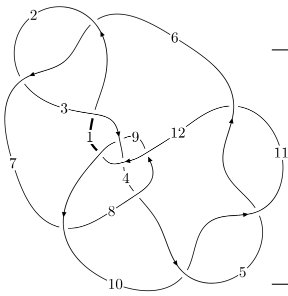
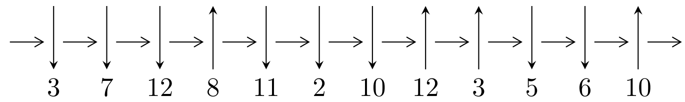
$12n_{0559}$ $(K12n_{0559})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2.74895 \times 10^{16}u^{37} + 2.53324 \times 10^{16}u^{36} + \cdots + 4.11981 \times 10^{16}b - 1.42189 \times 10^{17},$$
$$-1.62383 \times 10^{17}u^{37} + 1.68076 \times 10^{17}u^{36} + \cdots + 8.23961 \times 10^{16}a - 1.06430 \times 10^{18},\ u^{38} - u^{37} + \cdots + 7u -$$
$$I_2^u = \langle -u^5 + 2u^3 + b - u,\ -u^5 - 2u^3a + 2u^4 + u^2a + 2u^3 + a^2 + 2au - 3u^2 - a - u,\ u^6 - 3u^4 + 2u^2 + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 50 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.
$\boldsymbol{I_1^u = \langle -2.75\times10^{16}u^{37}+2.53\times10^{16}u^{36}+\cdots+4.12\times10^{16}b-1.42\times10^{17},\ -1.62\times10^{17}u^{37}+1.68\times10^{17}u^{36}+\cdots+8.24\times10^{16}a-1.06\times10^{18},\ u^{38}-u^{37}+\cdots+7u-1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^4+u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1.97076u^{37}-2.03985u^{36}+\cdots-21.0299u+12.9168 \\ 0.667251u^{37}-0.614893u^{36}+\cdots-9.05648u+3.45135 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2.02554u^{37}-1.32040u^{36}+\cdots-28.4281u+5.80356 \\ -0.659268u^{37}+0.328623u^{36}+\cdots+6.36982u-3.31602 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 3.06399u^{37}-2.12216u^{36}+\cdots-40.8760u+12.2142 \\ 0.0456579u^{37}+0.419048u^{36}+\cdots-0.102231u-1.50203 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 3.45135u^{37}-2.78410u^{36}+\cdots-45.4240u+15.1030 \\ 0.121448u^{37}+0.408171u^{36}+\cdots-0.340899u-1.30351 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1.50203u^{37}-1.54769u^{36}+\cdots-13.7795u+10.6164 \\ 0.477120u^{37}-0.620718u^{36}+\cdots-7.41211u+3.01833 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 3.57280u^{37}-2.37593u^{36}+\cdots-45.7649u+13.7995 \\ 0.121448u^{37}+0.408171u^{36}+\cdots-0.340899u-1.30351 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$$= -\frac{106268405583162365}{41198072891018797}u^{37}+\frac{98605685292409883}{41198072891018797}u^{36}+\cdots+\frac{62037259094258982}{3169082530078369}u-\frac{858011531178729634}{41198072891018797}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{38} + 25u^{37} + \cdots + 101u + 25$
c_2, c_6	$u^{38} - u^{37} + \cdots + 11u - 5$
c_3	$u^{38} - 5u^{37} + \cdots - 3u + 1$
c_4, c_9	$u^{38} - u^{37} + \cdots + 23u - 1$
c_5, c_{10}, c_{11}	$u^{38} - u^{37} + \cdots + 7u - 1$
c_7	$u^{38} - 5u^{37} + \cdots - 40603u + 13213$
c_8	$u^{38} - 3u^{37} + \cdots - u + 5$
c_{12}	$u^{38} + 3u^{37} + \cdots - 17u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{38} - 17y^{37} + \cdots - 41901y + 625$
c_2, c_6	$y^{38} - 25y^{37} + \cdots - 101y + 25$
c_3	$y^{38} - 65y^{37} + \cdots + 205y + 1$
c_4, c_9	$y^{38} + 53y^{37} + \cdots - 195y + 1$
c_5, c_{10}, c_{11}	$y^{38} - 39y^{37} + \cdots - 39y + 1$
c_7	$y^{38} - 49y^{37} + \cdots - 3299858645y + 174583369$
c_8	$y^{38} + 59y^{37} + \cdots - 201y + 25$
c_{12}	$y^{38} + 57y^{37} + \cdots - 183y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.644745 + 0.752188I$ $a = 0.801740 - 0.434056I$ $b = 0.11351 - 1.82495I$	$-13.38780 - 2.90157I$	$-9.03118 + 0.30817I$
$u = -0.644745 - 0.752188I$ $a = 0.801740 + 0.434056I$ $b = 0.11351 + 1.82495I$	$-13.38780 + 2.90157I$	$-9.03118 - 0.30817I$
$u = -0.478467 + 0.830062I$ $a = 1.281060 - 0.364339I$ $b = -0.25094 - 1.78475I$	$-12.8639 + 8.1852I$	$-8.10422 - 5.25532I$
