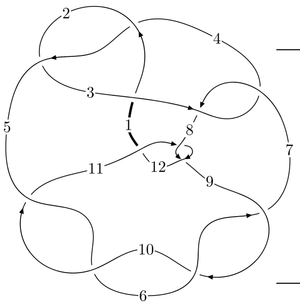
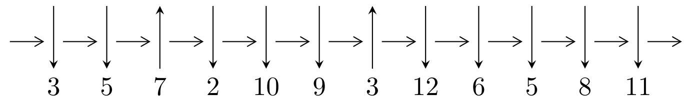
$12n_{0215}$ ($K12n_{0215}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 3.05834 \times 10^{15} u^{34} - 7.90175 \times 10^{15} u^{33} + \cdots + 2.09912 \times 10^{16} b + 1.74277 \times 10^{16},$$
$$7.98092 \times 10^{16} u^{34} - 1.40145 \times 10^{17} u^{33} + \cdots + 6.29736 \times 10^{16} a + 1.13113 \times 10^{17},\ u^{35} - 2u^{34} + \cdots + 2u - 1$$
$$I_2^u = \langle b + 1,\ 4u^4 - 3u^3 + 16u^2 + 3a - 8u + 10,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle$$

* 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.

$\boldsymbol{I_1^u = \langle 3.06\times 10^{15}u^{34} - 7.90\times 10^{15}u^{33} + \cdots + 2.10\times 10^{16}b + 1.74\times 10^{16},\ 7.98\times 10^{16}u^{34} - 1.40\times 10^{17}u^{33} + \cdots + 6.30\times 10^{16}a + 1.13\times 10^{17},\ u^{35} - 2u^{34} + \cdots + 2u - 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.26734u^{34} + 2.22546u^{33} + \cdots - 0.810928u - 1.79619 \\ -0.145696u^{34} + 0.376432u^{33} + \cdots - 1.05037u - 0.830238 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -1.41304u^{34} + 2.60189u^{33} + \cdots - 1.86130u - 2.62643 \\ -0.145696u^{34} + 0.376432u^{33} + \cdots - 1.05037u - 0.830238 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.375032u^{34} + 0.960289u^{33} + \cdots - 0.228111u - 1.08728 \\ 0.0296343u^{34} - 0.108392u^{33} + \cdots - 0.0371536u - 0.0245560 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.24493u^{34} + 2.18658u^{33} + \cdots - 1.42273u - 1.62947 \\ -0.161215u^{34} + 0.434551u^{33} + \cdots - 1.04853u - 0.806713 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.367678u^{34} + 0.886943u^{33} + \cdots - 0.895712u - 0.926179 \\ 0.0213029u^{34} - 0.0716902u^{33} + \cdots - 1.30130u + 0.337244 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.367678u^{34} + 0.886943u^{33} + \cdots - 0.895712u - 0.926179 \\ 0.0222806u^{34} - 0.0350461u^{33} + \cdots + 0.630447u - 0.185658 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $=$
$\frac{111368899656244763}{188920669770572085}u^{34} - \frac{254954201870553542}{188920669770572085}u^{33} + \cdots + \frac{234691530598543088}{37784133954114417}u - \frac{1174662391668223564}{188920669770572085}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} + 40u^{34} + \cdots + 11466u + 81$
c_2, c_4	$u^{35} - 6u^{34} + \cdots + 102u - 9$
c_3, c_7	$u^{35} - 3u^{34} + \cdots + 768u + 288$
c_5, c_6, c_9 c_{10}	$u^{35} - 2u^{34} + \cdots + 2u - 1$
c_8, c_{11}	$u^{35} + 2u^{34} + \cdots - 2u - 1$
c_{12}	$u^{35} + 24u^{34} + \cdots + 12u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} - 84y^{34} + \cdots + 90434070y - 6561$
c_2, c_4	$y^{35} - 40y^{34} + \cdots + 11466y - 81$
c_3, c_7	$y^{35} + 33y^{34} + \cdots + 935424y - 82944$
c_5, c_6, c_9 c_{10}	$y^{35} + 36y^{34} + \cdots + 12y - 1$
c_8, c_{11}	$y^{35} - 24y^{34} + \cdots + 12y - 1$
c_{12}	$y^{35} - 24y^{34} + \cdots + 308y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.823932 + 0.577808I$ $a = -0.155370 - 0.797556I$ $b = 1.65857 - 0.14735I$	$-11.98490 + 3.28428I$	$-11.99097 - 0.69750I$
