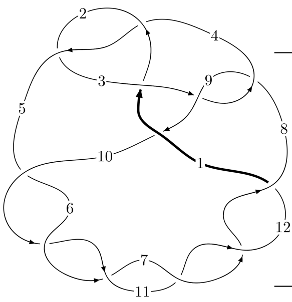
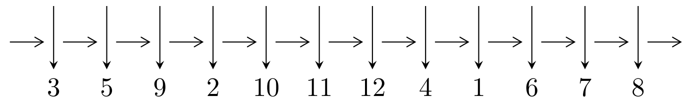
$12a_{0143}$ ($K12a_{0143}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{44} - u^{43} + \cdots + b + 1,\ -u^{26} + 19u^{24} + \cdots + a - 1,\ u^{45} + 2u^{44} + \cdots + u - 1 \rangle$$
$$I_2^u = \langle b + 1,\ a + 1,\ u^3 - u^2 - 2u + 1 \rangle$$

* 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.

$$I_1^u = \langle -u^{44} - u^{43} + \cdots + b + 1,\ -u^{26} + 19u^{24} + \cdots + a - 1,\ u^{45} + 2u^{44} + \cdots + u - 1 \rangle$$

(i) Arc colorings

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

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

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

$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u^{26} - 19u^{24} + \cdots + 2u + 1 \\ u^{44} + u^{43} + \cdots + u - 1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u^{44} + u^{43} + \cdots - 19u^3 + 3u \\ u^{44} + u^{43} + \cdots + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^5 - 4u^3 + 3u \\ u^7 - 5u^5 + 6u^3 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 2u^{44} + 2u^{43} + \cdots + 4u^2 + 3u \\ u^{44} + u^{43} + \cdots + 2u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{11} - 8u^9 + 22u^7 - 24u^5 + 9u^3 \\ u^{13} - 9u^{11} + 29u^9 - 40u^7 + 22u^5 - 3u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^4 - 3u^2 + 1 \\ u^6 - 4u^4 + 3u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 5u^{44} + 4u^{43} + \cdots - 4u - 19$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{45} + 22u^{44} + \cdots + 74u + 1$
c_2, c_4	$u^{45} - 4u^{44} + \cdots + 6u + 1$
c_3, c_8	$u^{45} - u^{44} + \cdots + 12u + 8$
c_5, c_6, c_7 c_{10}, c_{11}, c_{12}	$u^{45} - 2u^{44} + \cdots + u + 1$
c_9	$u^{45} + 8u^{44} + \cdots + 409u + 55$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{45} + 6y^{44} + \cdots + 4358y - 1$
c_2, c_4	$y^{45} - 22y^{44} + \cdots + 74y - 1$
c_3, c_8	$y^{45} + 21y^{44} + \cdots + 16y - 64$
c_5, c_6, c_7 c_{10}, c_{11}, c_{12}	$y^{45} - 64y^{44} + \cdots + 13y - 1$
c_9	$y^{45} - 4y^{44} + \cdots - 43479y - 3025$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.962969 + 0.169603I$ $a = 0.440533 - 0.958645I$ $b = 0.692370 + 0.677447I$	$-0.28984 - 2.31607I$	$-13.48731 + 4.06907I$
$u = 0.962969 - 0.169603I$ $a = 0.440533 + 0.958645I$ $b = 0.692370 - 0.677447I$	$-0.28984 + 2.31607I$	$-13.48731 - 4.06907I$
$u = -1.148590 + 0.071392I$ $a = 0.801348 + 0.494679I$ $b = -0.427212 - 0.486489I$	$-5.22276 + 0.37204I$	0
$u = -1.148590 - 0.071392I$ $a = 0.801348 - 0.494679I$ $b = -0.427212 + 0.486489I$	$-5.22276 - 0.37204I$	0
$u = 1.176560 + 0.211087I$ $a = -0.653062 + 0.188078I$ $b = 0.348834 - 0.855887I$	$-2.36170 - 5.17327I$	0
$u = 1.176560 - 0.211087I$ $a = -0.653062 - 0.188078I$ $b = 0.348834 + 0.855887I$	$-2.36170 + 5.17327I$	0
$u = 0.763709 + 0.251528I$ $a = -0.0103561 - 0.1259090I$ $b = 0.955005 - 0.546675I$	$-1.03136 + 2.41021I$	$-15.6897 - 1.6774I$
$u = 0.763709 - 0.251528I$ $a = -0.0103561 + 0.1259090I$ $b = 0.955005 + 0.546675I$	$-1.03136 - 2.41021I$	$-15.6897 + 1.6774I$
$u = 1.191250 + 0.124036I$ $a = -1.094580 + 0.310585I$ $b = -1.252440 + 0.198803I$	$-7.65311 - 1.99196I$	0
$u = 1.191250 - 0.124036I$ $a = -1.094580 - 0.310585I$ $b = -1.252440 - 0.198803I$	$-7.65311 + 1.99196I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.191140+0.163730I$ $a=-0.78548-1.96254I$ $b=-1.029290+0.504098I$	$-6.91071+4.51785I$	0
$u=-1.191140-0.163730I$ $a=-0.78548+1.96254I$ $b=-1.029290-0.504098I$	$-6.91071-4.51785I$	0
$u=1.219810+0.229016I$ $a=1.09073-1.61980I$ $b=1.150280+0.609142I$	$-4.75327-10.58690I$	0
