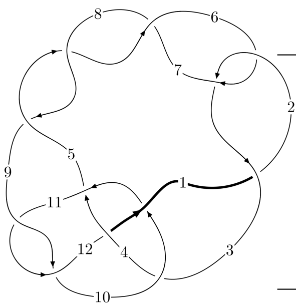
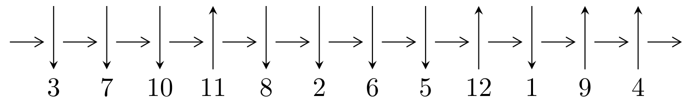
$12a_{0640}$ $(K12a_{0640})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -1.25642 \times 10^{19} u^{64} - 2.04945 \times 10^{19} u^{63} + \cdots + 2.31572 \times 10^{19} b - 3.37503 \times 10^{19},$$
$$3.33691 \times 10^{20} u^{64} + 8.52592 \times 10^{20} u^{63} + \cdots + 1.62101 \times 10^{20} a + 6.63020 \times 10^{20},\ u^{65} + 2u^{64} + \cdots - 3u - 1$$
$$I_2^u = \langle b - 1,\ u^2 + a + u,\ u^3 + u^2 - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 68 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.

$\boldsymbol{I_1^u = \langle -1.26\times10^{19}u^{64} - 2.05\times10^{19}u^{63} + \cdots + 2.32\times10^{19}b - 3.38\times10^{19},\ 3.34\times10^{20}u^{64} + 8.53\times10^{20}u^{63} + \cdots + 1.62\times10^{20}a + 6.63\times10^{20},\ u^{65} + 2u^{64} + \cdots - 3u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-2.05854u^{64} - 5.25965u^{63} + \cdots - 6.06473u - 4.09018\\0.542560u^{64} + 0.885015u^{63} + \cdots + 6.46360u + 1.45744\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-4.79404u^{64} - 9.62296u^{63} + \cdots - 15.4240u - 0.688537\\0.228872u^{64} + 3.24003u^{63} + \cdots + 15.0884u + 3.99997\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^2+1\\-u^4\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-2.02908u^{64} - 5.22916u^{63} + \cdots - 8.16807u - 4.20542\\0.571011u^{64} + 0.942649u^{63} + \cdots + 6.49245u + 1.42898\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u^3\\-u^3+u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u^5+u\\u^5-u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}2.19411u^{64} + 5.79390u^{63} + \cdots + 9.22067u + 4.42305\\-0.605690u^{64} - 1.01153u^{63} + \cdots - 5.60577u - 1.39431\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^7-2u^3\\-u^7+u^5-2u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{528336484950614213199}{162100580461622483569}u^{64} - \frac{1127997666238273519001}{162100580461622483569}u^{63} + \cdots - \frac{1505544510775395115944}{162100580461622483569}u - \frac{463719068585525000616}{162100580461622483569}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_7 c_8	$u^{65} + 12u^{64} + \cdots + 7u + 1$
c_2, c_6	$u^{65} - 2u^{64} + \cdots - 3u + 1$
c_3	$u^{65} + 3u^{64} + \cdots - 742u + 44$
c_4	$u^{65} + u^{64} + \cdots + 432488u + 133561$
c_9, c_{11}	$u^{65} + 4u^{64} + \cdots + 24u + 1$
c_{10}	$u^{65} - 11u^{64} + \cdots + 20u - 8$
c_{12}	$u^{65} + 4u^{64} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_8	$y^{65} + 84y^{64} + \cdots - 5y - 1$
c_2, c_6	$y^{65} - 12y^{64} + \cdots + 7y - 1$
c_3	$y^{65} + 83y^{64} + \cdots - 100900y - 1936$
c_4	$y^{65} + 19y^{64} + \cdots + 435178968530y - 17838540721$
c_9, c_{11}	$y^{65} - 54y^{64} + \cdots + 1032y - 1$
c_{10}	$y^{65} + 21y^{64} + \cdots + 464y - 64$
c_{12}	$y^{65} - 8y^{64} + \cdots + 7y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.820055+0.571414I$ $a=-0.75883-1.23938I$ $b=-0.689094-0.473723I$	$1.92122+2.92849I$	$-1.28212-3.41898I$
$u=-0.820055-0.571414I$ $a=-0.75883+1.23938I$ $b=-0.689094+0.473723I$	$1.92122-2.92849I$	$-1.28212+3.41898I$
$u=-0.969463+0.241716I$ $a=-1.47695-0.01532I$ $b=-0.541831-0.359416I$	$1.53983+7.60011I$	$-3.30399-8.68829I$
$u=-0.969463-0.241716I$ $a=-1.47695+0.01532I$ $b=-0.541831+0.359416I$	$1.53983-7.60011I$	$-3.30399+8.68829I$
$u=\quad 0.744354+0.673066I$ $a=-1.77437+1.77616I$ $b=-2.00526-0.95542I$	$6.17006-0.54961I$	$7.09242+0.I$
