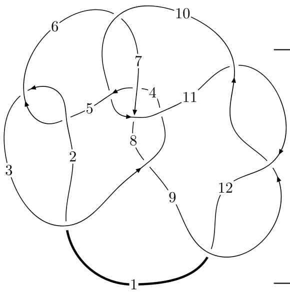
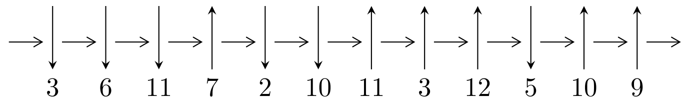
$12n_{0322}$ ($K12n_{0322}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -25033252u^{22} + 121557101u^{21} + \cdots + 2926713322b + 456806862,$$
$$157446473u^{22} - 71514300u^{21} + \cdots + 146335661a - 334256756,\ u^{23} - u^{22} + \cdots - 4u + 1\rangle$$
$$I_2^u = \langle -u^5b + 2u^4b - u^5 - u^3b + b^2 - 2bu + 2b - 2u,\ -u^4 + a - 1,\ u^6 + u^4 + 2u^2 + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 35 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.

$$I_1^u = \langle -2.50\times 10^{7}u^{22} + 1.22\times 10^{8}u^{21} + \cdots + 2.93\times 10^{8}b + 4.57\times 10^{8},\ 1.57\times 10^{8}u^{22} - 7.15\times 10^{7}u^{21} + \cdots + 1.46\times 10^{8}a - 3.34\times 10^{8},\ u^{23} - u^{22} + \cdots - 4u + 1\rangle$$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} -1.07593u^{22} + 0.488700u^{21} + \cdots - 6.60771u + 2.28418 \\ 0.0855337u^{22} - 0.415337u^{21} + \cdots + 1.72095u - 1.56082 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -1.74252u^{22} + 1.41007u^{21} + \cdots - 7.48338u + 5.61498 \\ -0.341312u^{22} - 0.0869202u^{21} + \cdots - 0.317822u + 0.422860 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2.02915u^{22} + 1.43160u^{21} + \cdots - 8.21390u + 5.70538 \\ -0.505038u^{22} + 0.0146154u^{21} + \cdots - 1.09158u + 0.687959 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.990393u^{22} + 0.0733639u^{21} + \cdots - 4.88676u + 0.723360 \\ 0.0855337u^{22} - 0.415337u^{21} + \cdots + 1.72095u - 1.56082 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0458208u^{22} + 0.256242u^{21} + \cdots + 1.37542u + 1.65212 \\ -0.626056u^{22} + 0.0915497u^{21} + \cdots - 1.35086u + 1.57783 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^6 - u^4 - 2u^2 - 1 \\ -u^6 - u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -0.580827u^{22} - 0.0431012u^{21} + \cdots - 3.61378u + 0.136133 \\ 0.107132u^{22} - 0.226022u^{21} + \cdots + 1.07904u - 1.52412 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{670390078}{146335661}u^{22} - \frac{445304479}{146335661}u^{21} + \cdots + \frac{1755269129}{146335661}u - \frac{1610811133}{146335661}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 19u^{22} + \cdots - 12u + 1$
c_2, c_5	$u^{23} + u^{22} + \cdots + 6u + 1$
c_3	$u^{23} + 5u^{22} + \cdots + 138708u + 29957$
c_4, c_8	$u^{23} + u^{22} + \cdots - 140u + 25$
c_6	$u^{23} + 7u^{22} + \cdots - 11462u - 5383$
