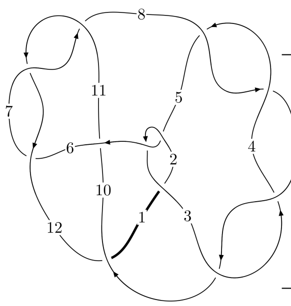
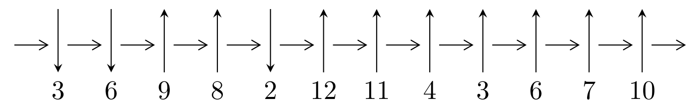
$12n_{0523}$ ($K12n_{0523}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2237795u^{14} - 2035326u^{13} + \cdots + 214299626b - 45089178,$$
$$- 5439477u^{14} - 13822761u^{13} + \cdots + 857198504a - 455155360,\ u^{15} + u^{14} + \cdots - 24u^2 + 8\rangle$$
$$I_2^u = \langle b+1,\ 4a^3 - 2a^2u + 12a^2 - 4au + 12a - 3u + 4,\ u^2 + 2\rangle$$

$$I_1^v = \langle a,\ b-1,\ v^3 + v^2 - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 24 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.

$\boldsymbol{I_1^u = \langle -2.24\times 10^6 u^{14} - 2.04\times 10^6 u^{13} + \cdots + 2.14\times 10^8 b - 4.51\times 10^7,\ -5.44\times 10^6 u^{14} - 1.38\times 10^7 u^{13} + \cdots + 8.57\times 10^8 a - 4.55\times 10^8,\ u^{15} + u^{14} + \cdots - 24u^2 + 8\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0.00634564u^{14} + 0.0161255u^{13} + \cdots - 1.29993u + 0.530980\\0.0104424u^{14} + 0.00949757u^{13} + \cdots + 0.658438u + 0.210403\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.0534854u^{14} + 0.0891983u^{13} + \cdots + 0.512158u - 1.09323\\-0.0306520u^{14} - 0.0138981u^{13} + \cdots + 1.32388u + 0.760098\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.0409458u^{14} + 0.0558447u^{13} + \cdots - 0.692253u + 0.663144\\-0.0540665u^{14} - 0.0698196u^{13} + \cdots - 0.280107u - 0.0129726\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.0131207u^{14} - 0.0139749u^{13} + \cdots - 0.972359u + 0.650171\\-0.0540665u^{14} - 0.0698196u^{13} + \cdots - 0.280107u - 0.0129726\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.0757597u^{14} - 0.0957170u^{13} + \cdots + 0.656898u + 1.36357\\0.0170459u^{14} + 0.0203363u^{13} + \cdots + 0.767262u + 0.281197\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.00634564u^{14} + 0.0161255u^{13} + \cdots - 1.29993u + 0.530980\\-0.0346001u^{14} - 0.0397191u^{13} + \cdots - 0.607673u - 0.132164\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{107735653}{428599252}u^{14} + \frac{61824743}{428599252}u^{13} + \cdots - \frac{778177628}{107149813}u + \frac{655579008}{107149813}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 32u^{14} + \cdots + 6478u + 289$
c_2, c_5	$u^{15} + 4u^{14} + \cdots + 52u - 17$
c_3, c_4, c_8 c_9	$u^{15} - u^{14} + \cdots + 24u^2 - 8$
c_6, c_7, c_{11}	$u^{15} - 2u^{14} + \cdots + u - 3$
c_{10}	$u^{15} + 2u^{14} + \cdots + 77u - 87$
c_{12}	$u^{15} - 2u^{14} + \cdots - 127u - 171$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} - 88y^{14} + \cdots + 29457142y - 83521$
c_2, c_5	$y^{15} - 32y^{14} + \cdots + 6478y - 289$
c_3, c_4, c_8 c_9	$y^{15} + 29y^{14} + \cdots + 384y - 64$
c_6, c_7, c_{11}	$y^{15} + 18y^{14} + \cdots + 7y - 9$
c_{10}	$y^{15} + 26y^{14} + \cdots - 75329y - 7569$
c_{12}	$y^{15} + 50y^{14} + \cdots - 77237y - 29241$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.218267 + 1.045140I$ $a = -0.313995 + 0.477157I$ $b = 0.671441 - 0.644775I$	$-6.94499 + 3.31343I$	$-0.90808 - 3.10960I$
$u = -0.218267 - 1.045140I$ $a = -0.313995 - 0.477157I$ $b = 0.671441 + 0.644775I$	$-6.94499 - 3.31343I$	$-0.90808 + 3.10960I$
$u = 0.097863 + 0.602652I$ $a = 0.107862 - 0.284601I$ $b = 0.722048 + 0.340057I$	$-1.30578 - 1.09993I$	$-0.13148 + 4.47979I$
$u = 0.097863 - 0.602652I$ $a = 0.107862 + 0.284601I$ $b = 0.722048 - 0.340057I$	$-1.30578 + 1.09993I$	$-0.13148 - 4.47979I$
$u = 0.585051 + 0.119200I$ $a = 1.13543 + 1.12186I$ $b = -0.446783 - 0.537153I$	$-3.77822 + 2.04196I$	$4.64535 - 1.53079I$
$u = 0.585051 - 0.119200I$ $a = 1.13543 - 1.12186I$ $b = -0.446783 + 0.537153I$	$-3.77822 - 2.04196I$	$4.64535 + 1.53079I$
$u = 0.18120 + 1.44491I$ $a = -0.956860 - 0.227359I$ $b = -1.212370 - 0.335064I$	$-7.73448 + 0.54824I$	$-1.59243 - 0.48598I$
$u = 0.18120 - 1.44491I$ $a = -0.956860 + 0.227359I$ $b = -1.212370 + 0.335064I$	$-7.73448 - 0.54824I$	$-1.59243 + 0.48598I$
$u = -0.321204$ $a = 1.40589$ $b = -0.228997$	0.692564	15.0030
$u = -0.71797 + 1.87258I$ $a = -0.566365 + 0.445862I$ $b = -2.21916 + 0.81697I$	$-16.8214 - 1.5623I$	$-1.46630 + 0.66617I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.71797 - 1.87258I$ $a = -0.566365 - 0.445862I$ $b = -2.21916 - 0.81697I$	$-16.8214 + 1.5623I$	$-1.46630 - 0.66617I$
$u = -0.39582 + 2.04334I$ $a = 1.144260 - 0.389222I$ $b = 2.23977 + 0.72183I$	$9.61396 - 8.62358I$	$-1.03984 + 3.00810I$
$u = -0.39582 - 2.04334I$ $a = 1.144260 + 0.389222I$ $b = 2.23977 - 0.72183I$	$9.61396 + 8.62358I$	$-1.03984 - 3.00810I$
$u = 0.12855 + 2.10555I$ $a = 1.246730 + 0.135922I$ $b = 2.35955 - 0.23642I$	$16.7551 + 3.3007I$	$0.99122 - 1.97685I$
$u = 0.12855 - 2.10555I$ $a = 1.246730 - 0.135922I$ $b = 2.35955 + 0.23642I$	$16.7551 - 3.3007I$	$0.99122 + 1.97685I$

