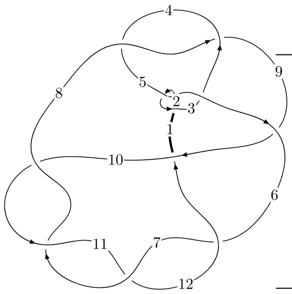
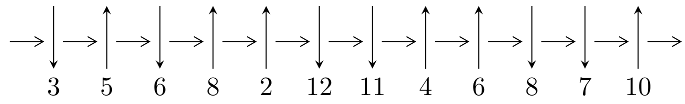
$12n_{0048}$ ($K12n_{0048}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{31} - 2u^{30} + \cdots + 2b + 2u,\ u^{30} - 2u^{29} + \cdots + 2a + 4,\ u^{32} - 3u^{31} + \cdots - 4u + 1\rangle$$
$$I_2^u = \langle -au + b - u,\ u^3a - u^2a - u^3 + a^2 + 3au - 2u,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 40 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.

$$\boldsymbol{I^u_1 = \langle u^{31}-2u^{30}+\cdots+2b+2u,\ u^{30}-2u^{29}+\cdots+2a+4,\ u^{32}-3u^{31}+\cdots-4u+1\rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{30} + u^{29} + \cdots - 2u - 2 \\ -\frac{1}{2}u^{31} + u^{30} + \cdots - 2u^2 - u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{5}{2}u^{31} - \frac{13}{2}u^{30} + \cdots + 15u - 4 \\ \frac{1}{2}u^{31} - 2u^{30} + \cdots + 3u - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{31} - \frac{7}{2}u^{30} + \cdots + 12u - 4 \\ -\frac{1}{2}u^{31} + u^{30} + \cdots - 4u^2 - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^7 + 4u^5 + 4u^3 \\ u^9 + 5u^7 + 7u^5 + 2u^3 + u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{3}{2}u^{31} - \frac{9}{2}u^{30} + \cdots + 12u - 3 \\ -\frac{1}{2}u^{31} + u^{30} + \cdots - 4u^2 - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^5 + 2u^3 - u \\ -u^5 - 3u^3 - u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^3 + 2u \\ u^5 + 3u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{5}{2}u^{31} - 6u^{30} + \cdots - 4u + \frac{11}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{32}+21u^{31}+\cdots+16u+1$
c_2, c_5	$u^{32}+5u^{31}+\cdots+8u+1$
c_3	$u^{32}-5u^{31}+\cdots+8u^2+1$
c_4, c_8	$u^{32}-u^{31}+\cdots+128u+256$
c_6, c_7, c_{10} c_{11}	$u^{32}-3u^{31}+\cdots-4u+1$
c_9	$u^{32}-3u^{31}+\cdots-10410u+8329$
c_{12}	$u^{32}+3u^{31}+\cdots+8u^2+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{32} - 15y^{31} + \cdots + 432y + 1$
c_2, c_5	$y^{32} + 21y^{31} + \cdots + 16y + 1$
c_3	$y^{32} - 51y^{31} + \cdots + 16y + 1$
c_4, c_8	$y^{32} + 45y^{31} + \cdots + 475136y + 65536$
c_6, c_7, c_{10} c_{11}	$y^{32} + 35y^{31} + \cdots + 16y + 1$
c_9	$y^{32} + 63y^{31} + \cdots + 4526986928y + 69372241$
c_{12}	$y^{32} + 43y^{31} + \cdots + 16y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.712603 + 0.575097I$ $a = 1.17357 + 2.13596I$ $b = -0.53596 + 1.34356I$	$-12.5938 - 8.0140I$	$-3.11734 + 5.63402I$
$u = 0.712603 - 0.575097I$ $a = 1.17357 - 2.13596I$ $b = -0.53596 - 1.34356I$	$-12.5938 + 8.0140I$	$-3.11734 - 5.63402I$
$u = 0.744220 + 0.468541I$ $a = -0.60836 - 1.69690I$ $b = -0.49608 - 1.36523I$	$-12.91530 + 3.15697I$	$-3.83308 - 0.28463I$
$u = 0.744220 - 0.468541I$ $a = -0.60836 + 1.69690I$ $b = -0.49608 + 1.36523I$	$-12.91530 - 3.15697I$	$-3.83308 + 0.28463I$
$u = 0.701586 + 0.517087I$ $a = -0.496748 + 0.685785I$ $b = -1.054030 - 0.033443I$	$-8.50888 - 2.34942I$	$-0.92927 + 2.77248I$
$u = 0.701586 - 0.517087I$ $a = -0.496748 - 0.685785I$ $b = -1.054030 + 0.033443I$	$-8.50888 + 2.34942I$	$-0.92927 - 2.77248I$
