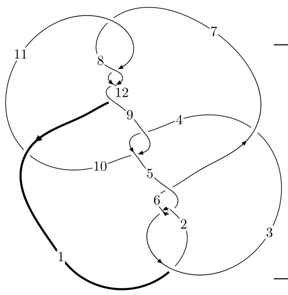
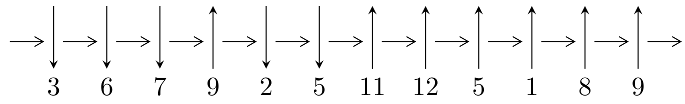
$12n_{0304}$ ($K12n_{0304}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2u^{40} - 5u^{39} + \cdots + b - 2,\ 2u^{39} + 5u^{38} + \cdots + 2a - 7,\ u^{41} + 3u^{40} + \cdots - 4u + 1\rangle$$
$$I_2^u = \langle b,\ a^2 - au - u^2 + a + 2u - 1,\ u^3 - u^2 + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 47 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.

$$I_1^u = \langle -2u^{40}-5u^{39}+\cdots+b-2,\ 2u^{39}+5u^{38}+\cdots+2a-7,\ u^{41}+3u^{40}+\cdots-4u+1\rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2+1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^{39}-\frac{5}{2}u^{38}+\cdots+4u+\frac{7}{2} \\ 2u^{40}+5u^{39}+\cdots-12u+2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2u^{40}+4u^{39}+\cdots-8u+\frac{11}{2} \\ 2u^{40}+5u^{39}+\cdots-12u+2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5-u^3+u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^{40}+\frac{3}{2}u^{39}+\cdots-\frac{1}{2}u+4 \\ \frac{3}{2}u^{40}+\frac{9}{2}u^{39}+\cdots-\frac{21}{2}u+\frac{3}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^7-2u^5+2u^3-2u \\ -u^7+u^5-2u^3+u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{2}u^{38}-u^{37}+\cdots-6u-\frac{1}{2} \\ -u^{12}+2u^{10}-4u^8+4u^6+2u^5-3u^4-2u^3+2u^2+2u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^{39}+u^{38}+\cdots+\frac{5}{2}u+2 \\ -\frac{1}{2}u^{40}-\frac{3}{2}u^{39}+\cdots+\frac{3}{2}u-\frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{19}{2}u^{40}-20u^{39}+\cdots+75u-\frac{1}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{41} + 15u^{40} + \cdots + 54u + 1$
c_2, c_5	$u^{41} + 3u^{40} + \cdots - 4u + 1$
c_3	$u^{41} - 3u^{40} + \cdots + 2u + 1$
c_4, c_9	$u^{41} - u^{40} + \cdots + 32u + 64$
c_7, c_8, c_{11} c_{12}	$u^{41} - 4u^{40} + \cdots - u - 1$
c_{10}	$u^{41} + 6u^{40} + \cdots - 25u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{41} + 25y^{40} + \cdots + 1814y - 1$
c_2, c_5	$y^{41} - 15y^{40} + \cdots + 54y - 1$
c_3	$y^{41} - 35y^{40} + \cdots + 54y - 1$
c_4, c_9	$y^{41} + 35y^{40} + \cdots - 23552y - 4096$
c_7, c_8, c_{11} c_{12}	$y^{41} - 46y^{40} + \cdots - y - 1$
c_{10}	$y^{41} + 38y^{40} + \cdots + 419y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.554966 + 0.821093I$ $a = 0.497003 - 1.229360I$ $b = -0.36616 + 1.39788I$	$-2.41826 - 3.80802I$	$3.60583 + 3.47707I$
$u = -0.554966 - 0.821093I$ $a = 0.497003 + 1.229360I$ $b = -0.36616 - 1.39788I$	$-2.41826 + 3.80802I$	$3.60583 - 3.47707I$
$u = -0.827605 + 0.515025I$ $a = -0.328705 + 0.303123I$ $b = -0.241607 + 0.924234I$	$1.70931 + 2.07723I$	$4.47890 - 3.71404I$
$u = -0.827605 - 0.515025I$ $a = -0.328705 - 0.303123I$ $b = -0.241607 - 0.924234I$	$1.70931 - 2.07723I$	$4.47890 + 3.71404I$
$u = 0.776023 + 0.578782I$ $a = 1.72542 + 0.58271I$ $b = -0.884835 + 0.226791I$	$1.60480 - 0.80076I$	$5.09218 - 0.58482I$