II. $I_2^u = \langle b+1,\ 4a^3 - 2a^2u + 12a^2 - 4au + 12a - 3u + 4,\ u^2+2\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4au + 4u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = -1.000000 - 0.533779I$ $b = -1.00000$	-5.46628	$3.01951 + 0.I$
$u = 1.414210I$ $a = -0.473303 + 0.620443I$ $b = -1.00000$	$-9.60386 - 2.82812I$	$-3.50976 + 2.97945I$
$u = 1.414210I$ $a = -1.52670 + 0.62044I$ $b = -1.00000$	$-9.60386 + 2.82812I$	$-3.50976 - 2.97945I$
$u = -1.414210I$ $a = -1.000000 + 0.533779I$ $b = -1.00000$	-5.46628	$3.01951 + 0.I$
$u = -1.414210I$ $a = -0.473303 - 0.620443I$ $b = -1.00000$	$-9.60386 + 2.82812I$	$-3.50976 - 2.97945I$
$u = -1.414210I$ $a = -1.52670 - 0.62044I$ $b = -1.00000$	$-9.60386 - 2.82812I$	$-3.50976 + 2.97945I$

III. $I_1^v = \langle a,\ b-1,\ v^3+v^2-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2v^2+2v+2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.877439 + 0.744862I$ $a = 0$ $b = 1.00000$	$-4.66906 - 2.82812I$	$-0.18504 + 4.10401I$
$v = -0.877439 - 0.744862I$ $a = 0$ $b = 1.00000$	$-4.66906 + 2.82812I$	$-0.18504 - 4.10401I$
$v = 0.754878$ $a = 0$ $b = 1.00000$	-0.531480	2.37010

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{15}+32u^{14}+\cdots+6478u+289)$
c_2	$((u-1)^3)(u+1)^6(u^{15}+4u^{14}+\cdots+52u-17)$
c_3, c_4, c_8 c_9	$u^3(u^2+2)^3(u^{15}-u^{14}+\cdots+24u^2-8)$
c_5	$((u-1)^6)(u+1)^3(u^{15}+4u^{14}+\cdots+52u-17)$
c_6, c_7	$((u^3-u^2+2u-1)^2)(u^3+u^2+2u+1)(u^{15}-2u^{14}+\cdots+u-3)$
c_{10}	$((u^3-u^2+1)^2)(u^3+u^2-1)(u^{15}+2u^{14}+\cdots+77u-87)$
c_{11}	$(u^3-u^2+2u-1)(u^3+u^2+2u+1)^2(u^{15}-2u^{14}+\cdots+u-3)$
c_{12}	$((u^3+u^2-1)^3)(u^{15}-2u^{14}+\cdots-127u-171)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{15}-88y^{14}+\cdots+2.94571\times 10^7 y-83521)$
c_2, c_5	$((y-1)^9)(y^{15}-32y^{14}+\cdots+6478y-289)$
c_3, c_4, c_8 c_9	$y^3(y+2)^6(y^{15}+29y^{14}+\cdots+384y-64)$
c_6, c_7, c_{11}	$((y^3+3y^2+2y-1)^3)(y^{15}+18y^{14}+\cdots+7y-9)$
c_{10}	$((y^3-y^2+2y-1)^3)(y^{15}+26y^{14}+\cdots-75329y-7569)$
c_{12}	$((y^3-y^2+2y-1)^3)(y^{15}+50y^{14}+\cdots-77237y-29241)$