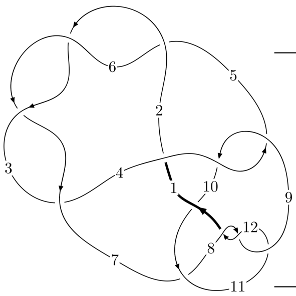
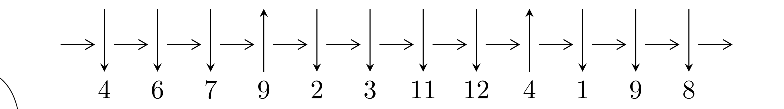
$12n_{0724}$ $(K12n_{0724})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle -u^{34} - 2u^{33} + \cdots + 2b + 2,\ 3u^{35} + 9u^{34} + \cdots + 2a + 12,\ u^{36} + 3u^{35} + \cdots + 5u + 1 \rangle$
$I_2^u = \langle -u^2 a + b,\ -u^2 a + a^2 - u^2 - a + u - 2,\ u^3 - u^2 + 2u - 1 \rangle$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 42 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. $I_1^u = \langle -u^{34}-2u^{33}+\cdots+2b+2,\ 3u^{35}+9u^{34}+\cdots+2a+12,\ u^{36}+3u^{35}+\cdots+5u+1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{3}{2}u^{35} - \frac{9}{2}u^{34} + \cdots - \frac{13}{2}u - 6 \\ \frac{1}{2}u^{34} + u^{33} + \cdots + \frac{1}{2}u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{3}{2}u^{35} - \frac{9}{2}u^{34} + \cdots - \frac{15}{2}u - 7 \\ -\frac{1}{2}u^{34} - u^{33} + \cdots + \frac{1}{2}u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{35} - \frac{3}{2}u^{34} + \cdots + 12u^2 - \frac{15}{2}u \\ \frac{1}{2}u^{34} + u^{33} + \cdots + \frac{9}{2}u^2 + \frac{1}{2}u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^4 - u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^{35} - 6u^{34} + \cdots - \frac{25}{2}u - \frac{17}{2} \\ -\frac{3}{2}u^{35} - 2u^{34} + \cdots + \frac{3}{2}u - \frac{1}{2} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^{35} + 3u^{34} + \cdots + \frac{19}{2}u + \frac{3}{2} \\ -\frac{1}{2}u^{35} - 2u^{34} + \cdots - \frac{3}{2}u - \frac{1}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^5 + 2u^3 + u \\ -u^5 - u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^{35} - \frac{5}{2}u^{34} + \cdots - 12u - \frac{21}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{36} - 4u^{35} + \cdots + 4u + 1$
c_2, c_3, c_5 c_6	$u^{36} + 4u^{35} + \cdots - 2u + 1$
c_4, c_9	$u^{36} + u^{35} + \cdots + 32u + 64$
c_7	$u^{36} + 3u^{35} + \cdots - 905u + 241$
c_8, c_{11}, c_{12}	$u^{36} - 3u^{35} + \cdots - 5u + 1$
c_{10}	$u^{36} - 5u^{35} + \cdots + 9u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{36} + 44y^{35} + \cdots - 26y + 1$
c_2, c_3, c_5 c_6	$y^{36} - 40y^{35} + \cdots - 26y + 1$
c_4, c_9	$y^{36} - 35y^{35} + \cdots - 82944y + 4096$
c_7	$y^{36} + 15y^{35} + \cdots - 1047493y + 58081$
c_8, c_{11}, c_{12}	$y^{36} + 35y^{35} + \cdots - 29y + 1$
c_{10}	$y^{36} + 35y^{35} + \cdots - 885y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.584918+0.622459I$ $a=-0.393281+0.608399I$ $b=-1.024860+0.631550I$	$-1.06074-3.44814I$	$-9.28468+0.39535I$
$u=-0.584918-0.622459I$ $a=-0.393281-0.608399I$ $b=-1.024860-0.631550I$	$-1.06074+3.44814I$	$-9.28468-0.39535I$
$u=-0.750111+0.395247I$ $a=\ 0.51873-1.46690I$ $b=\ 0.823106-0.363879I$	$-1.86419+7.98474I$	$-10.81435-5.76584I$
$u=-0.750111-0.395247I$ $a=\ 0.51873+1.46690I$ $b=\ 0.823106+0.363879I$	$-1.86419-7.98474I$	$-10.81435+5.76584I$
$u=-0.704933+0.458093I$ $a=-0.514731+1.219340I$ $b=-0.898045+0.419560I$	$5.07187+4.59949I$	$-7.09710-5.90387I$
$u=-0.704933-0.458093I$ $a=-0.514731-1.219340I$ $b=-0.898045-0.419560I$	$5.07187-4.59949I$	$-7.09710+5.90387I$
$u=-0.650250+0.527342I$ $a=\ 0.486347-0.943180I$ $b=\ 0.959920-0.500736I$	$5.33026-0.08250I$	$-6.15458-0.14164I$
$u=-0.650250-0.527342I$ $a=\ 0.486347+0.943180I$ $b=\ 0.959920+0.500736I$	$5.33026+0.08250I$	$-6.15458+0.14164I$
$u=\ 0.781619$ $a=-0.928457$ $b=\ 0.540395$	-7.32938	-12.6770
$u=\ 0.333725+1.215310I$ $a=-0.313201-0.777608I$ $b=-0.067999+0.938160I$	$-3.58469-4.02994I$	$-8.71251+3.82957I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.333725 - 1.215310I$ $a = -0.313201 + 0.777608I$ $b = -0.067999 - 0.938160I$	$-3.58469 + 4.02994I$	$-8.71251 - 3.82957I$
$u = 0.239600 + 1.278530I$ $a = 0.185138 + 0.409163I$ $b = 0.007593 - 0.541465I$	$2.51540 - 3.15546I$	$0.55293 + 6.85711I$
$u = 0.239600 - 1.278530I$ $a = 0.185138 - 0.409163I$ $b = 0.007593 + 0.541465I$	$2.51540 + 3.15546I$	$0.55293 - 6.85711I$
$u = 0.570266 + 0.400726I$ $a = -0.877489 - 0.756539I$ $b = 0.297801 + 0.607076I$	$-6.37924 - 1.83035I$	$-12.43917 + 3.59444I$
$u = 0.570266 - 0.400726I$ $a = -0.877489 + 0.756539I$ $b = 0.297801 - 0.607076I$	$-6.37924 + 1.83035I$	$-12.43917 - 3.59444I$
$u = -0.096640 + 1.314140I$ $a = -1.86833 - 0.54003I$ $b = 2.39929 + 1.89454I$	$-5.49210 + 1.78793I$	$-8.00000 + 1.75055I$
$u = -0.096640 - 1.314140I$ $a = -1.86833 + 0.54003I$ $b = 2.39929 - 1.89454I$	$-5.49210 - 1.78793I$	$-8.00000 - 1.75055I$
$u = 0.003093 + 1.351590I$ $a = 1.346750 + 0.048804I$ $b = -1.75931 - 0.78922I$	$2.91594 + 0.49680I$	$-6.76015 - 1.46543I$
$u = 0.003093 - 1.351590I$ $a = 1.346750 - 0.048804I$ $b = -1.75931 + 0.78922I$	$2.91594 - 0.49680I$	$-6.76015 + 1.46543I$
$u = 0.632707$ $a = 0.514711$ $b = -0.261536$	-1.47548	-4.26650