$u = 0.823932 - 0.577808I$ $a = -0.155370 + 0.797556I$ $b = 1.65857 + 0.14735I$	$-11.98490 - 3.28428I$	$-11.99097 + 0.69750I$
$u = -0.845135 + 0.556282I$ $a = 0.064458 + 0.876271I$ $b = 1.57251 - 0.09566I$	$-7.58978 + 2.78007I$	$-9.93716 - 2.70438I$
$u = -0.845135 - 0.556282I$ $a = 0.064458 - 0.876271I$ $b = 1.57251 + 0.09566I$	$-7.58978 - 2.78007I$	$-9.93716 + 2.70438I$
$u = 0.826909 + 0.535223I$ $a = 0.160633 - 1.094940I$ $b = 1.67277 + 0.32231I$	$-12.1055 - 8.7330I$	$-11.74675 + 5.60158I$
$u = 0.826909 - 0.535223I$ $a = 0.160633 + 1.094940I$ $b = 1.67277 - 0.32231I$	$-12.1055 + 8.7330I$	$-11.74675 - 5.60158I$
$u = -0.219192 + 0.760543I$ $a = 0.413862 + 0.000591I$ $b = 0.381823 + 0.140239I$	$1.26028 + 2.02659I$	$-0.48961 - 4.26135I$
$u = -0.219192 - 0.760543I$ $a = 0.413862 - 0.000591I$ $b = 0.381823 - 0.140239I$	$1.26028 - 2.02659I$	$-0.48961 + 4.26135I$
$u = -0.107525 + 1.257610I$ $a = 1.49280 - 1.31844I$ $b = -1.77830 + 0.61280I$	$-2.63751 + 2.36122I$	$-11.77236 - 2.92931I$
$u = -0.107525 - 1.257610I$ $a = 1.49280 + 1.31844I$ $b = -1.77830 - 0.61280I$	$-2.63751 - 2.36122I$	$-11.77236 + 2.92931I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.048161 + 1.339420I$ $a = 0.150468 + 1.217930I$ $b = -1.223220 - 0.264994I$	$2.04451 - 1.19616I$	$-3.22654 + 0.68114I$
$u = 0.048161 - 1.339420I$ $a = 0.150468 - 1.217930I$ $b = -1.223220 + 0.264994I$	$2.04451 + 1.19616I$	$-3.22654 - 0.68114I$
$u = 0.537614 + 0.278615I$ $a = -0.194970 + 0.880512I$ $b = -0.777018 - 1.038680I$	$-4.08309 - 3.66975I$	$-13.2607 + 6.9860I$
$u = 0.537614 - 0.278615I$ $a = -0.194970 - 0.880512I$ $b = -0.777018 + 1.038680I$	$-4.08309 + 3.66975I$	$-13.2607 - 6.9860I$
$u = 0.07172 + 1.41763I$ $a = 1.40227 + 1.58971I$ $b = -0.568896 - 0.136236I$	$2.34289 - 0.25916I$	$-8.00000 - 1.73801I$
$u = 0.07172 - 1.41763I$ $a = 1.40227 - 1.58971I$ $b = -0.568896 + 0.136236I$	$2.34289 + 0.25916I$	$-8.00000 + 1.73801I$
$u = 0.18444 + 1.40762I$ $a = 0.09162 + 2.08933I$ $b = -0.46414 - 1.41482I$	$1.31340 - 6.28579I$	$-8.00000 + 6.17936I$
$u = 0.18444 - 1.40762I$ $a = 0.09162 - 2.08933I$ $b = -0.46414 + 1.41482I$	$1.31340 + 6.28579I$	$-8.00000 - 6.17936I$
$u = -0.13397 + 1.43446I$ $a = 0.24966 - 1.49398I$ $b = -0.263513 + 0.834456I$	$5.13989 + 3.03126I$	$0. - 3.33629I$
$u = -0.13397 - 1.43446I$ $a = 0.24966 + 1.49398I$ $b = -0.263513 - 0.834456I$	$5.13989 - 3.03126I$	$0. + 3.33629I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.544097$ $a=-0.567908$ $b=-1.72921$	-6.34482	-17.4700
$u=-0.383769+0.315386I$ $a=\ \ 0.415262-1.043400I$ $b=-0.449868+0.371769I$	$-0.534568+1.131870I$	$-6.35643-6.10930I$
$u=-0.383769-0.315386I$ $a=\ \ 0.415262+1.043400I$ $b=-0.449868-0.371769I$	$-0.534568-1.131870I$	$-6.35643+6.10930I$
$u=\ \ 0.273233+0.399953I$ $a=\ \ 3.06116+1.12201I$ $b=-0.847017+0.385254I$	$-3.28792+0.94378I$	$-10.44072+4.60691I$
$u=\ \ 0.273233-0.399953I$ $a=\ \ 3.06116-1.12201I$ $b=-0.847017-0.385254I$	$-3.28792-0.94378I$	$-10.44072-4.60691I$
$u=\ \ 0.30180+1.54032I$ $a=-0.90061-1.57197I$ $b=\ \ 1.62707+0.48300I$	$-5.36857-12.88450I$	0
$u=\ \ 0.30180-1.54032I$ $a=-0.90061+1.57197I$ $b=\ \ 1.62707-0.48300I$	$-5.36857+12.88450I$	0