$u = 0.776023 - 0.578782I$ $a = 1.72542 - 0.58271I$ $b = -0.884835 - 0.226791I$	$1.60480 + 0.80076I$	$5.09218 + 0.58482I$
$u = -1.04869$ $a = 0.0572806$ $b = -1.17662$	3.30786	2.08440
$u = -0.613160 + 0.856728I$ $a = -0.94977 + 1.28570I$ $b = 0.59049 - 1.37882I$	$4.75528 - 6.89936I$	$6.92603 + 2.94505I$
$u = -0.613160 - 0.856728I$ $a = -0.94977 - 1.28570I$ $b = 0.59049 + 1.37882I$	$4.75528 + 6.89936I$	$6.92603 - 2.94505I$
$u = -0.851706 + 0.644533I$ $a = 0.208645 - 1.142410I$ $b = 0.123688 - 0.806905I$	$10.80640 + 2.51167I$	$3.89555 - 1.99801I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.851706 - 0.644533I$ $a = 0.208645 + 1.142410I$ $b = 0.123688 + 0.806905I$	$10.80640 - 2.51167I$	$3.89555 + 1.99801I$
$u = 0.607006 + 0.678640I$ $a = -2.19270 - 0.14272I$ $b = 1.058510 - 0.256762I$	$8.39222 + 0.77239I$	$9.02070 + 0.54313I$
$u = 0.607006 - 0.678640I$ $a = -2.19270 + 0.14272I$ $b = 1.058510 + 0.256762I$	$8.39222 - 0.77239I$	$9.02070 - 0.54313I$
$u = -0.468903 + 0.772766I$ $a = 0.050516 + 1.153690I$ $b = 0.094850 - 1.373440I$	$-2.97142 + 0.55275I$	$2.30390 - 2.65158I$
$u = -0.468903 - 0.772766I$ $a = 0.050516 - 1.153690I$ $b = 0.094850 + 1.373440I$	$-2.97142 - 0.55275I$	$2.30390 + 2.65158I$
$u = 0.917493 + 0.603542I$ $a = -1.30840 - 0.95232I$ $b = 0.987613 - 0.046245I$	$1.14349 - 3.91148I$	$2.83783 + 7.19272I$
$u = 0.917493 - 0.603542I$ $a = -1.30840 + 0.95232I$ $b = 0.987613 + 0.046245I$	$1.14349 + 3.91148I$	$2.83783 - 7.19272I$
$u = 1.145870 + 0.098490I$ $a = 0.557107 + 1.022870I$ $b = -0.43743 + 1.53434I$	$-1.90305 - 5.90674I$	$0.65317 + 3.76442I$
$u = 1.145870 - 0.098490I$ $a = 0.557107 - 1.022870I$ $b = -0.43743 - 1.53434I$	$-1.90305 + 5.90674I$	$0.65317 - 3.76442I$
$u = 1.150510 + 0.030891I$ $a = -0.178270 - 1.012240I$ $b = 0.13939 - 1.59211I$	$-8.52969 - 2.39687I$	$-2.76728 + 3.02467I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.150510 - 0.030891I$ $a = -0.178270 + 1.012240I$ $b = 0.13939 + 1.59211I$	$-8.52969 + 2.39687I$	$-2.76728 - 3.02467I$
$u = 0.879522 + 0.766671I$ $a = 0.349468 - 0.635389I$ $b = -0.011712 + 0.469579I$	$3.60760 - 2.89390I$	$-5.91956 + 4.41976I$
$u = 0.879522 - 0.766671I$ $a = 0.349468 + 0.635389I$ $b = -0.011712 - 0.469579I$	$3.60760 + 2.89390I$	$-5.91956 - 4.41976I$
$u = -0.318016 + 0.760424I$ $a = -0.76042 - 1.22775I$ $b = 0.286457 + 1.371580I$	$3.09276 + 3.48744I$	$6.36068 - 3.00060I$
$u = -0.318016 - 0.760424I$ $a = -0.76042 + 1.22775I$ $b = 0.286457 - 1.371580I$	$3.09276 - 3.48744I$	$6.36068 + 3.00060I$
$u = -0.803311 + 0.150840I$ $a = 0.146401 - 0.020062I$ $b = 0.412782 - 0.447090I$	$-1.348790 + 0.350630I$	$-5.34995 - 0.74571I$
$u = -0.803311 - 0.150840I$ $a = 0.146401 + 0.020062I$ $b = 0.412782 + 0.447090I$	$-1.348790 - 0.350630I$	$-5.34995 + 0.74571I$
$u = -1.057040 + 0.554919I$ $a = -1.211900 - 0.182135I$ $b = -0.13020 + 1.48466I$	$0.94110 + 1.27702I$	$2.95191 - 1.84094I$
$u = -1.057040 - 0.554919I$ $a = -1.211900 + 0.182135I$ $b = -0.13020 - 1.48466I$	$0.94110 - 1.27702I$	$2.95191 + 1.84094I$