$u = -0.490239 + 0.668149I$ $a = 1.72439 - 1.21578I$ $b = -0.125255 - 1.087690I$	$-2.20368 + 2.67014I$	$-2.97925 - 3.94706I$
$u = -0.490239 - 0.668149I$ $a = 1.72439 + 1.21578I$ $b = -0.125255 + 1.087690I$	$-2.20368 - 2.67014I$	$-2.97925 + 3.94706I$
$u = -0.599531 + 0.288987I$ $a = 0.01061 + 2.20427I$ $b = 0.026786 + 1.136550I$	$-3.37323 + 1.08981I$	$-5.51512 - 2.69237I$
$u = -0.599531 - 0.288987I$ $a = 0.01061 - 2.20427I$ $b = 0.026786 - 1.136550I$	$-3.37323 - 1.08981I$	$-5.51512 + 2.69237I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.14693 + 1.41081I$ $a = -0.351474 + 1.272230I$ $b = 0.195534 + 1.213220I$	$2.00066 + 3.66255I$	$0. - 3.26134I$
$u = -0.14693 - 1.41081I$ $a = -0.351474 - 1.272230I$ $b = 0.195534 - 1.213220I$	$2.00066 - 3.66255I$	$0. + 3.26134I$
$u = -0.294946 + 0.485626I$ $a = 0.628330 - 0.123530I$ $b = -0.164482 + 0.198738I$	$0.031344 + 1.111830I$	$0.46087 - 6.46007I$
$u = -0.294946 - 0.485626I$ $a = 0.628330 + 0.123530I$ $b = -0.164482 - 0.198738I$	$0.031344 - 1.111830I$	$0.46087 + 6.46007I$
$u = 0.05664 + 1.45455I$ $a = -1.51625 - 0.70222I$ $b = 0.648137 - 1.003850I$	$5.53715 - 3.59224I$	$0. + 2.25541I$
$u = 0.05664 - 1.45455I$ $a = -1.51625 + 0.70222I$ $b = 0.648137 + 1.003850I$	$5.53715 + 3.59224I$	$0. - 2.25541I$
$u = -0.01210 + 1.48445I$ $a = -0.270899 - 0.532093I$ $b = 0.656453 + 0.503553I$	$6.89090 + 1.46785I$	$4.83746 - 2.83876I$
$u = -0.01210 - 1.48445I$ $a = -0.270899 + 0.532093I$ $b = 0.656453 - 0.503553I$	$6.89090 - 1.46785I$	$4.83746 + 2.83876I$
$u = 0.26257 + 1.48581I$ $a = -0.261839 - 0.635491I$ $b = -0.44075 - 1.37939I$	$-6.59902 - 0.50025I$	0
$u = 0.26257 - 1.48581I$ $a = -0.261839 + 0.635491I$ $b = -0.44075 + 1.37939I$	$-6.59902 + 0.50025I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.23235 + 1.52047I$ $a = 0.332026 + 0.658818I$ $b = -1.044910 - 0.104621I$	$-1.84666 - 5.75102I$	0
$u = 0.23235 - 1.52047I$ $a = 0.332026 - 0.658818I$ $b = -1.044910 + 0.104621I$	$-1.84666 + 5.75102I$	0
$u = -0.07381 + 1.55331I$ $a = 0.782474 - 0.225010I$ $b = -0.293198 + 0.473940I$	$7.02752 + 2.34797I$	0
$u = -0.07381 - 1.55331I$ $a = 0.782474 + 0.225010I$ $b = -0.293198 - 0.473940I$	$7.02752 - 2.34797I$	0
$u = 0.038702 + 0.442217I$ $a = 0.809540 - 1.072710I$ $b = 0.420247 + 0.724423I$	$0.54316 + 1.39338I$	$5.51393 - 4.82316I$
$u = 0.038702 - 0.442217I$ $a = 0.809540 + 1.072710I$ $b = 0.420247 - 0.724423I$	$0.54316 - 1.39338I$	$5.51393 + 4.82316I$
$u = 0.23771 + 1.55222I$ $a = 1.49649 + 1.06121I$ $b = -0.56783 + 1.31462I$	$-5.59324 - 11.51330I$	0
$u = 0.23771 - 1.55222I$ $a = 1.49649 - 1.06121I$ $b = -0.56783 - 1.31462I$	$-5.59324 + 11.51330I$	0
$u = -0.12413 + 1.59090I$ $a = 1.46814 - 0.31922I$ $b = -0.237070 - 1.031430I$	$5.45590 + 4.87027I$	0
$u = -0.12413 - 1.59090I$ $a = 1.46814 + 0.31922I$ $b = -0.237070 + 1.031430I$	$5.45590 - 4.87027I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.255308 + 0.267111I$ $a = -1.91999 - 2.90858I$ $b = 0.512407 - 0.945593I$	$-0.17176 - 2.59226I$	$1.49287 + 0.71136I$
$u = 0.255308 - 0.267111I$ $a = -1.91999 + 2.90858I$ $b = 0.512407 + 0.945593I$	$-0.17176 + 2.59226I$	$1.49287 - 0.71136I$

II.

