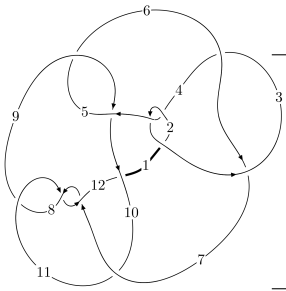
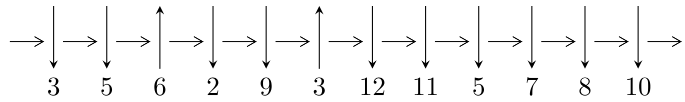
$12n_{0108}$ ($K12n_{0108}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-9.27106 \times 10^{41} u^{40} - 5.88994 \times 10^{42} u^{39} + \cdots + 9.61206 \times 10^{40} b - 6.11993 \times 10^{41}, \\
&- 6.34476 \times 10^{41} u^{40} - 4.08468 \times 10^{42} u^{39} + \cdots + 9.61206 \times 10^{40} a - 1.64646 \times 10^{42}, \\
&u^{41} + 8u^{40} + \cdots + 34u + 1 \rangle \\
I_2^u = \langle &a^2 + b - a + 2,\ a^3 + 2a + 1,\ u - 1 \rangle \\
I_3^u = \langle &a^3 - a^2 + b + a - 2,\ a^4 - a^3 + 2a^2 - 2a + 1,\ u - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 48 representations.

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[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. $\boldsymbol{I_1^u = \langle -9.27 \times 10^{41} u^{40} - 5.89 \times 10^{42} u^{39} + \cdots + 9.61 \times 10^{40} b - 6.12 \times 10^{41},\ -6.34 \times 10^{41} u^{40} - 4.08 \times 10^{42} u^{39} + \cdots + 9.61 \times 10^{40} a - 1.65 \times 10^{42},\ u^{41} + 8u^{40} + \cdots + 34u + 1 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 6.60083u^{40} + 42.4953u^{39} + \cdots + 119.918u + 17.1291 \\ 9.64523u^{40} + 61.2765u^{39} + \cdots + 197.232u + 6.36693 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 6.60083u^{40} + 42.4953u^{39} + \cdots + 119.918u + 17.1291 \\ -7.48281u^{40} - 47.2910u^{39} + \cdots - 146.752u - 3.94440 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1.00706u^{40} - 6.01141u^{39} + \cdots - 9.30914u + 5.53712 \\ 1.60537u^{40} + 9.92359u^{39} + \cdots + 28.7480u + 1.03801 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.598315u^{40} + 3.91218u^{39} + \cdots + 19.4389u + 6.57513 \\ 1.60537u^{40} + 9.92359u^{39} + \cdots + 28.7480u + 1.03801 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 4.48614u^{40} + 28.6835u^{39} + \cdots + 68.1177u + 12.1782 \\ -6.77071u^{40} - 42.6663u^{39} + \cdots - 132.736u - 3.61078 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2.18696u^{40} + 13.8857u^{39} + \cdots + 34.8186u + 9.92100 \\ -0.720306u^{40} - 4.14288u^{39} + \cdots - 11.5196u - 0.0728726 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.598315u^{40} - 3.91218u^{39} + \cdots - 19.4389u - 6.57513 \\ 1.49635u^{40} + 9.28064u^{39} + \cdots + 32.3421u + 0.715717 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8.64366u^{40} + 54.7705u^{39} + \cdots + 150.271u - 7.40030$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{41} + 50u^{40} + \cdots + 1026u + 1$
