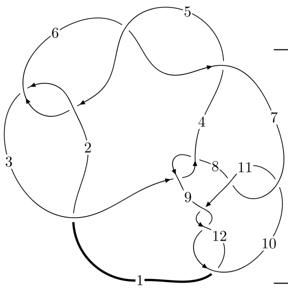
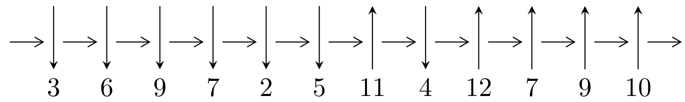
$12n_{0437}$ ($K12n_{0437}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 9.19324 \times 10^{24} u^{24} - 9.37535 \times 10^{25} u^{23} + \cdots + 7.01855 \times 10^{25} b + 8.63495 \times 10^{25}, \\
& -4.13470 \times 10^{25} u^{24} + 4.13261 \times 10^{26} u^{23} + \cdots + 7.01855 \times 10^{25} a - 2.79968 \times 10^{27}, \\
& u^{25} - 10u^{24} + \cdots + 72u - 1 \rangle \\
I_2^u = \langle & -u^4 + u^3 - 4u^2 + b + 3u - 3,\ a,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1 \rangle \\
I_3^u = \langle & u^2 a + b + u,\ u^2 a + a^2 - au - 2u^2 + 2a + u - 3,\ u^3 - u^2 + 2u - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 36 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. $I_1^u = \langle 9.19 \times 10^{24}u^{24} - 9.38 \times 10^{25}u^{23} + \cdots + 7.02 \times 10^{25}b + 8.63 \times 10^{25},\ -4.13 \times 10^{25}u^{24} + 4.13 \times 10^{26}u^{23} + \cdots + 7.02 \times 10^{25}a - 2.80 \times 10^{27},\ u^{25} - 10u^{24} + \cdots + 72u - 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.589110u^{24} - 5.88812u^{23} + \cdots - 335.813u + 39.8897 \\ -0.130985u^{24} + 1.33580u^{23} + \cdots + 39.4166u - 1.23030 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.452645u^{24} - 4.39464u^{23} + \cdots - 195.754u + 22.1379 \\ -0.146274u^{24} + 1.40258u^{23} + \cdots + 20.5478u - 0.642297 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.598919u^{24} - 5.79722u^{23} + \cdots - 216.301u + 22.7802 \\ -0.146274u^{24} + 1.40258u^{23} + \cdots + 20.5478u - 0.642297 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.598919u^{24} - 5.79722u^{23} + \cdots - 216.301u + 22.7802 \\ 0.0345873u^{24} - 0.219643u^{23} + \cdots + 21.9603u - 0.710241 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0157966u^{24} + 0.0835882u^{23} + \cdots - 49.3795u + 8.57675 \\ -0.0421281u^{24} + 0.395025u^{23} + \cdots + 1.19935u - 0.137223 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0628449u^{24} - 0.637985u^{23} + \cdots - 55.7029u + 8.66493 \\ 0.0743783u^{24} - 0.692119u^{23} + \cdots - 9.71411u + 0.0157966 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.137223u^{24} - 1.33010u^{23} + \cdots - 65.4171u + 8.68072 \\ 0.100634u^{24} - 0.951779u^{23} + \cdots - 12.6101u + 0.0579248 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.589110u^{24} - 5.88812u^{23} + \cdots - 335.813u + 39.8897 \\ -0.137742u^{24} + 1.39067u^{23} + \cdots + 39.7915u - 1.22733 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{25106355762453601367160863}{23395155619836929736818172}u^{24} - \frac{6294570004664487760705052 8}{58487889049592324342045 43}u^{23} + \cdots - \frac{5116034216051880087329545 19}{13761856246962899845187 16}u + \frac{3511614824849649487024565 65}{23395155619836929736818172}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6	$u^{25} + 10u^{24} + \cdots + 72u + 1$
c_2, c_5	$u^{25} + 4u^{24} + \cdots - 12u - 1$
c_3, c_8	$u^{25} - 2u^{24} + \cdots - 32u - 64$
c_7, c_{10}	$u^{25} - 4u^{24} + \cdots - 192u - 32$
c_9, c_{11}, c_{12}	$u^{25} + 9u^{24} + \cdots - 41u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6	$y^{25} + 14y^{24} + \cdots + 4016y - 1$