c_7	$u^{23} + u^{22} + \cdots + 376u - 7$
c_9, c_{11}, c_{12}	$u^{23} - 3u^{22} + \cdots + 6u + 1$
c_{10}	$u^{23} - u^{22} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} - 23y^{22} + \cdots - 984y - 1$
c_2, c_5	$y^{23} - 19y^{22} + \cdots - 12y - 1$
c_3	$y^{23} - 73y^{22} + \cdots - 10832245444y - 897421849$
c_4, c_8	$y^{23} + 43y^{22} + \cdots + 8150y - 625$
c_6	$y^{23} - 41y^{22} + \cdots + 193389604y - 28976689$
c_7	$y^{23} + 43y^{22} + \cdots + 163692y - 49$
c_9, c_{11}, c_{12}	$y^{23} + 39y^{22} + \cdots + 30y - 1$
c_{10}	$y^{23} + 3y^{22} + \cdots + 6y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.638291 + 0.756340I$ $a = -0.053920 + 0.672113I$ $b = -1.27006 - 0.66289I$	$-2.28180 - 5.04874I$	$-2.29238 + 7.64932I$
$u = 0.638291 - 0.756340I$ $a = -0.053920 - 0.672113I$ $b = -1.27006 + 0.66289I$	$-2.28180 + 5.04874I$	$-2.29238 - 7.64932I$
$u = 0.728457 + 0.859772I$ $a = -0.696631 - 0.653322I$ $b = 0.729953 + 0.669715I$	$-4.64426 - 2.76660I$	$-5.38126 + 3.37592I$
$u = 0.728457 - 0.859772I$ $a = -0.696631 + 0.653322I$ $b = 0.729953 - 0.669715I$	$-4.64426 + 2.76660I$	$-5.38126 - 3.37592I$
$u = 0.356533 + 0.788524I$ $a = 1.151030 + 0.050949I$ $b = -1.04769 + 1.09696I$	$-1.92628 + 1.02137I$	$-4.36487 - 0.00463I$
$u = 0.356533 - 0.788524I$ $a = 1.151030 - 0.050949I$ $b = -1.04769 - 1.09696I$	$-1.92628 - 1.02137I$	$-4.36487 + 0.00463I$
$u = -0.087548 + 0.829182I$ $a = -0.165345 - 0.286028I$ $b = 1.012130 + 0.803767I$	$1.16140 + 1.81818I$	$6.31882 - 4.29104I$
$u = -0.087548 - 0.829182I$ $a = -0.165345 + 0.286028I$ $b = 1.012130 - 0.803767I$	$1.16140 - 1.81818I$	$6.31882 + 4.29104I$
$u = -0.370099 + 0.602173I$ $a = 0.256458 - 0.802239I$ $b = -0.536912 + 0.631160I$	$0.076790 + 1.263270I$	$0.68970 - 5.37175I$
$u = -0.370099 - 0.602173I$ $a = 0.256458 + 0.802239I$ $b = -0.536912 - 0.631160I$	$0.076790 - 1.263270I$	$0.68970 + 5.37175I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.076080+0.763334I$ $a=-0.18671+1.49317I$ $b=\ \ 1.74353-0.51727I$	$-11.04540+2.65995I$	$-6.14199-2.02854I$
$u=-1.076080-0.763334I$ $a=-0.18671-1.49317I$ $b=\ \ 1.74353+0.51727I$	$-11.04540-2.65995I$	$-6.14199+2.02854I$
$u=-0.674267$ $a=\ \ 1.27270$ $b=\ \ 0.595901$	-1.85226	-5.67690
$u=-0.767551+1.147080I$ $a=-1.301880+0.405799I$ $b=\ \ 2.41969+0.70458I$	$-9.61269+4.18878I$	$-5.20065-2.68941I$
$u=-0.767551-1.147080I$ $a=-1.301880-0.405799I$ $b=\ \ 2.41969-0.70458I$	$-9.61269-4.18878I$	$-5.20065+2.68941I$