c_2, c_4	$u^{41} - 8u^{40} + \cdots + 34u - 1$
c_3, c_6	$u^{41} + 7u^{40} + \cdots + 448u + 128$
c_5, c_9	$u^{41} + 2u^{40} + \cdots - u - 1$
c_7, c_8, c_{11}	$u^{41} - 2u^{40} + \cdots - 3u - 1$
c_{10}	$u^{41} + 2u^{40} + \cdots - 240u - 36$
c_{12}	$u^{41} - 12u^{40} + \cdots - 467u + 163$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{41} - 110y^{40} + \cdots + 1177934y - 1$
c_2, c_4	$y^{41} - 50y^{40} + \cdots + 1026y - 1$
c_3, c_6	$y^{41} + 45y^{40} + \cdots + 520192y - 16384$
c_5, c_9	$y^{41} + 42y^{39} + \cdots + 11y - 1$
c_7, c_8, c_{11}	$y^{41} + 36y^{40} + \cdots + 11y - 1$
c_{10}	$y^{41} - 12y^{40} + \cdots + 7992y - 1296$
c_{12}	$y^{41} - 12y^{40} + \cdots + 2120951y - 26569$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.023890 + 0.144827I$ $a = -0.114598 + 0.492587I$ $b = -0.25937 - 2.41362I$	$1.10253 + 2.40302I$	$-1.4441 - 16.6541I$
$u = 1.023890 - 0.144827I$ $a = -0.114598 - 0.492587I$ $b = -0.25937 + 2.41362I$	$1.10253 - 2.40302I$	$-1.4441 + 16.6541I$
$u = 1.09654$ $a = 0.432301$ $b = 1.83917$	-2.21383	3.32100
$u = 0.799614 + 0.163499I$ $a = 0.305351 - 0.647956I$ $b = 0.24502 + 1.73105I$	$-2.56053 - 0.52413I$	$-15.2569 - 4.2496I$
$u = 0.799614 - 0.163499I$ $a = 0.305351 + 0.647956I$ $b = 0.24502 - 1.73105I$	$-2.56053 + 0.52413I$	$-15.2569 + 4.2496I$
$u = 0.618990 + 0.472493I$ $a = -0.934348 - 0.002226I$ $b = -0.492958 + 0.445400I$	$-0.79846 - 1.42488I$	$-6.70258 + 4.89942I$
$u = 0.618990 - 0.472493I$ $a = -0.934348 + 0.002226I$ $b = -0.492958 - 0.445400I$	$-0.79846 + 1.42488I$	$-6.70258 - 4.89942I$
$u = 0.654305 + 0.324584I$ $a = -0.185932 + 0.902814I$ $b = 0.19586 - 1.59294I$	$1.89593 - 3.76450I$	$-6.51510 - 0.37648I$
$u = 0.654305 - 0.324584I$ $a = -0.185932 - 0.902814I$ $b = 0.19586 + 1.59294I$	$1.89593 + 3.76450I$	$-6.51510 + 0.37648I$
$u = 0.024088 + 0.729003I$ $a = 0.975104 - 0.793348I$ $b = 0.015225 - 0.189698I$	$4.22621 - 1.38545I$	$-1.96542 + 3.48117I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.024088 - 0.729003I$ $a = 0.975104 + 0.793348I$ $b = 0.015225 + 0.189698I$	$4.22621 + 1.38545I$	$-1.96542 - 3.48117I$
$u = -0.690147 + 0.145492I$ $a = 0.04771 - 1.93802I$ $b = -0.236345 - 0.828778I$	$8.34723 - 4.89832I$	$3.94388 + 1.15377I$
$u = -0.690147 - 0.145492I$ $a = 0.04771 + 1.93802I$ $b = -0.236345 + 0.828778I$	$8.34723 + 4.89832I$	$3.94388 - 1.15377I$
$u = 0.784586 + 1.118630I$ $a = 0.619859 - 0.276128I$ $b = 0.550920 + 0.122912I$	$-3.61696 - 3.86307I$	0
$u = 0.784586 - 1.118630I$ $a = 0.619859 + 0.276128I$ $b = 0.550920 - 0.122912I$	$-3.61696 + 3.86307I$	0
