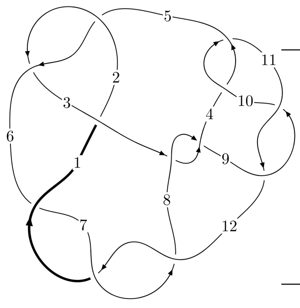
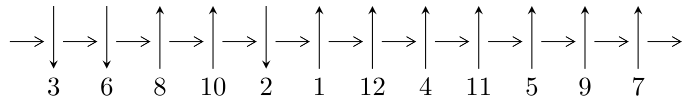
$12a_{0302}$ $(K12a_{0302})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{72} - 12u^{70} + \cdots - 2u^2 + 1 \rangle$$
$$I_2^u = \langle u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 73 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. $I_1^u = \langle u^{72} - 12u^{70} + \cdots - 2u^2 + 1 \rangle$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ -u^8 + 2u^6 - 2u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{11} - 2u^9 + 4u^7 - 4u^5 + 3u^3 - 2u \\ u^{13} - 3u^{11} + 5u^9 - 6u^7 + 4u^5 - 3u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^{16} - 3u^{14} + 7u^{12} - 10u^{10} + 11u^8 - 10u^6 + 6u^4 - 4u^2 + 1 \\ -u^{16} + 2u^{14} - 4u^{12} + 4u^{10} - 4u^8 + 4u^6 - 2u^4 + 2u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{28} - 5u^{26} + \cdots - 3u^2 + 1 \\ -u^{28} + 4u^{26} + \cdots + 10u^6 - 5u^4 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{52} - 9u^{50} + \cdots - 5u^2 + 1 \\ u^{54} - 10u^{52} + \cdots - 14u^4 + u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^{40} - 7u^{38} + \cdots - 6u^2 + 1 \\ -u^{40} + 6u^{38} + \cdots - 2u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{70} + 44u^{68} + \cdots + 12u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{72} + 40u^{71} + \cdots + 4u + 1$
c_2, c_5	$u^{72} + 2u^{71} + \cdots - 2u^2 + 1$
c_3, c_8	$u^{72} + 2u^{71} + \cdots + 170u + 25$
c_4, c_{10}	$u^{72} - 12u^{70} + \cdots - 2u^2 + 1$
c_6, c_7, c_{12}	$u^{72} + 3u^{71} + \cdots + 32u + 17$
c_9, c_{11}	$u^{72} - 24u^{71} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{72} - 16y^{71} + \cdots - 4y + 1$
c_2, c_5	$y^{72} - 40y^{71} + \cdots - 4y + 1$
c_3, c_8	$y^{72} - 36y^{71} + \cdots - 28800y + 625$
c_4, c_{10}	$y^{72} - 24y^{71} + \cdots - 4y + 1$
c_6, c_7, c_{12}	$y^{72} + 75y^{71} + \cdots + 16180y + 289$
c_9, c_{11}	$y^{72} + 48y^{71} + \cdots + 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.685263 + 0.729392I$	$-3.50695 + 0.02726I$	$-1.83210 + 0.I$
$u = -0.685263 - 0.729392I$	$-3.50695 - 0.02726I$	$-1.83210 + 0.I$
$u = -0.616766 + 0.759182I$	$-0.97423 + 5.55134I$	$3.79833 - 6.21492I$
$u = -0.616766 - 0.759182I$	$-0.97423 - 5.55134I$	$3.79833 + 6.21492I$
$u = -0.646232 + 0.799441I$	$-5.48260 + 4.68989I$	$6.00000 + 0.I$
$u = -0.646232 - 0.799441I$	$-5.48260 - 4.68989I$	$6.00000 + 0.I$
$u = 0.642592 + 0.806323I$	$-8.95862 - 9.56030I$	0
$u = 0.642592 - 0.806323I$	$-8.95862 + 9.56030I$	0
$u = 0.655486 + 0.801847I$	$-9.46744 - 0.22227I$	0
$u = 0.655486 - 0.801847I$	$-9.46744 + 0.22227I$	0
$u = 0.614794 + 0.726778I$	$0.52664 - 1.37080I$	$7.44043 + 0.82909I$
$u = 0.614794 - 0.726778I$	$0.52664 + 1.37080I$	$7.44043 - 0.82909I$
$u = -0.842454 + 0.642342I$	$-2.01813 - 2.49648I$	0
$u = -0.842454 - 0.642342I$	$-2.01813 + 2.49648I$	0
$u = -1.070910 + 0.017521I$	$5.97297 - 0.60288I$	0
$u = -1.070910 - 0.017521I$	$5.97297 + 0.60288I$	0
$u = -1.067600 + 0.102765I$	$-3.24294 + 0.10414I$	0
$u = -1.067600 - 0.102765I$	$-3.24294 - 0.10414I$	0
$u = 0.808140 + 0.711304I$	$-5.02712 - 0.48220I$	0
$u = 0.808140 - 0.711304I$	$-5.02712 + 0.48220I$	0
$u = 1.077510 + 0.040400I$	$4.74846 + 4.83042I$	0
$u = 1.077510 - 0.040400I$	$4.74846 - 4.83042I$	0
$u = 1.074930 + 0.090664I$	$0.68708 + 4.24895I$	0
$u = 1.074930 - 0.090664I$	$0.68708 - 4.24895I$	0
$u = -1.084780 + 0.094266I$	$-2.71190 - 9.05881I$	0
$u = -1.084780 - 0.094266I$	$-2.71190 + 9.05881I$	0
$u = 0.964081 + 0.532824I$	$-5.75145 + 6.22706I$	0
$u = 0.964081 - 0.532824I$	$-5.75145 - 6.22706I$	0
$u = 0.588986 + 0.660789I$	$0.924456 - 0.405677I$	$8.51154 + 0.82456I$
$u = 0.588986 - 0.660789I$	$0.924456 + 0.405677I$	$8.51154 - 0.82456I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.971960 + 0.563675I$	$-2.07865 - 1.92425I$	0
$u = -0.971960 - 0.563675I$	$-2.07865 + 1.92425I$	0
$u = 0.895218 + 0.693491I$	$-4.75836 + 5.86106I$	0
$u = 0.895218 - 0.693491I$	$-4.75836 - 5.86106I$	0
$u = 0.992256 + 0.556250I$	$-5.45230 - 2.69823I$	0
$u = 0.992256 - 0.556250I$	$-5.45230 + 2.69823I$	0
$u = 0.867105 + 0.759891I$	$-9.07437 + 2.86581I$	0
$u = 0.867105 - 0.759891I$	$-9.07437 - 2.86581I$	0
$u = -0.862009 + 0.766282I$	$-12.84810 + 1.84355I$	0
$u = -0.862009 - 0.766282I$	$-12.84810 - 1.84355I$	0
$u = -0.874376 + 0.763198I$	$-12.8104 - 7.6046I$	0
$u = -0.874376 - 0.763198I$	$-12.8104 + 7.6046I$	0
$u = -0.730912 + 0.402422I$	$-0.11472 - 3.40202I$	$7.20877 + 8.25970I$
$u = -0.730912 - 0.402422I$	$-0.11472 + 3.40202I$	$7.20877 - 8.25970I$
$u = -1.004080 + 0.624647I$	$1.20214 - 1.36853I$	0
$u = -1.004080 - 0.624647I$	$1.20214 + 1.36853I$	0
$u = 1.009180 + 0.644267I$	$2.12034 + 5.52640I$	0
$u = 1.009180 - 0.644267I$	$2.12034 - 5.52640I$	0
$u = -0.990350 + 0.679412I$	$-2.58830 - 5.42724I$	0
$u = -0.990350 - 0.679412I$	$-2.58830 + 5.42724I$	0
$u = 1.016670 + 0.666187I$	$1.70598 + 6.71869I$	0
$u = 1.016670 - 0.666187I$	$1.70598 - 6.71869I$	0
$u = -1.024170 + 0.676591I$	$0.23261 - 11.01360I$	0
$u = -1.024170 - 0.676591I$	$0.23261 + 11.01360I$	0
$u = -0.501415 + 0.583380I$	$-0.06144 - 3.50578I$	$5.32142 + 7.03074I$
$u = -0.501415 - 0.583380I$	$-0.06144 + 3.50578I$	$5.32142 - 7.03074I$
$u = 1.022920 + 0.704607I$	$-8.35859 + 5.89706I$	0
$u = 1.022920 - 0.704607I$	$-8.35859 - 5.89706I$	0
$u = -1.026150 + 0.700458I$	$-4.33826 - 10.34330I$	0
$u = -1.026150 - 0.700458I$	$-4.33826 + 10.34330I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.029980 + 0.702080I$	$-7.7907 + 15.2371I$	0
$u = \quad 1.029980 - 0.702080I$	$-7.7907 - 15.2371I$	0
$u = \quad 0.308780 + 0.639750I$	$-7.21219 + 7.05768I$	$-0.07616 - 5.90453I$
$u = \quad 0.308780 - 0.639750I$	$-7.21219 - 7.05768I$	$-0.07616 + 5.90453I$
$u = -0.302317 + 0.614260I$	$-3.72314 - 2.33103I$	$2.90552 + 2.90095I$
$u = -0.302317 - 0.614260I$	$-3.72314 + 2.33103I$	$2.90552 - 2.90095I$
$u = \quad 0.271854 + 0.619380I$	$-7.53422 - 2.12033I$	$-0.914618 + 0.535660I$
$u = \quad 0.271854 - 0.619380I$	$-7.53422 + 2.12033I$	$-0.914618 - 0.535660I$
$u = \quad 0.607470 + 0.101465I$	$0.893845 + 0.072656I$	$11.83691 - 0.70837I$
$u = \quad 0.607470 - 0.101465I$	$0.893845 - 0.072656I$	$11.83691 + 0.70837I$
$u = -0.146204 + 0.400346I$	$-1.56463 + 0.90785I$	$-1.88769 - 0.68738I$
$u = -0.146204 - 0.400346I$	$-1.56463 - 0.90785I$	$-1.88769 + 0.68738I$