$u=-1.01450+1.01430I$ $a=\ \ 1.01669-1.12066I$ $b=-1.98063+0.31926I$	$-18.6458+3.7213I$	$-3.19708-1.97285I$
$u=-1.01450-1.01430I$ $a=\ \ 1.01669+1.12066I$ $b=-1.98063-0.31926I$	$-18.6458-3.7213I$	$-3.19708+1.97285I$
$u=\ \ 1.10481+0.91677I$ $a=\ \ 1.22917+1.03499I$ $b=-1.37206+0.92349I$	$15.8685+3.3875I$	$-5.25744-0.65270I$
$u=\ \ 1.10481-0.91677I$ $a=\ \ 1.22917-1.03499I$ $b=-1.37206-0.92349I$	$15.8685-3.3875I$	$-5.25744+0.65270I$
$u=\ \ 0.94898+1.10084I$ $a=\ \ 0.84505+1.21860I$ $b=-2.63899-1.28859I$	$16.5464-10.8721I$	$-4.62089+4.80987I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.94898 - 1.10084I$ $a = 0.84505 - 1.21860I$ $b = -2.63899 + 1.28859I$	$16.5464 + 10.8721I$	$-4.62089 - 4.80987I$
$u = 0.375835 + 0.114241I$ $a = -1.23027 - 2.62777I$ $b = -0.856913 + 0.343009I$	$-1.84255 - 2.10614I$	$-6.71348 + 2.97651I$
$u = 0.375835 - 0.114241I$ $a = -1.23027 + 2.62777I$ $b = -0.856913 - 0.343009I$	$-1.84255 + 2.10614I$	$-6.71348 - 2.97651I$

II. $\boldsymbol{I_2^u = \langle -u^5b - u^5 + \cdots + b^2 + 2b,\ -u^4 + a - 1,\ u^6 + u^4 + 2u^2 + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^4 + 1 \\ b \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^5 - u^3 - 2u \\ -u^5b - bu + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^5b - u^5 - u^3 - bu - 2u \\ u^3b + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^4 + b + 1 \\ b \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^5b - u^5 - u^4 - u^3 - bu - 2u - 1 \\ -u^5 + u^3b - u^3 + b - u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ -u^4 - u^2 - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2u^4 + u^2 + b + 2 \\ u^2b - u^2 + b - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^5 + 4u^4 - 4bu + 4u^2 - 4u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^2 - u + 1)^6$
c_2, c_5	$(u^4 - u^2 + 1)^3$
c_3	$u^{12} + 6u^{10} + \cdots - 4u + 1$
c_4, c_8	$(u^2 + 1)^6$
c_6	$u^{12} - 6u^{10} + \cdots + 2u + 1$
c_7	$u^{12} - 4u^{11} + \cdots - 70u + 37$
c_9	$(u^3 + u^2 + 2u + 1)^4$
c_{10}	$(u^6 + u^4 + 2u^2 + 1)^2$
c_{11}, c_{12}	$(u^3 - u^2 + 2u - 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)^6$
c_2, c_5	$(y^2-y+1)^6$
c_3	$y^{12}+12y^{11}+\cdots-6y+1$
c_4, c_8	$(y+1)^{12}$
c_6	$y^{12}-12y^{11}+\cdots+6y+1$
c_7	$y^{12}+8y^{11}+\cdots+1094y+1369$
c_9, c_{11}, c_{12}	$(y^3+3y^2+2y-1)^4$
c_{10}	$(y^3+y^2+2y+1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.744862 + 0.877439I$ $a = -0.662359 - 0.562280I$ $b = -0.192400 + 0.406511I$	$-4.66906 - 4.85801I$	$-5.50976 + 6.44355I$
