+1)$
c_2, c_4	$((y-1)^6)(y^{42}-13y^{41}+\cdots-804y+1)$
c_3, c_6	$y^6(y^{42}-39y^{41}+\cdots-253952y+4096)$
c_5, c_9	$(y^6+5y^5+\cdots-5y+1)(y^{42}+10y^{41}+\cdots-7y+1)$
c_7, c_8, c_{11} c_{12}	$(y^6-7y^5+\cdots-5y+1)(y^{42}-50y^{41}+\cdots-7y+1)$
c_{10}	$(y^6+5y^5+9y^4+4y^3-6y^2-5y+1)$ $\cdot(y^{42}-26y^{41}+\cdots-65134235y+2505889)$