$u=\quad 0.744354-0.673066I$ $a=-1.77437-1.77616I$ $b=-2.00526+0.95542I$	$6.17006+0.54961I$	$7.09242+0.I$
$u=\quad 0.596268+0.796205I$ $a=-0.84320+1.39289I$ $b=-1.84547+0.11090I$	$7.82451+7.18297I$	$3.58934-3.88549I$
$u=\quad 0.596268-0.796205I$ $a=-0.84320-1.39289I$ $b=-1.84547-0.11090I$	$7.82451-7.18297I$	$3.58934+3.88549I$
$u=-0.558053+0.817613I$ $a=-0.294812+1.037710I$ $b=\quad 0.840197+0.843216I$	$7.30694+1.58876I$	$6.94400-2.45858I$
$u=-0.558053-0.817613I$ $a=-0.294812-1.037710I$ $b=\quad 0.840197-0.843216I$	$7.30694-1.58876I$	$6.94400+2.45858I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.998178 + 0.175665I$ $a = 0.203083 + 0.942676I$ $b = 0.383549 + 0.157322I$	$1.14078 + 1.78516I$	$-1.11805 - 3.43956I$
$u = 0.998178 - 0.175665I$ $a = 0.203083 - 0.942676I$ $b = 0.383549 - 0.157322I$	$1.14078 - 1.78516I$	$-1.11805 + 3.43956I$
$u = -0.767755 + 0.612962I$ $a = 3.39308 + 2.93420I$ $b = 3.54263 + 0.73826I$	$3.80285 + 2.31034I$	$-25.0391 + 4.5996I$
$u = -0.767755 - 0.612962I$ $a = 3.39308 - 2.93420I$ $b = 3.54263 - 0.73826I$	$3.80285 - 2.31034I$	$-25.0391 - 4.5996I$
$u = 0.812707 + 0.650110I$ $a = 0.19129 + 2.01588I$ $b = -2.00190 + 1.46282I$	$5.94798 - 4.38359I$	$6.03810 + 7.34576I$
$u = 0.812707 - 0.650110I$ $a = 0.19129 - 2.01588I$ $b = -2.00190 - 1.46282I$	$5.94798 + 4.38359I$	$6.03810 - 7.34576I$
$u = 0.870827 + 0.601767I$ $a = 1.54614 - 1.58787I$ $b = 1.54992 + 0.15321I$	$1.78299 - 6.95651I$	$0. + 9.98928I$
$u = 0.870827 - 0.601767I$ $a = 1.54614 + 1.58787I$ $b = 1.54992 - 0.15321I$	$1.78299 + 6.95651I$	$0. - 9.98928I$
$u = 0.648812 + 0.671920I$ $a = 0.167707 - 0.999965I$ $b = 1.50126 - 0.72002I$	$2.49850 + 2.18973I$	$1.25971 - 3.64342I$
$u = 0.648812 - 0.671920I$ $a = 0.167707 + 0.999965I$ $b = 1.50126 + 0.72002I$	$2.49850 - 2.18973I$	$1.25971 + 3.64342I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.684737+0.604855I$ $a=-1.010310-0.522879I$ $b=-1.022020-0.286519I$	$2.35987+1.53086I$	$1.14672-4.64603I$
$u=-0.684737-0.604855I$ $a=-1.010310+0.522879I$ $b=-1.022020+0.286519I$	$2.35987-1.53086I$	$1.14672+4.64603I$
$u=\ \ 0.956434+0.623323I$ $a=-1.40109+1.80097I$ $b=-2.02007+0.57048I$	$6.62284-12.39710I$	0
$u=\ \ 0.956434-0.623323I$ $a=-1.40109-1.80097I$ $b=-2.02007-0.57048I$	$6.62284+12.39710I$	0
$u=-0.831440+0.172732I$ $a=\ \ 2.04727-0.37107I$ $b=\ \ 0.655355-0.212384I$	$-2.33387+3.36125I$	$-9.80190-7.73059I$
$u=-0.831440-0.172732I$ $a=\ \ 2.04727+0.37107I$ $b=\ \ 0.655355+0.212384I$	$-2.33387-3.36125I$	$-9.80190+7.73059I$
$u=\ \ 0.798114+0.280411I$ $a=\ \ 0.172582-1.311990I$ $b=\ \ 0.339896-0.283030I$	$-1.85279-0.67069I$	$-10.04650+3.48460I$
$u=\ \ 0.798114-0.280411I$ $a=\ \ 0.172582+1.311990I$ $b=\ \ 0.339896+0.283030I$	$-1.85279+0.67069I$	$-10.04650-3.48460I$
$u=-0.994683+0.610182I$ $a=\ \ 1.168940+0.182146I$ $b=\ \ 1.080470-0.508571I$	$5.85453+3.65774I$	0
$u=-0.994683-0.610182I$ $a=\ \ 1.168940-0.182146I$ $b=\ \ 1.080470+0.508571I$	$5.85453-3.65774I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.886696 + 0.799693I$ $a = 0.049918 + 0.520198I$ $b = 0.688654 + 0.067457I$	$4.04012 + 2.99291I$	0
$u = -0.886696 - 0.799693I$ $a = 0.049918 - 0.520198I$ $b = 0.688654 - 0.067457I$	$4.04012 - 2.99291I$	0
$u = 0.715886$ $a = -0.806878$ $b = 0.0728787$	-1.06061	-9.36050
$u = -0.036225 + 0.711406I$ $a = -0.646922 - 1.148690I$ $b = -0.293062 - 0.445219I$	$4.70553 - 4.54910I$	$4.84912 + 4.44515I$