c_2, c_5	$y^{25} - 10y^{24} + \cdots + 72y - 1$
c_3, c_8	$y^{25} - 28y^{24} + \cdots + 29696y - 4096$
c_7, c_{10}	$y^{25} + 24y^{24} + \cdots + 51712y - 1024$
c_9, c_{11}, c_{12}	$y^{25} - 9y^{24} + \cdots + 1947y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.799543 + 0.627415I$ $a = -0.93941 + 1.56370I$ $b = -0.01758 + 1.51331I$	$-4.36096 - 1.13139I$	$0.75657 + 1.52598I$
$u = -0.799543 - 0.627415I$ $a = -0.93941 - 1.56370I$ $b = -0.01758 - 1.51331I$	$-4.36096 + 1.13139I$	$0.75657 - 1.52598I$
$u = -0.034202 + 0.923614I$ $a = -0.686187 - 0.237402I$ $b = 0.108494 + 0.547445I$	$1.97950 - 1.66008I$	$-0.69040 + 2.96263I$
$u = -0.034202 - 0.923614I$ $a = -0.686187 + 0.237402I$ $b = 0.108494 - 0.547445I$	$1.97950 + 1.66008I$	$-0.69040 - 2.96263I$
$u = 0.856820 + 0.829058I$ $a = 1.063360 - 0.668986I$ $b = 0.022399 - 0.950691I$	$-0.38972 - 2.81828I$	$-1.13877 + 3.80627I$
$u = 0.856820 - 0.829058I$ $a = 1.063360 + 0.668986I$ $b = 0.022399 + 0.950691I$	$-0.38972 + 2.81828I$	$-1.13877 - 3.80627I$
$u = 0.755262$ $a = -2.29591$ $b = 0.108132$	7.52575	-13.1500
$u = 0.240993 + 1.276750I$ $a = -0.034747 + 0.379118I$ $b = 0.13663 + 3.40519I$	$4.24524 - 2.77554I$	$34.2342 + 3.0457I$
$u = 0.240993 - 1.276750I$ $a = -0.034747 - 0.379118I$ $b = 0.13663 - 3.40519I$	$4.24524 + 2.77554I$	$34.2342 - 3.0457I$
$u = -0.563738 + 1.206990I$ $a = 0.839591 - 1.130370I$ $b = -0.40514 - 1.62951I$	$-2.40018 + 6.37988I$	$2.18378 - 2.52933I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.563738 - 1.206990I$ $a = 0.839591 + 1.130370I$ $b = -0.40514 + 1.62951I$	$-2.40018 - 6.37988I$	$2.18378 + 2.52933I$
$u = 0.75670 + 1.19685I$ $a = 0.860055 + 0.001764I$ $b = -0.149981 + 0.594534I$	$0.73025 - 3.27384I$	$-1.24326 + 3.27643I$
$u = 0.75670 - 1.19685I$ $a = 0.860055 - 0.001764I$ $b = -0.149981 - 0.594534I$	$0.73025 + 3.27384I$	$-1.24326 - 3.27643I$
$u = 0.462757 + 0.342084I$ $a = -0.172877 - 1.143600I$ $b = -0.66811 - 1.47469I$	$0.902564 - 0.255949I$	$-3.12150 + 6.64716I$
$u = 0.462757 - 0.342084I$ $a = -0.172877 + 1.143600I$ $b = -0.66811 + 1.47469I$	$0.902564 + 0.255949I$	$-3.12150 - 6.64716I$
$u = 0.447970$ $a = -0.336060$ $b = 0.456804$	-0.908338	-11.6550
$u = 0.11903 + 1.59221I$ $a = -0.113155 + 0.609313I$ $b = 0.018929 + 0.249452I$	$13.29460 - 3.19957I$	$9.89238 + 1.87771I$
$u = 0.11903 - 1.59221I$ $a = -0.113155 - 0.609313I$ $b = 0.018929 - 0.249452I$	$13.29460 + 3.19957I$	$9.89238 - 1.87771I$
$u = 1.63956 + 0.34345I$ $a = -0.019703 - 1.413500I$ $b = 0.15371 - 1.68285I$	$-10.18570 - 4.57384I$	$0. + 2.62009I$
$u = 1.63956 - 0.34345I$ $a = -0.019703 + 1.413500I$ $b = 0.15371 + 1.68285I$	$-10.18570 + 4.57384I$	$0. - 2.62009I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.04678 + 1.44405I$ $a = 0.689190 + 1.046230I$ $b = -0.09880 + 1.59912I$	$-7.03225 - 4.52109I$	0
$u = 1.04678 - 1.44405I$ $a = 0.689190 - 1.046230I$ $b = -0.09880 - 1.59912I$	$-7.03225 + 4.52109I$	0
$u = 0.66532 + 1.68962I$ $a = -0.626781 - 0.927153I$ $b = 0.44778 - 1.73312I$	$-3.94520 - 12.71920I$	0
$u = 0.66532 - 1.68962I$ $a = -0.626781 + 0.927153I$ $b = 0.44778 + 1.73312I$	$-3.94520 + 12.71920I$	0
$u = 0.0157871$ $a = 34.9133$ $b = -0.661595$	1.12664	9.59670