$$\boldsymbol{I_2^u = \langle -au + b - u,\ u^3a - u^2a - u^3 + a^2 + 3au - 2u,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} a \\ au + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^3 - au - u^2 + a + 2u \\ au + u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^3 - u^2 + a + 3u - 1 \\ au + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^3 - u^2 + 2u - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^3 - au - u^2 + a + 2u \\ au + u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 + 1 \\ u^3 - u^2 + 2u - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^3 + 2u \\ u^3 - u^2 + 2u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^2a + 4u^3 - 4au - 3u^2 - a + 7u - 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2 + y + 1)^4$
c_4, c_8	y^8
c_6, c_7, c_{10} c_{11}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^2$
c_9, c_{12}	$(y^4 + y^3 + 3y^2 + 2y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = 0.541116 + 0.214920I$ $b = 0.500000 + 0.866025I$	$-0.211005 + 0.614778I$	$-2.00436 + 1.31849I$
$u = 0.395123 + 0.506844I$ $a = -1.58443 - 1.44211I$ $b = 0.500000 - 0.866025I$	$-0.21101 - 3.44499I$	$0.99907 + 9.21934I$
$u = 0.395123 - 0.506844I$ $a = 0.541116 - 0.214920I$ $b = 0.500000 - 0.866025I$	$-0.211005 - 0.614778I$	$-2.00436 - 1.31849I$
$u = 0.395123 - 0.506844I$ $a = -1.58443 + 1.44211I$ $b = 0.500000 + 0.866025I$	$-0.21101 + 3.44499I$	$0.99907 - 9.21934I$
$u = 0.10488 + 1.55249I$ $a = -0.423047 - 0.283088I$ $b = 0.500000 + 0.866025I$	$6.79074 - 1.13408I$	$1.85285 - 1.30164I$
$u = 0.10488 + 1.55249I$ $a = -1.53364 - 0.35811I$ $b = 0.500000 - 0.866025I$	$6.79074 - 5.19385I$	$5.65243 + 5.51994I$
$u = 0.10488 - 1.55249I$ $a = -0.423047 + 0.283088I$ $b = 0.500000 - 0.866025I$	$6.79074 + 1.13408I$	$1.85285 + 1.30164I$
$u = 0.10488 - 1.55249I$ $a = -1.53364 + 0.35811I$ $b = 0.500000 + 0.866025I$	$6.79074 + 5.19385I$	$5.65243 - 5.51994I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{32}+21u^{31}+\cdots+16u+1)$
c_2	$((u^2+u+1)^4)(u^{32}+5u^{31}+\cdots+8u+1)$
c_3	$((u^2-u+1)^4)(u^{32}-5u^{31}+\cdots+8u^2+1)$
c_4, c_8	$u^8(u^{32}-u^{31}+\cdots+128u+256)$
c_5	$((u^2-u+1)^4)(u^{32}+5u^{31}+\cdots+8u+1)$
c_6, c_7	$((u^4-u^3+3u^2-2u+1)^2)(u^{32}-3u^{31}+\cdots-4u+1)$
c_9	$((u^4+u^3+u^2+1)^2)(u^{32}-3u^{31}+\cdots-10410u+8329)$
c_{10}, c_{11}	$((u^4+u^3+3u^2+2u+1)^2)(u^{32}-3u^{31}+\cdots-4u+1)$
c_{12}	$((u^4+u^3+u^2+1)^2)(u^{32}+3u^{31}+\cdots+8u^2+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{32}-15y^{31}+\cdots+432y+1)$
c_2, c_5	$((y^2+y+1)^4)(y^{32}+21y^{31}+\cdots+16y+1)$
c_3	$((y^2+y+1)^4)(y^{32}-51y^{31}+\cdots+16y+1)$
c_4, c_8	$y^8(y^{32}+45y^{31}+\cdots+475136y+65536)$
c_6, c_7, c_{10} c_{11}	$((y^4+5y^3+7y^2+2y+1)^2)(y^{32}+35y^{31}+\cdots+16y+1)$
c_9	$(y^4+y^3+3y^2+2y+1)^2$ $\cdot(y^{32}+63y^{31}+\cdots+4526986928y+69372241)$
c_{12}	$((y^4+y^3+3y^2+2y+1)^2)(y^{32}+43y^{31}+\cdots+16y+1)$