$u=1.219810-0.229016I$ $a=1.09073+1.61980I$ $b=1.150280-0.609142I$	$-4.75327+10.58690I$	0
$u=-1.316520+0.069582I$ $a=0.845369+0.138843I$ $b=0.949980+0.382113I$	$-7.86567-1.43041I$	0
$u=-1.316520-0.069582I$ $a=0.845369-0.138843I$ $b=0.949980-0.382113I$	$-7.86567+1.43041I$	0
$u=-0.503453+0.459470I$ $a=0.37795+2.46430I$ $b=1.101250-0.610224I$	$0.78058+8.20264I$	$-13.8836-9.3349I$
$u=-0.503453-0.459470I$ $a=0.37795-2.46430I$ $b=1.101250+0.610224I$	$0.78058-8.20264I$	$-13.8836+9.3349I$
$u=-0.432497+0.443637I$ $a=-1.29853-0.73079I$ $b=0.428503+0.789342I$	$2.77707+2.93987I$	$-10.12479-5.18879I$
$u=-0.432497-0.443637I$ $a=-1.29853+0.73079I$ $b=0.428503-0.789342I$	$2.77707-2.93987I$	$-10.12479+5.18879I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.442889 + 0.349610I$ $a = 0.03028 + 3.06490I$ $b = -0.954541 - 0.430846I$	$-1.64546 - 2.76575I$	$-16.0685 + 7.3874I$
$u = 0.442889 - 0.349610I$ $a = 0.03028 - 3.06490I$ $b = -0.954541 + 0.430846I$	$-1.64546 + 2.76575I$	$-16.0685 - 7.3874I$
$u = -0.147862 + 0.512639I$ $a = -1.34459 - 1.27617I$ $b = 1.043660 + 0.604880I$	$1.83508 - 4.99628I$	$-10.28872 + 3.31837I$
$u = -0.147862 - 0.512639I$ $a = -1.34459 + 1.27617I$ $b = 1.043660 - 0.604880I$	$1.83508 + 4.99628I$	$-10.28872 - 3.31837I$
$u = -0.229805 + 0.471597I$ $a = -0.25152 + 1.93643I$ $b = 0.527284 - 0.732325I$	$3.37526 + 0.10760I$	$-7.61315 - 2.95177I$
$u = -0.229805 - 0.471597I$ $a = -0.25152 - 1.93643I$ $b = 0.527284 + 0.732325I$	$3.37526 - 0.10760I$	$-7.61315 + 2.95177I$
$u = -0.426938 + 0.242547I$ $a = -0.516634 - 0.830332I$ $b = -1.145690 - 0.133170I$	$-2.39909 + 0.70824I$	$-15.1495 - 9.1471I$
$u = -0.426938 - 0.242547I$ $a = -0.516634 + 0.830332I$ $b = -1.145690 + 0.133170I$	$-2.39909 - 0.70824I$	$-15.1495 + 9.1471I$
$u = 0.181432 + 0.311155I$ $a = 2.35597 - 1.25070I$ $b = -0.825100 + 0.293052I$	$-0.905303 + 0.433735I$	$-12.18552 + 1.89292I$
$u = 0.181432 - 0.311155I$ $a = 2.35597 + 1.25070I$ $b = -0.825100 - 0.293052I$	$-0.905303 - 0.433735I$	$-12.18552 - 1.89292I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.346739$ $a = 1.01677$ $b = -0.122928$	-0.548092	-17.9540
$u = -1.73488 + 0.01556I$ $a = 0.165858 + 0.798942I$ $b = 0.805113 - 0.767877I$	$-10.02540 + 2.83788I$	0
$u = -1.73488 - 0.01556I$ $a = 0.165858 - 0.798942I$ $b = 0.805113 + 0.767877I$	$-10.02540 - 2.83788I$	0
$u = 1.77511 + 0.02023I$ $a = 0.581848 - 0.527304I$ $b = -0.425874 + 0.628346I$	$-15.9251 - 0.7872I$	0
$u = 1.77511 - 0.02023I$ $a = 0.581848 + 0.527304I$ $b = -0.425874 - 0.628346I$	$-15.9251 + 0.7872I$	0
$u = -1.77793 + 0.05224I$ $a = -0.414828 - 0.211707I$ $b = 0.314583 + 0.909747I$	$-13.1145 + 6.3153I$	0
$u = -1.77793 - 0.05224I$ $a = -0.414828 + 0.211707I$ $b = 0.314583 - 0.909747I$	$-13.1145 - 6.3153I$	0
$u = 1.78253 + 0.04085I$ $a = -0.78346 + 1.57093I$ $b = -1.063730 - 0.545729I$	$-17.7770 - 5.4165I$	0
$u = 1.78253 - 0.04085I$ $a = -0.78346 - 1.57093I$ $b = -1.063730 + 0.545729I$	$-17.7770 + 5.4165I$	0
$u = -1.78292 + 0.03166I$ $a = -1.096720 - 0.115819I$ $b = -1.302410 - 0.221345I$	$-18.5397 + 2.6826I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.78292 - 0.03166I$ $a = -1.096720 + 0.115819I$ $b = -1.302410 + 0.221345I$	$-18.5397 - 2.6826I$	0
$u = -1.78906 + 0.05870I$ $a = 1.08096 + 1.26242I$ $b = 1.181650 - 0.611600I$	$-15.7314 + 11.8740I$	0
$u = -1.78906 - 0.05870I$ $a = 1.08096 - 1.26242I$ $b = 1.181650 + 0.611600I$	$-15.7314 - 11.8740I$	0
$u = 1.81198 + 0.01590I$ $a = 0.970531 - 0.091202I$ $b = 0.989237 - 0.314096I$	$-19.4518 + 1.0384I$	0
$u = 1.81198 - 0.01590I$ $a = 0.970531 + 0.091202I$ $b = 0.989237 + 0.314096I$	$-19.4518 - 1.0384I$	0