$u = -0.036225 - 0.711406I$ $a = -0.646922 + 1.148690I$ $b = -0.293062 + 0.445219I$	$4.70553 + 4.54910I$	$4.84912 - 4.44515I$
$u = -0.660304 + 0.263461I$ $a = -0.92327 - 2.16146I$ $b = -0.65397 - 1.36006I$	$1.59886 + 2.23743I$	$-0.09200 - 8.25781I$
$u = -0.660304 - 0.263461I$ $a = -0.92327 + 2.16146I$ $b = -0.65397 + 1.36006I$	$1.59886 - 2.23743I$	$-0.09200 + 8.25781I$
$u = 0.923672 + 0.910982I$ $a = -1.33275 + 0.68563I$ $b = -2.27621 - 1.05859I$	$11.31760 - 2.00493I$	0
$u = 0.923672 - 0.910982I$ $a = -1.33275 - 0.68563I$ $b = -2.27621 + 1.05859I$	$11.31760 + 2.00493I$	0
$u = -0.920176 + 0.922248I$ $a = 0.437881 + 1.136740I$ $b = 2.72886 + 0.25698I$	$11.70890 - 2.29417I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.920176 - 0.922248I$ $a = 0.437881 - 1.136740I$ $b = 2.72886 - 0.25698I$	$11.70890 + 2.29417I$	0
$u = 0.948041 + 0.898495I$ $a = -0.00686 + 1.89178I$ $b = -2.10420 + 1.27127I$	$11.23820 - 4.66383I$	0
$u = 0.948041 - 0.898495I$ $a = -0.00686 - 1.89178I$ $b = -2.10420 - 1.27127I$	$11.23820 + 4.66383I$	0
$u = 0.938818 + 0.910131I$ $a = 1.94266 - 3.67219I$ $b = 6.37132 - 0.20498I$	$13.25270 - 3.35212I$	0
$u = 0.938818 - 0.910131I$ $a = 1.94266 + 3.67219I$ $b = 6.37132 + 0.20498I$	$13.25270 + 3.35212I$	0
$u = -0.906041 + 0.944348I$ $a = -0.96248 - 1.58621I$ $b = -3.52611 + 0.26832I$	$17.2883 - 8.5608I$	0
$u = -0.906041 - 0.944348I$ $a = -0.96248 + 1.58621I$ $b = -3.52611 - 0.26832I$	$17.2883 + 8.5608I$	0
$u = 0.902391 + 0.951587I$ $a = 0.047768 - 1.069910I$ $b = 1.97152 - 0.78996I$	$16.6895 + 0.2053I$	0
$u = 0.902391 - 0.951587I$ $a = 0.047768 + 1.069910I$ $b = 1.97152 + 0.78996I$	$16.6895 - 0.2053I$	0
$u = -0.936676 + 0.920511I$ $a = -1.11522 - 1.81897I$ $b = -3.01179 + 1.07212I$	$15.9561 + 1.1091I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.936676 - 0.920511I$ $a = -1.11522 + 1.81897I$ $b = -3.01179 - 1.07212I$	$15.9561 - 1.1091I$	0
$u = -0.958520 + 0.902088I$ $a = 0.73789 + 1.98899I$ $b = 2.69761 - 0.07690I$	$11.5836 + 9.0106I$	0
$u = -0.958520 - 0.902088I$ $a = 0.73789 - 1.98899I$ $b = 2.69761 + 0.07690I$	$11.5836 - 9.0106I$	0
$u = -0.948403 + 0.914191I$ $a = 0.16245 - 1.67524I$ $b = -3.04131 - 1.20975I$	$15.9177 + 5.6422I$	0
$u = -0.948403 - 0.914191I$ $a = 0.16245 + 1.67524I$ $b = -3.04131 + 1.20975I$	$15.9177 - 5.6422I$	0
$u = -0.981573 + 0.901998I$ $a = -0.76506 - 2.45787I$ $b = -3.56067 - 0.50087I$	$17.0389 + 15.3461I$	0
$u = -0.981573 - 0.901998I$ $a = -0.76506 + 2.45787I$ $b = -3.56067 + 0.50087I$	$17.0389 - 15.3461I$	0
$u = 0.988719 + 0.902991I$ $a = 0.98242 - 1.12974I$ $b = 2.00991 + 0.63394I$	$16.4045 - 7.0166I$	0
$u = 0.988719 - 0.902991I$ $a = 0.98242 + 1.12974I$ $b = 2.00991 - 0.63394I$	$16.4045 + 7.0166I$	0
$u = 0.656202 + 0.074693I$ $a = -0.19941 + 2.76051I$ $b = 0.712381 - 1.203220I$	$0.647228 - 0.175412I$	$27.9047 - 7.2168I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.656202 - 0.074693I$ $a = -0.19941 - 2.76051I$ $b = 0.712381 + 1.203220I$	$0.647228 + 0.175412I$	$27.9047 + 7.2168I$
$u = 0.025083 + 0.412212I$ $a = -0.276764 + 0.598990I$ $b = 0.383965 + 0.619009I$	$0.08844 - 1.51243I$	$0.26581 + 4.27826I$
$u = 0.025083 - 0.412212I$ $a = -0.276764 - 0.598990I$ $b = 0.383965 - 0.619009I$	$0.08844 + 1.51243I$	$0.26581 - 4.27826I$
$u = -0.305765 + 0.261881I$ $a = -4.05933 - 1.09380I$ $b = -0.900970 + 0.336871I$	$2.53402 - 0.11660I$	$3.78096 - 2.55604I$
$u = -0.305765 - 0.261881I$ $a = -4.05933 + 1.09380I$ $b = -0.900970 - 0.336871I$	$2.53402 + 0.11660I$	$3.78096 + 2.55604I$