$u=-0.31717+1.54997I$ $a=-0.84603+1.20335I$ $b=\ \ 1.51007-0.28880I$	$-0.76082+7.07720I$	0
$u=-0.31717-1.54997I$ $a=-0.84603-1.20335I$ $b=\ \ 1.51007+0.28880I$	$-0.76082-7.07720I$	0
$u=\ \ 0.30705+1.57204I$ $a=-1.108790-0.870354I$ $b=\ \ 1.56930+0.03692I$	$-4.96905-0.92386I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.30705 - 1.57204I$ $a = -1.108790 + 0.870354I$ $b = 1.56930 - 0.03692I$	$-4.96905 + 0.92386I$	0
$u = -0.393303$ $a = 1.22750$ $b = 0.0923140$	-0.995121	-10.5770
$u = -0.06492 + 1.66171I$ $a = -0.365988 - 0.087264I$ $b = 0.749270 + 0.127452I$	$9.76537 + 3.12159I$	0
$u = -0.06492 - 1.66171I$ $a = -0.365988 + 0.087264I$ $b = 0.749270 - 0.127452I$	$9.76537 - 3.12159I$	0
$u = 0.331033$ $a = -3.18710$ $b = -1.10194$	-2.12637	-0.370270

II.

$$\boldsymbol{I^u_2 = \langle b+1,\ 4u^4 - 3u^3 + 16u^2 + 3a - 8u + 10,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{4}{3}u^4 + u^3 + \cdots + \frac{8}{3}u - \frac{10}{3} \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{4}{3}u^4 + u^3 + \cdots + \frac{8}{3}u - \frac{13}{3} \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{4}{3}u^4 + u^3 + \cdots + \frac{8}{3}u - \frac{10}{3} \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 - 1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{58}{9}u^4 + \frac{13}{3}u^3 - \frac{211}{9}u^2 + \frac{128}{9}u - \frac{223}{9}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^5$
c_3, c_7	y^5
c_5, c_6, c_9 c_{10}, c_{12}	$y^5+7y^4+16y^3+13y^2+3y-1$
c_8, c_{11}	$y^5-y^4+4y^3-3y^2+3y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.233677 + 0.885557I$ $a = 0.162657 + 0.410020I$ $b = -1.00000$	$0.17487 - 2.21397I$	$-9.00284 + 4.40290I$
$u = 0.233677 - 0.885557I$ $a = 0.162657 - 0.410020I$ $b = -1.00000$	$0.17487 + 2.21397I$	$-9.00284 - 4.40290I$
$u = 0.416284$ $a = -3.11537$ $b = -1.00000$	-2.52712	-22.8010
$u = 0.05818 + 1.69128I$ $a = 0.728361 + 0.139255I$ $b = -1.00000$	$9.31336 - 3.33174I$	$-11.48557 + 5.79761I$
$u = 0.05818 - 1.69128I$ $a = 0.728361 - 0.139255I$ $b = -1.00000$	$9.31336 + 3.33174I$	$-11.48557 - 5.79761I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^{35}+40u^{34}+\cdots+11466u+81)$
c_2	$((u-1)^5)(u^{35}-6u^{34}+\cdots+102u-9)$
c_3, c_7	$u^5(u^{35}-3u^{34}+\cdots+768u+288)$
c_4	$((u+1)^5)(u^{35}-6u^{34}+\cdots+102u-9)$
c_5, c_6	$(u^5-u^4+4u^3-3u^2+3u-1)(u^{35}-2u^{34}+\cdots+2u-1)$
c_8	$(u^5-u^4+u^2+u-1)(u^{35}+2u^{34}+\cdots-2u-1)$
c_9, c_{10}	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{35}-2u^{34}+\cdots+2u-1)$
c_{11}	$(u^5+u^4-u^2+u+1)(u^{35}+2u^{34}+\cdots-2u-1)$
c_{12}	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{35}+24u^{34}+\cdots+12u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^5)(y^{35} - 84y^{34} + \cdots + 90434070y - 6561)$
c_2, c_4	$((y-1)^5)(y^{35} - 40y^{34} + \cdots + 11466y - 81)$
c_3, c_7	$y^5(y^{35} + 33y^{34} + \cdots + 935424y - 82944)$
c_5, c_6, c_9 c_{10}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)(y^{35} + 36y^{34} + \cdots + 12y - 1)$
c_8, c_{11}	$(y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1)(y^{35} - 24y^{34} + \cdots + 12y - 1)$
c_{12}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)(y^{35} - 24y^{34} + \cdots + 308y - 1)$