II. $I_2^u = \langle b+1,\ a+1,\ u^3 - u^2 - 2u + 1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^2 - u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ -u^2 - u + 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^2 - 1 \\ u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2 + u - 17$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.24698$ $a = -1.00000$ $b = -1.00000$	-7.98968	-19.8020
$u = \quad 0.445042$ $a = -1.00000$ $b = -1.00000$	-2.34991	-16.7530
$u = \quad 1.80194$ $a = -1.00000$ $b = -1.00000$	-19.2692	-18.4450

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^3)(u^{45}+22u^{44}+\cdots+74u+1)$
c_2	$((u-1)^3)(u^{45}-4u^{44}+\cdots+6u+1)$
c_3, c_8	$u^3(u^{45}-u^{44}+\cdots+12u+8)$
c_4	$((u+1)^3)(u^{45}-4u^{44}+\cdots+6u+1)$
c_5, c_6, c_7	$(u^3-u^2-2u+1)(u^{45}-2u^{44}+\cdots+u+1)$
c_9	$(u^3-u^2-2u+1)(u^{45}+8u^{44}+\cdots+409u+55)$
c_{10}, c_{11}, c_{12}	$(u^3+u^2-2u-1)(u^{45}-2u^{44}+\cdots+u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^3)(y^{45}+6y^{44}+\cdots+4358y-1)$
c_2, c_4	$((y-1)^3)(y^{45}-22y^{44}+\cdots+74y-1)$
c_3, c_8	$y^3(y^{45}+21y^{44}+\cdots+16y-64)$
c_5, c_6, c_7 c_{10}, c_{11}, c_{12}	$(y^3-5y^2+6y-1)(y^{45}-64y^{44}+\cdots+13y-1)$
c_9	$(y^3-5y^2+6y-1)(y^{45}-4y^{44}+\cdots-43479y-3025)$