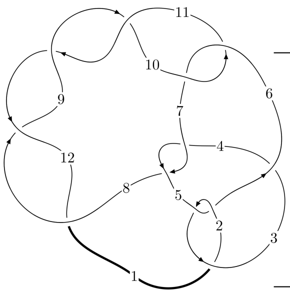
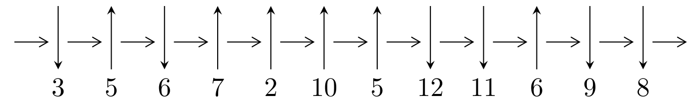
$12n_{0025}$ $(K12n_{0025})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & u^{11} + 2u^{10} + 2u^9 + 3u^7 + 6u^6 + 6u^5 - 2u^4 - 3u^3 - 3u^2 + 2b, \\
& u^{11} + 2u^{10} + u^9 - 2u^8 + u^7 + 6u^6 + 3u^5 - 8u^4 - 9u^3 - u^2 + 2a + 3u + 1, \\
& u^{13} + 3u^{12} + 5u^{11} + 4u^{10} + 6u^9 + 11u^8 + 17u^7 + 12u^6 + 6u^5 + u^2 + u + 1\rangle \\
I_2^u = \langle & u^3a + 2u^2a + u^3 - au + 2u^2 + 8b - 3a - u - 3,\ -u^2a - u^3 + a^2 + au + 3u^2 - 3u + 2,\ u^4 - u^3 + u^2 + 1\rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 21 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.

$$I_1^u = \langle u^{11}+2u^{10}+\cdots-3u^2+2b,\ u^{11}+2u^{10}+\cdots+2a+1,\ u^{13}+3u^{12}+\cdots+u+1\rangle$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{11} - u^{10} + \cdots - \frac{3}{2}u - \frac{1}{2} \\ -\frac{1}{2}u^{11} - u^{10} + \cdots + \frac{3}{2}u^3 + \frac{3}{2}u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{2}u^9 - \frac{5}{2}u^5 - \frac{3}{2}u - \frac{1}{2} \\ \frac{1}{2}u^{11} + u^{10} + \cdots + \frac{3}{2}u^3 + \frac{3}{2}u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{10} - \frac{3}{2}u^9 + \cdots - \frac{3}{2}u - \frac{1}{2} \\ u^{12} + \frac{3}{2}u^{11} + \cdots + \frac{3}{2}u^3 + \frac{3}{2}u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{12} + \frac{3}{2}u^{11} + \cdots - \frac{3}{2}u - \frac{1}{2} \\ u^{12} + \frac{3}{2}u^{11} + \cdots + \frac{3}{2}u^3 + \frac{3}{2}u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^9 - 3u^5 - u \\ -u^9 - u^7 - 3u^5 - 2u^3 - u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^7 + 2u^3 \\ u^7 + u^5 + 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{9}{2}u^{12} + 11u^{11} + 15u^{10} + \frac{11}{2}u^9 + \frac{33}{2}u^8 + 35u^7 + 50u^6 + \frac{25}{2}u^5 - \frac{11}{2}u^4 - \frac{27}{2}u^3 + 3u^2 + \frac{15}{2}u + \frac{7}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{13} - u^{12} + \cdots + 3u - 1$
c_2, c_5	$u^{13} + 5u^{12} + \cdots - 5u - 1$
c_3	$u^{13} - 5u^{12} + \cdots - 4501u - 833$
c_4, c_7	$u^{13} + u^{12} + \cdots - 1152u - 256$
c_6, c_{10}	$u^{13} - 3u^{12} + 5u^{11} - 4u^{10} + 6u^9 - 11u^8 + 17u^7 - 12u^6 + 6u^5 - u^2 + u - 1$
c_8, c_9, c_{11} c_{12}	$u^{13} + u^{12} + \cdots - u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{13} + 35y^{12} + \cdots - 129y - 1$
c_2, c_5	$y^{13} - y^{12} + \cdots + 3y - 1$
c_3	$y^{13} + 47y^{12} + \cdots - 4829293y - 693889$
c_4, c_7	$y^{13} - 45y^{12} + \cdots - 212992y - 65536$