$u = 1.06503 + 0.93172I$ $a = -0.595278 + 0.164576I$ $b = -0.773274 - 0.052105I$	$-0.499621 - 0.427314I$	0
$u = 1.06503 - 0.93172I$ $a = -0.595278 - 0.164576I$ $b = -0.773274 + 0.052105I$	$-0.499621 + 0.427314I$	0
$u = 0.64097 + 1.26233I$ $a = -0.593984 + 0.346167I$ $b = -0.439012 - 0.204480I$	$0.95653 - 7.53305I$	0
$u = 0.64097 - 1.26233I$ $a = -0.593984 - 0.346167I$ $b = -0.439012 + 0.204480I$	$0.95653 + 7.53305I$	0
$u = -0.546543 + 0.110125I$ $a = -0.15010 + 2.08713I$ $b = 0.113534 + 0.680577I$	$2.42231 - 1.86356I$	$-0.33827 + 3.07051I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.546543 - 0.110125I$ $a = -0.15010 - 2.08713I$ $b = 0.113534 - 0.680577I$	$2.42231 + 1.86356I$	$-0.33827 - 3.07051I$
$u = -1.52433 + 0.18776I$ $a = -0.857605 + 0.620146I$ $b = -1.95651 + 0.55267I$	$-1.30698 + 4.28669I$	0
$u = -1.52433 - 0.18776I$ $a = -0.857605 - 0.620146I$ $b = -1.95651 - 0.55267I$	$-1.30698 - 4.28669I$	0
$u = -1.64128 + 0.09999I$ $a = 0.638107 + 0.741558I$ $b = 1.78817 + 0.37849I$	$-6.19266 + 5.42860I$	0
$u = -1.64128 - 0.09999I$ $a = 0.638107 - 0.741558I$ $b = 1.78817 - 0.37849I$	$-6.19266 - 5.42860I$	0
$u = -1.68045 + 0.02735I$ $a = -0.661327 - 0.687909I$ $b = -1.85642 - 0.38244I$	$-11.48150 + 1.16744I$	0
$u = -1.68045 - 0.02735I$ $a = -0.661327 + 0.687909I$ $b = -1.85642 + 0.38244I$	$-11.48150 - 1.16744I$	0
$u = -1.68637 + 0.08037I$ $a = 0.707793 - 0.630890I$ $b = 1.93021 - 0.41903I$	$-9.39900 + 3.48257I$	0
$u = -1.68637 - 0.08037I$ $a = 0.707793 + 0.630890I$ $b = 1.93021 + 0.41903I$	$-9.39900 - 3.48257I$	0
$u = -1.69925 + 0.27352I$ $a = 0.758442 - 0.516353I$ $b = 2.04847 - 0.47151I$	$-9.49392 + 4.85059I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.69925-0.27352I$ $a=0.758442+0.516353I$ $b=2.04847+0.47151I$	$-9.49392-4.85059I$	0
$u=-1.67351+0.43283I$ $a=0.792521-0.425685I$ $b=2.12131-0.52943I$	$-6.4546+13.6928I$	0
$u=-1.67351-0.43283I$ $a=0.792521+0.425685I$ $b=2.12131+0.52943I$	$-6.4546-13.6928I$	0
$u=-1.70062+0.36989I$ $a=-0.772140+0.460082I$ $b=-2.09871+0.49854I$	$-11.6676+9.4552I$	0
$u=-1.70062-0.36989I$ $a=-0.772140-0.460082I$ $b=-2.09871-0.49854I$	$-11.6676-9.4552I$	0
$u=1.79083$ $a=-0.471299$ $b=-1.27778$	-5.96639	0
$u=1.80924+0.21929I$ $a=0.470409-0.020609I$ $b=1.266140+0.027083I$	$-2.04881-3.64658I$	0
$u=1.80924-0.21929I$ $a=0.470409+0.020609I$ $b=1.266140-0.027083I$	$-2.04881+3.64658I$	0
$u=-0.006712+0.160531I$ $a=-1.90793-3.46251I$ $b=-0.690720+0.504582I$	$3.36845+2.26324I$	$-4.13576-3.78467I$
