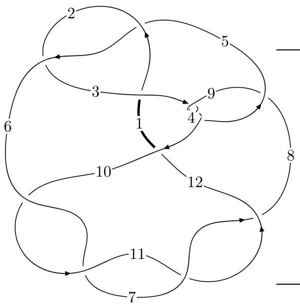
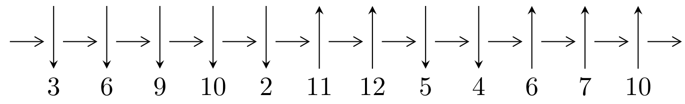
$12n_{0468}$ ($K12n_{0468}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 50017u^{23} - 192212u^{22} + \cdots + 807182b - 1440535, \\
&\quad - 887697u^{23} + 1683868u^{22} + \cdots + 403591a + 7501915,\ u^{24} - 2u^{23} + \cdots - 14u + 1\rangle \\
I_2^u &= \langle b,\ a - u - 1,\ u^2 + u - 1\rangle \\
I_3^u &= \langle b^2 - 2,\ a + u - 1,\ u^2 - u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 30 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.

$$\boldsymbol{I_1^u = \langle 5.00\times 10^4 u^{23} - 1.92\times 10^5 u^{22} + \cdots + 8.07\times 10^5 b - 1.44\times 10^6,\ -8.88\times 10^5 u^{23} + 1.68\times 10^6 u^{22} + \cdots + 4.04\times 10^5 a + 7.50\times 10^6,\ u^{24} - 2u^{23} + \cdots - 14u + 1\rangle}$$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 2.19950u^{23} - 4.17221u^{22} + \cdots + 80.3744u - 18.5879 \\ -0.0619650u^{23} + 0.238127u^{22} + \cdots - 4.26658u + 1.78465 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2.19950u^{23} - 4.17221u^{22} + \cdots + 80.3744u - 18.5879 \\ -0.155552u^{23} + 0.463063u^{22} + \cdots - 5.24199u + 2.01143 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^4 - 3u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.28329u^{23} + 2.79375u^{22} + \cdots - 48.2229u + 16.0757 \\ 0.0668610u^{23} - 0.539826u^{22} + \cdots + 6.83004u - 2.15414 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.21643u^{23} + 2.25393u^{22} + \cdots - 41.3929u + 13.9216 \\ 0.0668610u^{23} - 0.539826u^{22} + \cdots + 6.83004u - 2.15414 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2.01143u^{23} + 3.86730u^{22} + \cdots - 83.0096u + 22.9180 \\ 0.557673u^{23} - 0.761132u^{22} + \cdots + 14.1472u - 3.26037 \end{pmatrix}$$