c_6, c_{10}	$y^{13} + y^{12} + \cdots - y - 1$
c_8, c_9, c_{11} c_{12}	$y^{13} + 25y^{12} + \cdots - y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.440311+0.759939I$ $a=\ \ 0.796729+0.648672I$ $b=-0.267976+0.211150I$	$0.01165-1.74285I$	$0.51102+3.65273I$
$u=-0.440311-0.759939I$ $a=\ \ 0.796729-0.648672I$ $b=-0.267976-0.211150I$	$0.01165+1.74285I$	$0.51102-3.65273I$
$u=-0.748468$ $a=\ \ 0.262818$ $b=\ \ 0.939012$	1.70389	6.48230
$u=-0.082679+0.714751I$ $a=\ \ 1.41033-2.09260I$ $b=\ \ 0.247845-0.688505I$	$-1.32993-1.48407I$	$-5.25082+4.83992I$
$u=-0.082679-0.714751I$ $a=\ \ 1.41033+2.09260I$ $b=\ \ 0.247845+0.688505I$	$-1.32993+1.48407I$	$-5.25082-4.83992I$
$u=\ \ 0.939578+0.989792I$ $a=-0.103034-0.771838I$ $b=-1.151440-0.150255I$	$8.78280+3.51047I$	$4.53999-2.23004I$
$u=\ \ 0.939578-0.989792I$ $a=-0.103034+0.771838I$ $b=-1.151440+0.150255I$	$8.78280-3.51047I$	$4.53999+2.23004I$
$u=\ \ 0.532801+0.327453I$ $a=-1.35777+1.25278I$ $b=\ \ 0.616504+0.991708I$	$0.55073+2.69724I$	$3.82886-1.91679I$
$u=\ \ 0.532801-0.327453I$ $a=-1.35777-1.25278I$ $b=\ \ 0.616504-0.991708I$	$0.55073-2.69724I$	$3.82886+1.91679I$
$u=-0.99353+1.07384I$ $a=\ \ 0.40970+1.86567I$ $b=-1.14718+1.28471I$	$-14.0646-8.3921I$	$3.62108+3.78756I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.99353-1.07384I$ $a=\ \ 0.40970-1.86567I$ $b=-1.14718-1.28471I$	$-14.0646+8.3921I$	$3.62108-3.78756I$
$u=-1.08162+0.98798I$ $a=-0.787365-0.595530I$ $b=-1.26726-1.23564I$	$-13.71940+0.78911I$	$4.00870+0.19018I$
$u=-1.08162-0.98798I$ $a=-0.787365+0.595530I$ $b=-1.26726+1.23564I$	$-13.71940-0.78911I$	$4.00870-0.19018I$

II.

$$I_2^u = \langle u^3a+u^3+\cdots-3a-3,\ -u^2a-u^3+a^2+au+3u^2-3u+2,\ u^4-u^3+u^2+1\rangle$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_2 = \begin{pmatrix} a \\ -\frac{1}{8}u^3a - \frac{1}{8}u^3 + \cdots + \frac{3}{8}a + \frac{3}{8} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{1}{8}u^3a + \frac{1}{8}u^3 + \cdots + \frac{5}{8}a - \frac{3}{8} \\ -\frac{1}{8}u^3a - \frac{1}{8}u^3 + \cdots + \frac{3}{8}a - \frac{5}{8} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{8}u^3a + \frac{1}{8}u^3 + \cdots + \frac{5}{8}a - \frac{3}{8} \\ -\frac{1}{8}u^3a - \frac{1}{8}u^3 + \cdots + \frac{3}{8}a - \frac{5}{8} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^2 + a + u - 1 \\ -\frac{1}{8}u^3a - \frac{1}{8}u^3 + \cdots + \frac{3}{8}a - \frac{5}{8} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 - 1 \\ u^3 - u^2 - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{1}{2}u^3a + 2u^2a + \frac{1}{2}u^3 - \frac{3}{2}au - 3u^2 - \frac{1}{2}a + \frac{5}{2}u + \frac{1}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5	$(u^2 - u + 1)^4$