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.118075 + 1.391920I$ $a = -0.902722 + 0.302362I$ $b = 1.248310 + 0.060515I$	$4.66390 - 2.61771I$	$-2.92989 + 4.33183I$
$u = 0.118075 - 1.391920I$ $a = -0.902722 - 0.302362I$ $b = 1.248310 - 0.060515I$	$4.66390 + 2.61771I$	$-2.92989 - 4.33183I$
$u = 0.20804 + 1.44313I$ $a = 0.670803 - 0.683664I$ $b = -1.072410 + 0.518782I$	$-0.46527 - 4.68513I$	$-8.00000 + 0.I$
$u = 0.20804 - 1.44313I$ $a = 0.670803 + 0.683664I$ $b = -1.072410 - 0.518782I$	$-0.46527 + 4.68513I$	$-8.00000 + 0.I$
$u = -0.28295 + 1.47214I$ $a = -2.04519 + 0.99112I$ $b = 3.54834 - 1.01341I$	$4.15419 + 11.75140I$	0
$u = -0.28295 - 1.47214I$ $a = -2.04519 - 0.99112I$ $b = 3.54834 + 1.01341I$	$4.15419 - 11.75140I$	0
$u = -0.25376 + 1.49060I$ $a = 2.05918 - 0.92299I$ $b = -3.47531 + 0.84038I$	$11.38500 + 8.10134I$	0
$u = -0.25376 - 1.49060I$ $a = 2.05918 + 0.92299I$ $b = -3.47531 - 0.84038I$	$11.38500 - 8.10134I$	0
$u = -0.16804 + 1.50765I$ $a = 1.98331 - 0.75551I$ $b = -3.17021 + 0.44936I$	$5.88626 - 0.82923I$	0
$u = -0.16804 - 1.50765I$ $a = 1.98331 + 0.75551I$ $b = -3.17021 - 0.44936I$	$5.88626 + 0.82923I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.21821+1.50283I$ $a=-2.04552+0.85247I$ $b=\ \ 3.36643-0.66614I$	$11.93180+3.06807I$	0
$u=-0.21821-1.50283I$ $a=-2.04552-0.85247I$ $b=\ \ 3.36643+0.66614I$	$11.93180-3.06807I$	0
$u=-0.419044$ $a=\ \ 3.28668$ $b=\ \ 1.05760$	-9.57946	-1.90810
$u=\ \ 0.352645+0.225056I$ $a=\ \ 0.666608+0.999666I$ $b=-0.054962-0.463386I$	$-0.508387-0.873575I$	$-8.67347+7.93671I$
$u=\ \ 0.352645-0.225056I$ $a=\ \ 0.666608-0.999666I$ $b=-0.054962+0.463386I$	$-0.508387+0.873575I$	$-8.67347-7.93671I$
$u=-0.226552$ $a=-2.78574$ $b=-0.591839$	-1.26761	-6.33540