$u = 1.004470 + 0.646364I$ $a = 1.16107 + 1.33962I$ $b = -1.216110 - 0.239593I$	$7.24069 - 5.93073I$	$6.53956 + 5.01754I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.004470 - 0.646364I$ $a = 1.16107 - 1.33962I$ $b = -1.216110 + 0.239593I$	$7.24069 + 5.93073I$	$6.53956 - 5.01754I$
$u = 0.891105 + 0.826186I$ $a = -0.68311 + 1.33083I$ $b = 0.038155 - 1.007650I$	$10.04850 - 3.07313I$	$5.86480 + 2.85684I$
$u = 0.891105 - 0.826186I$ $a = -0.68311 - 1.33083I$ $b = 0.038155 + 1.007650I$	$10.04850 + 3.07313I$	$5.86480 - 2.85684I$
$u = -1.066370 + 0.630817I$ $a = 1.70734 + 0.08552I$ $b = -0.22070 - 1.52920I$	$-4.70291 + 4.72137I$	$0. - 2.49884I$
$u = -1.066370 - 0.630817I$ $a = 1.70734 - 0.08552I$ $b = -0.22070 + 1.52920I$	$-4.70291 - 4.72137I$	$0. + 2.49884I$
$u = -1.067020 + 0.674301I$ $a = -2.03641 - 0.00933I$ $b = 0.45680 + 1.50432I$	$-3.95261 + 9.40997I$	$2.00000 - 7.76812I$
$u = -1.067020 - 0.674301I$ $a = -2.03641 + 0.00933I$ $b = 0.45680 - 1.50432I$	$-3.95261 - 9.40997I$	$2.00000 + 7.76812I$
$u = -1.061600 + 0.708976I$ $a = 2.31095 - 0.08552I$ $b = -0.65644 - 1.43319I$	$3.38790 + 12.73300I$	$5.12799 - 7.34194I$
$u = -1.061600 - 0.708976I$ $a = 2.31095 + 0.08552I$ $b = -0.65644 + 1.43319I$	$3.38790 - 12.73300I$	$5.12799 + 7.34194I$
$u = 0.530791$ $a = -3.58500$ $b = 0.511824$	8.14249	16.8230

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.153263$ $a = \quad 3.39924$ $b = -0.382289$	0.765123	13.2670

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^2 a - 3u^2 + a + 8u + 7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.198308 + 1.205210I$ $b = 0$	$11.90680 - 2.82812I$	$11.55793 + 3.24268I$
$u = 0.877439 + 0.744862I$ $a = 0.075747 - 0.460350I$ $b = 0$	$4.01109 - 2.82812I$	$14.0681 + 1.5771I$
$u = 0.877439 - 0.744862I$ $a = -0.198308 - 1.205210I$ $b = 0$	$11.90680 + 2.82812I$	$11.55793 - 3.24268I$
$u = 0.877439 - 0.744862I$ $a = 0.075747 + 0.460350I$ $b = 0$	$4.01109 + 2.82812I$	$14.0681 - 1.5771I$
$u = -0.754878$ $a = 1.08457$ $b = 0$	-0.126494	0.954070
$u = -0.754878$ $a = -2.83945$ $b = 0$	7.76919	-5.20600

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3-u^2+2u-1)^2)(u^{41}+15u^{40}+\cdots+54u+1)$
c_2	$((u^3+u^2-1)^2)(u^{41}+3u^{40}+\cdots-4u+1)$
c_3	$((u^3-u^2+2u-1)^2)(u^{41}-3u^{40}+\cdots+2u+1)$
c_4, c_9	$u^6(u^{41}-u^{40}+\cdots+32u+64)$
c_5	$((u^3-u^2+1)^2)(u^{41}+3u^{40}+\cdots-4u+1)$
c_6	$((u^3+u^2+2u+1)^2)(u^{41}+15u^{40}+\cdots+54u+1)$
c_7, c_8	$((u^2-u-1)^3)(u^{41}-4u^{40}+\cdots-u-1)$
c_{10}	$((u^2-u-1)^3)(u^{41}+6u^{40}+\cdots-25u-1)$
c_{11}, c_{12}	$((u^2+u-1)^3)(u^{41}-4u^{40}+\cdots-u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^3+3y^2+2y-1)^2)(y^{41}+25y^{40}+\cdots+1814y-1)$
c_2, c_5	$((y^3-y^2+2y-1)^2)(y^{41}-15y^{40}+\cdots+54y-1)$
c_3	$((y^3+3y^2+2y-1)^2)(y^{41}-35y^{40}+\cdots+54y-1)$
c_4, c_9	$y^6(y^{41}+35y^{40}+\cdots-23552y-4096)$
c_7, c_8, c_{11} c_{12}	$((y^2-3y+1)^3)(y^{41}-46y^{40}+\cdots-y-1)$
c_{10}	$((y^2-3y+1)^3)(y^{41}+38y^{40}+\cdots+419y-1)$