$u = 0.744862 + 0.877439I$ $a = -0.662359 - 0.562280I$ $b = 0.95484 + 1.38041I$	$-4.66906 - 0.79824I$	$-5.50976 - 0.48465I$
$u = 0.744862 - 0.877439I$ $a = -0.662359 + 0.562280I$ $b = -0.192400 - 0.406511I$	$-4.66906 + 4.85801I$	$-5.50976 - 6.44355I$
$u = 0.744862 - 0.877439I$ $a = -0.662359 + 0.562280I$ $b = 0.95484 - 1.38041I$	$-4.66906 + 0.79824I$	$-5.50976 + 0.48465I$
$u = -0.744862 + 0.877439I$ $a = -0.662359 + 0.562280I$ $b = 0.369879 + 0.255848I$	$-4.66906 + 0.79824I$	$-5.50976 + 0.48465I$
$u = -0.744862 + 0.877439I$ $a = -0.662359 + 0.562280I$ $b = 1.51712 - 0.71805I$	$-4.66906 + 4.85801I$	$-5.50976 - 6.44355I$
$u = -0.744862 - 0.877439I$ $a = -0.662359 - 0.562280I$ $b = 0.369879 - 0.255848I$	$-4.66906 - 0.79824I$	$-5.50976 - 0.48465I$
$u = -0.744862 - 0.877439I$ $a = -0.662359 - 0.562280I$ $b = 1.51712 + 0.71805I$	$-4.66906 - 4.85801I$	$-5.50976 + 6.44355I$
$u = 0.754878I$ $a = 1.32472$ $b = -0.177479 + 0.662359I$	$-0.53148 + 2.02988I$	$1.01951 - 3.46410I$
$u = 0.754878I$ $a = 1.32472$ $b = -2.47196 + 0.66236I$	$-0.53148 - 2.02988I$	$1.01951 + 3.46410I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad - 0.754878I$ $a = \quad 1.32472$ $b = -0.177479 - 0.662359I$	$-0.53148 - 2.02988I$	$1.01951 + 3.46410I$
$u = \quad - 0.754878I$ $a = \quad 1.32472$ $b = -2.47196 - 0.66236I$	$-0.53148 + 2.02988I$	$1.01951 - 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{23}+19u^{22}+\cdots-12u+1)$
c_2, c_5	$((u^4-u^2+1)^3)(u^{23}+u^{22}+\cdots+6u+1)$
c_3	$(u^{12}+6u^{10}+\cdots-4u+1)(u^{23}+5u^{22}+\cdots+138708u+29957)$
c_4, c_8	$((u^2+1)^6)(u^{23}+u^{22}+\cdots-140u+25)$
c_6	$(u^{12}-6u^{10}+\cdots+2u+1)(u^{23}+7u^{22}+\cdots-11462u-5383)$
c_7	$(u^{12}-4u^{11}+\cdots-70u+37)(u^{23}+u^{22}+\cdots+376u-7)$
c_9	$((u^3+u^2+2u+1)^4)(u^{23}-3u^{22}+\cdots+6u+1)$
c_{10}	$((u^6+u^4+2u^2+1)^2)(u^{23}-u^{22}+\cdots-4u+1)$
c_{11}, c_{12}	$((u^3-u^2+2u-1)^4)(u^{23}-3u^{22}+\cdots+6u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{23}-23y^{22}+\cdots-984y-1)$
c_2, c_5	$((y^2-y+1)^6)(y^{23}-19y^{22}+\cdots-12y-1)$
c_3	$(y^{12}+12y^{11}+\cdots-6y+1)$ $\cdot(y^{23}-73y^{22}+\cdots-10832245444y-897421849)$
c_4, c_8	$((y+1)^{12})(y^{23}+43y^{22}+\cdots+8150y-625)$
c_6	$(y^{12}-12y^{11}+\cdots+6y+1)$ $\cdot(y^{23}-41y^{22}+\cdots+193389604y-28976689)$
c_7	$(y^{12}+8y^{11}+\cdots+1094y+1369)(y^{23}+43y^{22}+\cdots+163692y-49)$
c_9, c_{11}, c_{12}	$((y^3+3y^2+2y-1)^4)(y^{23}+39y^{22}+\cdots+30y-1)$
c_{10}	$((y^3+y^2+2y+1)^4)(y^{23}+3y^{22}+\cdots+6y-1)$