$u=-0.006712-0.160531I$ $a=-1.90793+3.46251I$ $b=-0.690720-0.504582I$	$3.36845-2.26324I$	$-4.13576+3.78467I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.0303735$ $a = 13.9549$ $b = 0.495519$	-0.822843	-12.1130

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -11a^2 + 9a - 34$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.22670 + 1.46771I$ $b = 0.329484 + 0.802255I$	$7.79580 - 5.13794I$	$-8.82908 + 5.88938I$
$u = 1.00000$ $a = 0.22670 - 1.46771I$ $b = 0.329484 - 0.802255I$	$7.79580 + 5.13794I$	$-8.82908 - 5.88938I$
$u = 1.00000$ $a = -0.453398$ $b = -2.65897$	-2.43213	-40.3420

III. $\boldsymbol{I_3^u = \langle a^3 - a^2 + b + a - 2,\ a^4 - a^3 + 2a^2 - 2a + 1,\ u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4a^3 + 3a^2 + 4a - 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.621744 + 0.440597I$ $b = 1.69244 - 0.31815I$	$1.64493 - 2.02988I$	$-5.42268 + 5.10773I$
$u = 1.00000$ $a = 0.621744 - 0.440597I$ $b = 1.69244 + 0.31815I$	$1.64493 + 2.02988I$	$-5.42268 - 5.10773I$
$u = 1.00000$ $a = -0.121744 + 1.306620I$ $b = -0.192440 + 0.547877I$	$1.64493 + 2.02988I$	$-11.07732 - 4.41855I$
$u = 1.00000$ $a = -0.121744 - 1.306620I$ $b = -0.192440 - 0.547877I$	$1.64493 - 2.02988I$	$-11.07732 + 4.41855I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^7)(u^{41}+50u^{40}+\cdots+1026u+1)$
c_2	$((u-1)^7)(u^{41}-8u^{40}+\cdots+34u-1)$
c_3, c_6	$u^7(u^{41}+7u^{40}+\cdots+448u+128)$
c_4	$((u+1)^7)(u^{41}-8u^{40}+\cdots+34u-1)$
c_5	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{41}+2u^{40}+\cdots-u-1)$
c_7, c_8	$(u^3+2u-1)(u^4+u^3+2u^2+2u+1)(u^{41}-2u^{40}+\cdots-3u-1)$
c_9	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{41}+2u^{40}+\cdots-u-1)$
c_{10}	$((u^2-u+1)^2)(u^3+3u^2+5u+2)(u^{41}+2u^{40}+\cdots-240u-36)$
c_{11}	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{41}-2u^{40}+\cdots-3u-1)$
c_{12}	$(u^3+2u+1)(u^4-u^3+2u^2-2u+1)(u^{41}-12u^{40}+\cdots-467u+163)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^7)(y^{41} - 110y^{40} + \cdots + 1177934y - 1)$
c_2, c_4	$((y-1)^7)(y^{41} - 50y^{40} + \cdots + 1026y - 1)$
c_3, c_6	$y^7(y^{41} + 45y^{40} + \cdots + 520192y - 16384)$
c_5, c_9	$(y^3 + 4y^2 + 4y - 1)(y^4 + 3y^3 + 2y^2 + 1)(y^{41} + 42y^{39} + \cdots + 11y - 1)$
c_7, c_8, c_{11}	$(y^3 + 4y^2 + 4y - 1)(y^4 + 3y^3 + 2y^2 + 1)(y^{41} + 36y^{40} + \cdots + 11y - 1)$
c_{10}	$((y^2 + y + 1)^2)(y^3 + y^2 + 13y - 4)(y^{41} - 12y^{40} + \cdots + 7992y - 1296)$
c_{12}	$(y^3 + 4y^2 + 4y - 1)(y^4 + 3y^3 + 2y^2 + 1)$ $\cdot (y^{41} - 12y^{40} + \cdots + 2120951y - 26569)$