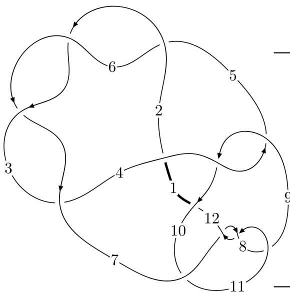
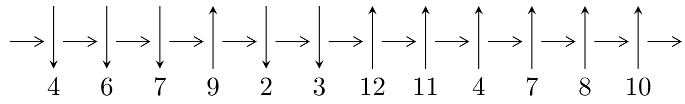
$12n_{0723}$ ($K12n_{0723}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{14} + 2u^{13} + \cdots + 2b - 1,\ -u^{14} + 4u^{13} + \cdots + 2a + 4,\ u^{15} - 3u^{14} + \cdots - 3u + 1\rangle$$
$$I_2^u = \langle -au + b,\ u^2a + a^2 + au - 2u^2 + 2a - u - 3,\ u^3 + u^2 + 2u + 1\rangle$$

* 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. $I_1^u = \langle -u^{14}+2u^{13}+\cdots+2b-1,\ -u^{14}+4u^{13}+\cdots+2a+4,\ u^{15}-3u^{14}+\cdots-3u+1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}\frac{1}{2}u^{14}-2u^{13}+\cdots+9u-2\\ \frac{1}{2}u^{14}-u^{13}+\cdots+\frac{1}{2}u+\frac{1}{2}\end{pmatrix}$$

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

$$a_3 = \begin{pmatrix}u^{14}-3u^{13}+\cdots+\frac{19}{2}u-\frac{3}{2}\\ \frac{1}{2}u^{14}-u^{13}+\cdots+\frac{1}{2}u+\frac{1}{2}\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-\frac{1}{2}u^{12}+u^{11}+\cdots-\frac{7}{2}u+\frac{1}{2}\\ \frac{1}{2}u^{14}-u^{13}+\cdots+\frac{3}{2}u-\frac{1}{2}\end{pmatrix}$$

$$a_2 = \begin{pmatrix}\frac{1}{2}u^{14}-u^{13}+\cdots-\frac{7}{2}u^2+5u\\ -\frac{1}{2}u^{14}+u^{13}+\cdots-\frac{1}{2}u+\frac{1}{2}\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-\frac{1}{2}u^{14}+u^{13}+\cdots-7u+1\\ \frac{1}{2}u^{14}-2u^{13}+\cdots+\frac{5}{2}u-\frac{3}{2}\end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix}-u^3-2u\\u^3+u\end{pmatrix}$$

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

$$a_9 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $=$

$$-\frac{1}{2}u^{13}+\frac{1}{2}u^{12}-\frac{7}{2}u^{11}+\frac{5}{2}u^{10}-\frac{17}{2}u^9+\frac{11}{2}u^8-13u^7+\frac{27}{2}u^6-\frac{53}{2}u^5+26u^4-\frac{69}{2}u^3+18u^2-11u-\frac{9}{2}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} - 18u^{14} + \cdots + 4668u + 207$
c_2, c_3, c_5 c_6	$u^{15} + 4u^{14} + \cdots + 6u - 1$
c_4, c_9	$u^{15} + u^{14} + \cdots - 96u - 64$
c_7, c_8, c_{11}	$u^{15} + 3u^{14} + \cdots - 3u - 1$
c_{10}	$u^{15} - 3u^{14} + \cdots - 37u - 41$
c_{12}	$u^{15} - u^{14} + \cdots - 15u - 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} - 110y^{14} + \cdots + 14260806y - 42849$
c_2, c_3, c_5 c_6	$y^{15} - 26y^{14} + \cdots + 46y - 1$
c_4, c_9	$y^{15} + 35y^{14} + \cdots + 33792y - 4096$
c_7, c_8, c_{11}	$y^{15} + 17y^{14} + \cdots - 15y - 1$
c_{10}	$y^{15} + 21y^{14} + \cdots - 37007y - 1681$
c_{12}	$y^{15} + 41y^{14} + \cdots + 273y - 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.900691 + 0.591172I$ $a = -1.46534 + 1.01047I$ $b = 1.91718 - 0.04386I$	$17.6730 + 2.9604I$	$-3.47231 - 2.17330I$
$u = 0.900691 - 0.591172I$ $a = -1.46534 - 1.01047I$ $b = 1.91718 + 0.04386I$	$17.6730 - 2.9604I$	$-3.47231 + 2.17330I$
$u = 0.508960 + 0.560149I$ $a = 1.18891 - 1.58128I$ $b = -1.49086 + 0.13884I$	$-8.38938 + 1.78426I$	$-4.62403 - 2.81000I$
$u = 0.508960 - 0.560149I$ $a = 1.18891 + 1.58128I$ $b = -1.49086 - 0.13884I$	$-8.38938 - 1.78426I$	$-4.62403 + 2.81000I$
$u = -0.184001 + 1.341680I$ $a = -0.211499 - 0.179174I$ $b = -0.279310 + 0.250795I$	$-3.45010 - 2.42340I$	$3.50251 + 0.27987I$
$u = -0.184001 - 1.341680I$ $a = -0.211499 + 0.179174I$ $b = -0.279310 - 0.250795I$	$-3.45010 + 2.42340I$	$3.50251 - 0.27987I$
$u = -0.03840 + 1.49525I$ $a = 0.358226 + 0.638671I$ $b = 0.968727 - 0.511112I$	$-7.29450 + 0.31744I$	$-5.62657 - 1.11275I$
$u = -0.03840 - 1.49525I$ $a = 0.358226 - 0.638671I$ $b = 0.968727 + 0.511112I$	$-7.29450 - 0.31744I$	$-5.62657 + 1.11275I$
$u = -0.498442$ $a = -0.328877$ $b = -0.163926$	0.854874	12.4950
$u = 0.14640 + 1.58860I$ $a = -0.162813 - 1.015850I$ $b = -1.58994 + 0.40736I$	$-15.7392 + 4.1680I$	$-6.43676 - 2.09201I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.14640 - 1.58860I$ $a = -0.162813 + 1.015850I$ $b = -1.58994 - 0.40736I$	$-15.7392 - 4.1680I$	$-6.43676 + 2.09201I$
$u = 0.33131 + 1.59485I$ $a = -0.156693 + 1.177500I$ $b = 1.92985 - 0.14022I$	$10.55240 + 7.55501I$	$-5.88870 - 2.72866I$
$u = 0.33131 - 1.59485I$ $a = -0.156693 - 1.177500I$ $b = 1.92985 + 0.14022I$	$10.55240 - 7.55501I$	$-5.88870 + 2.72866I$
$u = 0.084263 + 0.319070I$ $a = 0.11365 + 1.99296I$ $b = 0.626317 - 0.204194I$	$-1.181970 + 0.424054I$	$-6.20164 - 1.93342I$
$u = 0.084263 - 0.319070I$ $a = 0.11365 - 1.99296I$ $b = 0.626317 + 0.204194I$	$-1.181970 - 0.424054I$	$-6.20164 + 1.93342I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(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_8	$(u^3 + u^2 + 2u + 1)^2$
c_{10}, c_{12}	$(u^3 + u^2 - 1)^2$
c_{11}	$(u^3 - u^2 + 2u - 1)^2$

