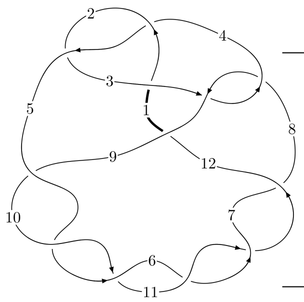
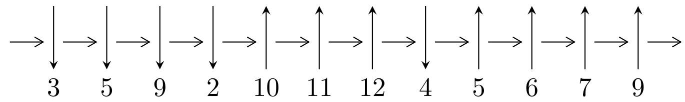
$12n_{0235}$ ($K12n_{0235}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & u^8 + u^7 - 6u^6 - 5u^5 + 11u^4 + 7u^3 - 6u^2 + b - u + 1, \\
& -2u^8 - 2u^7 + 12u^6 + 10u^5 - 22u^4 - 14u^3 + 12u^2 + a + 2u - 3, \\
& u^9 + 2u^8 - 6u^7 - 12u^6 + 11u^5 + 22u^4 - 6u^3 - 11u^2 + 3u + 1\rangle \\
I_2^u = \langle & b + 1,\ a - 1,\ u^3 + u^2 - 2u - 1\rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 12 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.

$$I_1^u = \langle u^8 + u^7 + \cdots + b + 1,\ -2u^8 - 2u^7 + \cdots + a - 3,\ u^9 + 2u^8 + \cdots + 3u + 1\rangle$$

(i) Arc colorings

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

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

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

$$a_{11} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 2u^8 + 2u^7 - 12u^6 - 10u^5 + 22u^4 + 14u^3 - 12u^2 - 2u + 3 \\ -u^8 - u^7 + 6u^6 + 5u^5 - 11u^4 - 7u^3 + 6u^2 + u - 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^8 + u^7 - 6u^6 - 5u^5 + 11u^4 + 7u^3 - 6u^2 - u + 2 \\ -u^8 - u^7 + 6u^6 + 5u^5 - 11u^4 - 7u^3 + 6u^2 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^7 - 4u^5 + 2u^3 + 2u \\ -u^7 + 5u^5 - 6u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^7 - 6u^5 + 10u^3 - 4u + 2 \\ u^8 - 6u^6 + u^5 + 11u^4 - 3u^3 - 6u^2 + 3u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^3 + 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^4 - 3u^2 + 1 \\ -u^6 + 4u^4 - 3u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -5u^8 - 8u^7 + 31u^6 + 46u^5 - 61u^4 - 79u^3 + 40u^2 + 32u - 7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9-2u^8+17u^7-27u^6+64u^5-32u^4-18u^3+48u^2-12u+1$
c_2, c_4	$u^9-4u^8+9u^7-9u^6+4u^5+6u^4-6u^3+6u^2+1$
c_3, c_8	$u^9-u^8+11u^7-4u^6+36u^5-7u^4+35u^3-24u^2+4u+8$
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$u^9+2u^8-6u^7-12u^6+11u^5+22u^4-6u^3-11u^2+3u+1$
c_{12}	$u^9-8u^8+\cdots+563u-55$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^9 + 30y^8 + \cdots + 48y - 1$
c_2, c_4	$y^9 + 2y^8 + 17y^7 + 27y^6 + 64y^5 + 32y^4 - 18y^3 - 48y^2 - 12y - 1$
c_3, c_8	$y^9 + 21y^8 + \cdots + 400y - 64$
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$y^9 - 16y^8 + \cdots + 31y - 1$
c_{12}	$y^9 - 76y^8 + \cdots + 218299y - 3025$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.179250+0.234667I$ $a=\ \ 0.27808-1.83091I$ $b=\ \ 0.360958+0.915457I$	$6.67894-1.77536I$	$10.01363+2.14949I$
$u=-1.179250-0.234667I$ $a=\ \ 0.27808+1.83091I$ $b=\ \ 0.360958-0.915457I$	$6.67894+1.77536I$	$10.01363-2.14949I$
$u=\ \ 0.551791+0.168482I$ $a=\ \ 1.190020+0.762701I$ $b=-0.095011-0.381350I$	$1.001300+0.199242I$	$9.75217-1.35811I$
$u=\ \ 0.551791-0.168482I$ $a=\ \ 1.190020-0.762701I$ $b=-0.095011+0.381350I$	$1.001300-0.199242I$	$9.75217+1.35811I$
$u=\ \ 1.64788+0.14930I$ $a=-0.74609+2.36291I$ $b=\ \ 0.87305-1.18145I$	$16.6165+3.5415I$	$9.41596-2.15533I$
$u=\ \ 1.64788-0.14930I$ $a=-0.74609-2.36291I$ $b=\ \ 0.87305+1.18145I$	$16.6165-3.5415I$	$9.41596+2.15533I$
$u=-0.206388$ $a=\ \ 2.82125$ $b=-0.910627$	-1.31799	-11.3310
$u=-1.91723+0.04388I$ $a=-1.63264-2.58420I$ $b=\ \ 1.31632+1.29210I$	$-8.83332-4.85466I$	$8.98397+1.82769I$
$u=-1.91723-0.04388I$ $a=-1.63264+2.58420I$ $b=\ \ 1.31632-1.29210I$	$-8.83332+4.85466I$	$8.98397-1.82769I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2-u+11$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^3$
c_3, c_8	y^3
c_5, c_6, c_7 c_9, c_{10}, c_{11} c_{12}	$y^3 - 5y^2 + 6y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.24698$ $a = 1.00000$ $b = -1.00000$	4.69981	8.19810
$u = -0.445042$ $a = 1.00000$ $b = -1.00000$	−0.939962	11.2470
$u = -1.80194$ $a = 1.00000$ $b = -1.00000$	15.9794	9.55500

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^3$ $\cdot(u^9-2u^8+17u^7-27u^6+64u^5-32u^4-18u^3+48u^2-12u+1)$
c_2	$(u-1)^3(u^9-4u^8+9u^7-9u^6+4u^5+6u^4-6u^3+6u^2+1)$
c_3, c_8	$u^3(u^9-u^8+11u^7-4u^6+36u^5-7u^4+35u^3-24u^2+4u+8)$
c_4	$(u+1)^3(u^9-4u^8+9u^7-9u^6+4u^5+6u^4-6u^3+6u^2+1)$
c_5, c_6, c_7	(u^3+u^2-2u-1) $\cdot(u^9+2u^8-6u^7-12u^6+11u^5+22u^4-6u^3-11u^2+3u+1)$
c_9, c_{10}, c_{11}	(u^3-u^2-2u+1) $\cdot(u^9+2u^8-6u^7-12u^6+11u^5+22u^4-6u^3-11u^2+3u+1)$
c_{12}	$(u^3-u^2-2u+1)(u^9-8u^8+\cdots+563u-55)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^3)(y^9+30y^8+\cdots+48y-1)$
c_2, c_4	$(y-1)^3$ $\cdot(y^9+2y^8+17y^7+27y^6+64y^5+32y^4-18y^3-48y^2-12y-1)$
c_3, c_8	$y^3(y^9+21y^8+\cdots+400y-64)$
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$(y^3-5y^2+6y-1)(y^9-16y^8+\cdots+31y-1)$
c_{12}	$(y^3-5y^2+6y-1)(y^9-76y^8+\cdots+218299y-3025)$