c_2	$(u^2 + u + 1)^4$
c_4, c_7	u^8
c_6	$(u^4 - u^3 + u^2 + 1)^2$
c_8, c_9	$(u^4 - u^3 + 3u^2 - 2u + 1)^2$
c_{10}	$(u^4 + u^3 + u^2 + 1)^2$
c_{11}, c_{12}	$(u^4 + u^3 + 3u^2 + 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2 + y + 1)^4$
c_4, c_7	y^8
c_6, c_{10}	$(y^4 + y^3 + 3y^2 + 2y + 1)^2$
c_8, c_9, c_{11} c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.351808 + 0.720342I$ $a = 1.04112 + 1.08095I$ $b = 0.500000 + 0.866025I$	$-0.211005 + 0.614778I$	$2.20786 + 0.04655I$
$u = -0.351808 + 0.720342I$ $a = -1.08443 - 2.30813I$ $b = 0.500000 - 0.866025I$	$-0.21101 - 3.44499I$	$-2.55284 + 7.82341I$
$u = -0.351808 - 0.720342I$ $a = 1.04112 - 1.08095I$ $b = 0.500000 - 0.866025I$	$-0.211005 - 0.614778I$	$2.20786 - 0.04655I$
$u = -0.351808 - 0.720342I$ $a = -1.08443 + 2.30813I$ $b = 0.500000 + 0.866025I$	$-0.21101 + 3.44499I$	$-2.55284 - 7.82341I$
$u = 0.851808 + 0.911292I$ $a = 0.076953 - 0.582938I$ $b = 0.500000 - 0.866025I$	$6.79074 + 1.13408I$	$2.75261 - 0.95911I$
$u = 0.851808 + 0.911292I$ $a = -1.03364 + 1.22414I$ $b = 0.500000 + 0.866025I$	$6.79074 + 5.19385I$	$2.09237 - 4.44058I$
$u = 0.851808 - 0.911292I$ $a = 0.076953 + 0.582938I$ $b = 0.500000 + 0.866025I$	$6.79074 - 1.13408I$	$2.75261 + 0.95911I$
$u = 0.851808 - 0.911292I$ $a = -1.03364 - 1.22414I$ $b = 0.500000 - 0.866025I$	$6.79074 - 5.19385I$	$2.09237 + 4.44058I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{13}-u^{12}+\cdots+3u-1)$
c_2	$((u^2+u+1)^4)(u^{13}+5u^{12}+\cdots-5u-1)$
c_3	$((u^2-u+1)^4)(u^{13}-5u^{12}+\cdots-4501u-833)$
c_4, c_7	$u^8(u^{13}+u^{12}+\cdots-1152u-256)$
c_5	$((u^2-u+1)^4)(u^{13}+5u^{12}+\cdots-5u-1)$
c_6	$(u^4-u^3+u^2+1)^2$ $\cdot(u^{13}-3u^{12}+5u^{11}-4u^{10}+6u^9-11u^8+17u^7-12u^6+6u^5-u^2+u-1)$
c_8, c_9	$((u^4-u^3+3u^2-2u+1)^2)(u^{13}+u^{12}+\cdots-u-1)$
c_{10}	$(u^4+u^3+u^2+1)^2$ $\cdot(u^{13}-3u^{12}+5u^{11}-4u^{10}+6u^9-11u^8+17u^7-12u^6+6u^5-u^2+u-1)$
c_{11}, c_{12}	$((u^4+u^3+3u^2+2u+1)^2)(u^{13}+u^{12}+\cdots-u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{13}+35y^{12}+\cdots-129y-1)$
c_2, c_5	$((y^2+y+1)^4)(y^{13}-y^{12}+\cdots+3y-1)$
c_3	$((y^2+y+1)^4)(y^{13}+47y^{12}+\cdots-4829293y-693889)$
c_4, c_7	$y^8(y^{13}-45y^{12}+\cdots-212992y-65536)$
c_6, c_{10}	$((y^4+y^3+3y^2+2y+1)^2)(y^{13}+y^{12}+\cdots-y-1)$
c_8, c_9, c_{11} c_{12}	$((y^4+5y^3+7y^2+2y+1)^2)(y^{13}+25y^{12}+\cdots-y-1)$