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{456499}{403591}u^{23} + \frac{452261}{403591}u^{22} + \cdots - \frac{8480209}{403591}u - \frac{5152499}{403591}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} + 5u^{23} + \cdots + 53u + 1$
c_2, c_5	$u^{24} + 3u^{23} + \cdots + 7u + 1$
c_3, c_4, c_9	$u^{24} - u^{23} + \cdots - 4u - 4$
c_6, c_7, c_{10} c_{11}	$u^{24} + 2u^{23} + \cdots + 14u + 1$
c_8	$u^{24} + 3u^{23} + \cdots - 4u - 4$
c_{12}	$u^{24} + 20u^{23} + \cdots - 7204u + 113$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24}+35y^{23}+\cdots-2365y+1$
c_2, c_5	$y^{24}-5y^{23}+\cdots-53y+1$
c_3, c_4, c_9	$y^{24}-19y^{23}+\cdots-144y+16$
c_6, c_7, c_{10} c_{11}	$y^{24}-36y^{23}+\cdots-124y+1$
c_8	$y^{24}+41y^{23}+\cdots-272y+16$
c_{12}	$y^{24}-108y^{23}+\cdots-36653012y+12769$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.964868$ $a=\ \ 1.34648$ $b=-0.375511$	-3.09721	-1.73870
$u=\ \ 0.789115$ $a=-0.656714$ $b=-1.73162$	-4.32235	2.54540
$u=-1.195640+0.370602I$ $a=-0.572553-0.900506I$ $b=-0.06466-1.81298I$	$3.39573-7.66310I$	$-0.37088+5.98262I$
$u=-1.195640-0.370602I$ $a=-0.572553+0.900506I$ $b=-0.06466+1.81298I$	$3.39573+7.66310I$	$-0.37088-5.98262I$
$u=\ \ 0.394218+0.611999I$ $a=-0.26532-1.46494I$ $b=-0.096993-0.945243I$	$-1.63157+4.24750I$	$-3.56364-6.51398I$
$u=\ \ 0.394218-0.611999I$ $a=-0.26532+1.46494I$ $b=-0.096993+0.945243I$	$-1.63157-4.24750I$	$-3.56364+6.51398I$
$u=-1.300810+0.139494I$ $a=-0.624407+0.553888I$ $b=-0.341664+0.962592I$	$4.01026-1.38355I$	$0.744304+1.165315I$
$u=-1.300810-0.139494I$ $a=-0.624407-0.553888I$ $b=-0.341664-0.962592I$	$4.01026+1.38355I$	$0.744304-1.165315I$
$u=-0.567026+0.327854I$ $a=\ \ 0.027057+0.847883I$ $b=-0.318541+0.587410I$	$1.105110-0.832342I$	$4.13142+2.88592I$
$u=-0.567026-0.327854I$ $a=\ \ 0.027057-0.847883I$ $b=-0.318541-0.587410I$	$1.105110+0.832342I$	$4.13142-2.88592I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.330220 + 0.199162I$ $a = -0.460296 + 0.718151I$ $b = 0.01595 + 1.48977I$	$7.39054 + 2.83153I$	$3.91368 - 2.93748I$
$u = 1.330220 - 0.199162I$ $a = -0.460296 - 0.718151I$ $b = 0.01595 - 1.48977I$	$7.39054 - 2.83153I$	$3.91368 + 2.93748I$
$u = 0.394897 + 0.488286I$ $a = 1.365600 - 0.212541I$ $b = 0.148526 - 0.193691I$	$-1.60715 - 0.53576I$	$-3.93456 - 0.12149I$
$u = 0.394897 - 0.488286I$ $a = 1.365600 + 0.212541I$ $b = 0.148526 + 0.193691I$	$-1.60715 + 0.53576I$	$-3.93456 + 0.12149I$
$u = -1.60569$ $a = -0.0892641$ $b = 1.28709$	3.92860	2.04700
$u = 0.322044$ $a = 2.66696$ $b = 0.304688$	-1.11472	-13.2200
$u = 1.68408$ $a = -0.772565$ $b = -0.260162$	6.28088	-2.91920
$u = 1.79002 + 0.10661I$ $a = 0.653626 - 0.552899I$ $b = 0.45171 - 2.56882I$	$14.1732 + 9.8238I$	$0. - 4.62190I$
$u = 1.79002 - 0.10661I$ $a = 0.653626 + 0.552899I$ $b = 0.45171 + 2.56882I$	$14.1732 - 9.8238I$	$0. + 4.62190I$
$u = 1.82183 + 0.02838I$ $a = 0.439745 + 0.654915I$ $b = 0.79204 + 2.27718I$	$15.6632 + 2.1276I$	$1.47628 - 0.94453I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.82183 - 0.02838I$ $a = 0.439745 - 0.654915I$ $b = 0.79204 - 2.27718I$	$15.6632 - 2.1276I$	$1.47628 + 0.94453I$
$u = -1.82860 + 0.05006I$ $a = 0.568562 + 0.623923I$ $b = 0.63662 + 2.42066I$	$19.1541 - 4.0381I$	$3.21227 + 2.25463I$
$u = -1.82860 - 0.05006I$ $a = 0.568562 - 0.623923I$ $b = 0.63662 - 2.42066I$	$19.1541 + 4.0381I$	$3.21227 - 2.25463I$
$u = 0.0970532$ $a = -10.7589$ $b = 1.32951$	-6.54674	-14.1170

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.61803$ $b = 0$	-0.657974	6.00000
$u = -1.61803$ $a = -0.618034$ $b = 0$	7.23771	6.00000

III. $I_3^u = \langle b^2 - 2,\ a + u - 1,\ u^2 - u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = \quad 1.61803$ $b = \quad 1.41421$	-5.59278	-4.00000
$u = -0.618034$ $a = \quad 1.61803$ $b = -1.41421$	-5.59278	-4.00000
$u = \quad 1.61803$ $a = -0.618034$ $b = \quad 1.41421$	2.30291	-4.00000
$u = \quad 1.61803$ $a = -0.618034$ $b = -1.41421$	2.30291	-4.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{24}+5u^{23}+\cdots+53u+1)$
c_2	$((u-1)^2)(u+1)^4(u^{24}+3u^{23}+\cdots+7u+1)$
c_3, c_4, c_9	$u^2(u^2-2)^2(u^{24}-u^{23}+\cdots-4u-4)$
c_5	$((u-1)^4)(u+1)^2(u^{24}+3u^{23}+\cdots+7u+1)$
c_6, c_7	$(u^2-u-1)(u^2+u-1)^2(u^{24}+2u^{23}+\cdots+14u+1)$
c_8	$u^2(u^2-2)^2(u^{24}+3u^{23}+\cdots-4u-4)$
c_{10}, c_{11}	$((u^2-u-1)^2)(u^2+u-1)(u^{24}+2u^{23}+\cdots+14u+1)$
c_{12}	$((u^2+u-1)^3)(u^{24}+20u^{23}+\cdots-7204u+113)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{24}+35y^{23}+\cdots-2365y+1)$
c_2, c_5	$((y-1)^6)(y^{24}-5y^{23}+\cdots-53y+1)$
c_3, c_4, c_9	$y^2(y-2)^4(y^{24}-19y^{23}+\cdots-144y+16)$
c_6, c_7, c_{10} c_{11}	$((y^2-3y+1)^3)(y^{24}-36y^{23}+\cdots-124y+1)$
c_8	$y^2(y-2)^4(y^{24}+41y^{23}+\cdots-272y+16)$
c_{12}	$((y^2-3y+1)^3)(y^{24}-108y^{23}+\cdots-3.66530\times10^7y+12769)$