II. $I^u_2 = \langle -u^4 + u^3 - 4u^2 + b + 3u - 3,\ a,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u^4 - u^3 + 4u^2 - 3u + 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u^4 - u^3 + 4u^2 - 4u + 3 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^3 + 2u \\ -u^3 - u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ -u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u^4 - u^3 + 4u^2 - 3u + 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -18u^4 + 11u^3 - 65u^2 + 29u - 38$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_6, c_8	$y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1$
c_2, c_5	$y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1$
c_7, c_{10}	y^5
c_9, c_{11}, c_{12}	$(y-1)^5$

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$0.233677+0.885557I$		
$a=$	0	$3.46474-2.21397I$	$3.79538+3.60694I$
$b=$	$0.278580-1.055720I$		
$u=$	$0.233677-0.885557I$		
$a=$	0	$3.46474+2.21397I$	$3.79538-3.60694I$
$b=$	$0.278580+1.055720I$		
$u=$	0.416284		
$a=$	0	0.762751	-36.9390
$b=$	2.40221		
$u=$	$0.05818+1.69128I$		
$a=$	0	$12.60320-3.33174I$	$-2.32599+3.47010I$
$b=$	$0.020316-0.590570I$		
$u=$	$0.05818-1.69128I$		
$a=$	0	$12.60320+3.33174I$	$-2.32599-3.47010I$
$b=$	$0.020316+0.590570I$		

III. $\boldsymbol{I_3^u = \langle u^2a + b + u,\ u^2a + a^2 - au - 2u^2 + 2a + u - 3,\ u^3 - u^2 + 2u - 1\rangle}$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a \\ -u^2a - u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 - a - u + 2 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 - a - u + 2 \\ 0 \end{pmatrix}$$

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

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

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

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

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

$$a_{10} = \begin{pmatrix} a \\ -u \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.198308 + 1.205210I$ $b = 0.132927 + 0.807858I$	$11.90680 - 2.82812I$	$1.56739 + 1.81005I$
$u = 0.215080 + 1.307140I$ $a = 0.075747 - 0.460350I$ $b = -0.34801 - 2.11500I$	$4.01109 - 2.82812I$	$-5.96298 + 6.80673I$
$u = 0.215080 - 1.307140I$ $a = -0.198308 - 1.205210I$ $b = 0.132927 - 0.807858I$	$11.90680 + 2.82812I$	$1.56739 - 1.81005I$
$u = 0.215080 - 1.307140I$ $a = 0.075747 + 0.460350I$ $b = -0.34801 + 2.11500I$	$4.01109 + 2.82812I$	$-5.96298 - 6.80673I$
$u = 0.569840$ $a = 1.08457$ $b = -0.922021$	-0.126494	1.65540
$u = 0.569840$ $a = -2.83945$ $b = 0.352181$	7.76919	20.1360

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^3 - u^2 + 2u - 1)^2(u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1)$ $\cdot (u^{25} + 10u^{24} + \cdots + 72u + 1)$
c_2	$((u^3 + u^2 - 1)^2)(u^5 - u^4 + u^2 + u - 1)(u^{25} + 4u^{24} + \cdots - 12u - 1)$
c_3	$u^6(u^5 - u^4 + \cdots + 3u - 1)(u^{25} - 2u^{24} + \cdots - 32u - 64)$
c_5	$((u^3 - u^2 + 1)^2)(u^5 + u^4 - u^2 + u + 1)(u^{25} + 4u^{24} + \cdots - 12u - 1)$
c_6	$(u^3 + u^2 + 2u + 1)^2(u^5 + u^4 + 4u^3 + 3u^2 + 3u + 1)$ $\cdot (u^{25} + 10u^{24} + \cdots + 72u + 1)$
c_7	$u^5(u^2 - u - 1)^3(u^{25} - 4u^{24} + \cdots - 192u - 32)$
c_8	$u^6(u^5 + u^4 + \cdots + 3u + 1)(u^{25} - 2u^{24} + \cdots - 32u - 64)$
c_9	$((u + 1)^5)(u^2 - u - 1)^3(u^{25} + 9u^{24} + \cdots - 41u + 1)$
c_{10}	$u^5(u^2 + u - 1)^3(u^{25} - 4u^{24} + \cdots - 192u - 32)$
c_{11}, c_{12}	$((u - 1)^5)(u^2 + u - 1)^3(u^{25} + 9u^{24} + \cdots - 41u + 1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6	$(y^3+3y^2+2y-1)^2(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot(y^{25}+14y^{24}+\cdots+4016y-1)$
c_2, c_5	$(y^3-y^2+2y-1)^2(y^5-y^4+4y^3-3y^2+3y-1)$ $\cdot(y^{25}-10y^{24}+\cdots+72y-1)$
c_3, c_8	$y^6(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot(y^{25}-28y^{24}+\cdots+29696y-4096)$
c_7, c_{10}	$y^5(y^2-3y+1)^3(y^{25}+24y^{24}+\cdots+51712y-1024)$
c_9, c_{11}, c_{12}	$((y-1)^5)(y^2-3y+1)^3(y^{25}-9y^{24}+\cdots+1947y-1)$