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

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ u^2a \end{pmatrix}$$

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

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

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

$$a_2 = \begin{pmatrix} -u^2 - a - u - 1 \\ -u^2a + 2u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -au + 2a \\ u^2a + au - a \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2a - au - 5u^2 + 3u - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -1.071720 + 0.909787I$ $b = 1.27003 - 2.11500I$	$-5.85852 - 2.82812I$	$-10.89327 + 4.43024I$
$u = 0.215080 + 1.307140I$ $a = 0.409360 - 0.347508I$ $b = -0.485107 + 0.807858I$	$2.03717 - 2.82812I$	$-11.10015 - 0.15818I$
$u = 0.215080 - 1.307140I$ $a = -1.071720 - 0.909787I$ $b = 1.27003 + 2.11500I$	$-5.85852 + 2.82812I$	$-10.89327 - 4.43024I$
$u = 0.215080 - 1.307140I$ $a = 0.409360 + 0.347508I$ $b = -0.485107 - 0.807858I$	$2.03717 + 2.82812I$	$-11.10015 + 0.15818I$
$u = 0.569840$ $a = -0.818721$ $b = -0.265853$	-2.10041	-19.1820
$u = 0.569840$ $a = 2.14344$ $b = 0.696013$	-9.99610	-21.8310

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u-1)^3)(u^{36}-4u^{35}+\cdots+4u+1)$
c_2, c_3	$((u^2+u-1)^3)(u^{36}+4u^{35}+\cdots-2u+1)$
c_4, c_9	$u^6(u^{36}+u^{35}+\cdots+32u+64)$
c_5, c_6	$((u^2-u-1)^3)(u^{36}+4u^{35}+\cdots-2u+1)$
c_7	$((u^3+u^2-1)^2)(u^{36}+3u^{35}+\cdots-905u+241)$
c_8	$((u^3-u^2+2u-1)^2)(u^{36}-3u^{35}+\cdots-5u+1)$
c_{10}	$((u^3+u^2-1)^2)(u^{36}-5u^{35}+\cdots+9u+3)$
c_{11}, c_{12}	$((u^3+u^2+2u+1)^2)(u^{36}-3u^{35}+\cdots-5u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2-3y+1)^3)(y^{36}+44y^{35}+\cdots-26y+1)$
c_2, c_3, c_5 c_6	$((y^2-3y+1)^3)(y^{36}-40y^{35}+\cdots-26y+1)$
c_4, c_9	$y^6(y^{36}-35y^{35}+\cdots-82944y+4096)$
c_7	$((y^3-y^2+2y-1)^2)(y^{36}+15y^{35}+\cdots-1047493y+58081)$
c_8, c_{11}, c_{12}	$((y^3+3y^2+2y-1)^2)(y^{36}+35y^{35}+\cdots-29y+1)$
c_{10}	$((y^3-y^2+2y-1)^2)(y^{36}+35y^{35}+\cdots-885y+9)$