II. $I_2^u = \langle u - 1 \rangle$

(i) Arc colorings

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

$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000	1.64493	6.00000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u+1)(u^{72}+40u^{71}+\cdots+4u+1)$
c_2, c_5	$(u-1)(u^{72}+2u^{71}+\cdots-2u^2+1)$
c_3, c_8	$(u-1)(u^{72}+2u^{71}+\cdots+170u+25)$
c_4, c_{10}	$(u-1)(u^{72}-12u^{70}+\cdots-2u^2+1)$
c_6, c_7, c_{12}	$u(u^{72}+3u^{71}+\cdots+32u+17)$
c_9, c_{11}	$(u-1)(u^{72}-24u^{71}+\cdots-4u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)(y^{72}-16y^{71}+\cdots-4y+1)$
c_2, c_5	$(y-1)(y^{72}-40y^{71}+\cdots-4y+1)$
c_3, c_8	$(y-1)(y^{72}-36y^{71}+\cdots-28800y+625)$
c_4, c_{10}	$(y-1)(y^{72}-24y^{71}+\cdots-4y+1)$
c_6, c_7, c_{12}	$y(y^{72}+75y^{71}+\cdots+16180y+289)$
c_9, c_{11}	$(y-1)(y^{72}+48y^{71}+\cdots+12y+1)$