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^2-u \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^2-u \\ u^2+u+1 \end{pmatrix}$$

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

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

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

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.662359 + 0.562280I$ $b = 1.00000$	$4.66906 + 2.82812I$	$4.21508 - 1.30714I$
$u = -0.877439 - 0.744862I$ $a = 0.662359 - 0.562280I$ $b = 1.00000$	$4.66906 - 2.82812I$	$4.21508 + 1.30714I$
$u = 0.754878$ $a = -1.32472$ $b = 1.00000$	0.531480	4.56980

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u^3 - u^2 + 2u - 1)(u^{65} + 12u^{64} + \cdots + 7u + 1)$
c_2	$(u^3 + u^2 - 1)(u^{65} - 2u^{64} + \cdots - 3u + 1)$
c_3	$(u^3 - 2u^2 + u - 1)(u^{65} + 3u^{64} + \cdots - 742u + 44)$
c_4	$(u^3 - 2u^2 + u - 1)(u^{65} + u^{64} + \cdots + 432488u + 133561)$
c_6	$(u^3 - u^2 + 1)(u^{65} - 2u^{64} + \cdots - 3u + 1)$
c_7, c_8	$(u^3 + u^2 + 2u + 1)(u^{65} + 12u^{64} + \cdots + 7u + 1)$
c_9	$((u + 1)^3)(u^{65} + 4u^{64} + \cdots + 24u + 1)$
c_{10}	$u^3(u^{65} - 11u^{64} + \cdots + 20u - 8)$
c_{11}	$((u - 1)^3)(u^{65} + 4u^{64} + \cdots + 24u + 1)$
c_{12}	$(u^3 - u^2 + 2u - 1)(u^{65} + 4u^{64} + \cdots + u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_7 c_8	$(y^3+3y^2+2y-1)(y^{65}+84y^{64}+\cdots-5y-1)$
c_2, c_6	$(y^3-y^2+2y-1)(y^{65}-12y^{64}+\cdots+7y-1)$
c_3	$(y^3-2y^2-3y-1)(y^{65}+83y^{64}+\cdots-100900y-1936)$
c_4	(y^3-2y^2-3y-1) $\cdot(y^{65}+19y^{64}+\cdots+435178968530y-17838540721)$
c_9, c_{11}	$((y-1)^3)(y^{65}-54y^{64}+\cdots+1032y-1)$
c_{10}	$y^3(y^{65}+21y^{64}+\cdots+464y-64)$
c_{12}	$(y^3+3y^2+2y-1)(y^{65}-8y^{64}+\cdots+7y-1)$