(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_8, 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
$u=-0.215080+1.307140I$ $a=-0.198308-1.205210I$ $b=\ \ 1.61803$	$-11.90680-2.82812I$	$-5.91278+1.52866I$
$u=-0.215080+1.307140I$ $a=\ \ 0.075747+0.460350I$ $b=-0.618034$	$-4.01109-2.82812I$	$-6.11966+6.11708I$
$u=-0.215080-1.307140I$ $a=-0.198308+1.205210I$ $b=\ \ 1.61803$	$-11.90680+2.82812I$	$-5.91278-1.52866I$
$u=-0.215080-1.307140I$ $a=\ \ 0.075747-0.460350I$ $b=-0.618034$	$-4.01109+2.82812I$	$-6.11966-6.11708I$
$u=-0.569840$ $a=\ \ 1.08457$ $b=-0.618034$	0.126494	-1.14270
$u=-0.569840$ $a=-2.83945$ $b=\ \ 1.61803$	-7.76919	-3.79250

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u-1)^3)(u^{15}-18u^{14}+\cdots+4668u+207)$
c_2, c_3	$((u^2+u-1)^3)(u^{15}+4u^{14}+\cdots+6u-1)$
c_4, c_9	$u^6(u^{15}+u^{14}+\cdots-96u-64)$
c_5, c_6	$((u^2-u-1)^3)(u^{15}+4u^{14}+\cdots+6u-1)$
c_7, c_8	$((u^3+u^2+2u+1)^2)(u^{15}+3u^{14}+\cdots-3u-1)$
c_{10}	$((u^3+u^2-1)^2)(u^{15}-3u^{14}+\cdots-37u-41)$
c_{11}	$((u^3-u^2+2u-1)^2)(u^{15}+3u^{14}+\cdots-3u-1)$
c_{12}	$((u^3+u^2-1)^2)(u^{15}-u^{14}+\cdots-15u-3)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2-3y+1)^3)(y^{15}-110y^{14}+\cdots+1.42608\times 10^7 y-42849)$
c_2, c_3, c_5 c_6	$((y^2-3y+1)^3)(y^{15}-26y^{14}+\cdots+46y-1)$
c_4, c_9	$y^6(y^{15}+35y^{14}+\cdots+33792y-4096)$
c_7, c_8, c_{11}	$((y^3+3y^2+2y-1)^2)(y^{15}+17y^{14}+\cdots-15y-1)$
c_{10}	$((y^3-y^2+2y-1)^2)(y^{15}+21y^{14}+\cdots-37007y-1681)$
c_{12}	$((y^3-y^2+2y-1)^2)(y^{15}+41y^{14}+\cdots+273y-9)$