$u = -0.478467 - 0.830062I$ $a = 1.281060 + 0.364339I$ $b = -0.25094 + 1.78475I$	$-12.8639 - 8.1852I$	$-8.10422 + 5.25532I$
$u = 0.531918 + 0.751960I$ $a = -1.088960 - 0.565285I$ $b = 0.07319 - 1.72540I$	$-8.90525 - 2.50092I$	$-5.86634 + 2.56670I$
$u = 0.531918 - 0.751960I$ $a = -1.088960 + 0.565285I$ $b = 0.07319 + 1.72540I$	$-8.90525 + 2.50092I$	$-5.86634 - 2.56670I$
$u = 0.547239 + 0.502053I$ $a = 1.267080 + 0.591264I$ $b = -0.676584 + 0.904931I$	$-3.49790 - 4.12703I$	$-9.00602 + 6.42337I$
$u = 0.547239 - 0.502053I$ $a = 1.267080 - 0.591264I$ $b = -0.676584 - 0.904931I$	$-3.49790 + 4.12703I$	$-9.00602 - 6.42337I$
$u = 0.219443 + 0.699987I$ $a = -0.037483 - 0.669697I$ $b = 0.415341 + 1.142040I$	$-2.33417 + 0.42500I$	$-7.90152 + 0.53407I$
$u = 0.219443 - 0.699987I$ $a = -0.037483 + 0.669697I$ $b = 0.415341 - 1.142040I$	$-2.33417 - 0.42500I$	$-7.90152 - 0.53407I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.263470+0.115418I$ $a=\ \ 0.155909+0.360863I$ $b=-0.480768+0.017588I$	$-2.25857+0.57001I$	$-2.81061+0.I$
$u=-1.263470-0.115418I$ $a=\ \ 0.155909-0.360863I$ $b=-0.480768-0.017588I$	$-2.25857-0.57001I$	$-2.81061+0.I$
$u=\ \ 1.280750+0.149729I$ $a=\ \ 0.851613+1.095860I$ $b=-0.202776+1.036480I$	$-5.14131-2.83687I$	$-11.03494+3.31873I$
$u=\ \ 1.280750-0.149729I$ $a=\ \ 0.851613-1.095860I$ $b=-0.202776-1.036480I$	$-5.14131+2.83687I$	$-11.03494-3.31873I$
$u=\ \ 1.300970+0.201402I$ $a=-0.050909+0.890884I$ $b=\ \ 0.1131480+0.0174250I$	$-3.00626-4.83883I$	$-4.00000+6.35067I$
$u=\ \ 1.300970-0.201402I$ $a=-0.050909-0.890884I$ $b=\ \ 0.1131480-0.0174250I$	$-3.00626+4.83883I$	$-4.00000-6.35067I$
$u=-0.061251+0.594784I$ $a=-0.417558+1.055680I$ $b=\ \ 0.192238-0.029719I$	$1.20430+1.95319I$	$2.65095-4.43332I$
$u=-0.061251-0.594784I$ $a=-0.417558-1.055680I$ $b=\ \ 0.192238+0.029719I$	$1.20430-1.95319I$	$2.65095+4.43332I$
$u=-1.365440+0.327458I$ $a=-0.843246+0.605113I$ $b=-0.369076+1.327770I$	$-7.31262+3.36514I$	0
$u=-1.365440-0.327458I$ $a=-0.843246-0.605113I$ $b=-0.369076-1.327770I$	$-7.31262-3.36514I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.408360+0.089637I$ $a = 0.48516+1.53710I$ $b = -0.507713+1.049310I$	$-5.54125-2.92041I$	0
$u = 1.408360-0.089637I$ $a = 0.48516-1.53710I$ $b = -0.507713-1.049310I$	$-5.54125+2.92041I$	0
$u = -1.45723+0.02361I$ $a = -0.27899-2.06538I$ $b = 0.43890-1.34446I$	$-7.45168+2.35722I$	0
$u = -1.45723-0.02361I$ $a = -0.27899+2.06538I$ $b = 0.43890+1.34446I$	$-7.45168-2.35722I$	0
$u = -0.528921$ $a = 0.210332$ $b = -0.547836$	-1.28259	-8.18110
$u = 1.48529$ $a = 0.507416$ $b = 1.07105$	-7.77665	0
$u = -0.269231+0.414079I$ $a = -1.058820+0.163044I$ $b = 0.294017+0.615100I$	$-0.254814+1.145580I$	$-3.55444-5.99940I$
$u = -0.269231-0.414079I$ $a = -1.058820-0.163044I$ $b = 0.294017-0.615100I$	$-0.254814-1.145580I$	$-3.55444+5.99940I$
$u = -1.51707+0.17151I$ $a = -0.106102+1.396060I$ $b = 0.998525+0.969650I$	$-10.27140+6.63615I$	0
$u = -1.51707-0.17151I$ $a = -0.106102-1.396060I$ $b = 0.998525-0.969650I$	$-10.27140-6.63615I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.52395 + 0.30793I$ $a = -1.14837 - 1.87775I$ $b = 0.37644 - 1.80124I$	$-19.3511 - 12.3559I$	0
$u = 1.52395 - 0.30793I$ $a = -1.14837 + 1.87775I$ $b = 0.37644 + 1.80124I$	$-19.3511 + 12.3559I$	0
$u = -1.53293 + 0.26223I$ $a = 1.00320 - 2.03551I$ $b = -0.19546 - 1.80459I$	$-15.6450 + 6.2232I$	0
$u = -1.53293 - 0.26223I$ $a = 1.00320 + 2.03551I$ $b = -0.19546 + 1.80459I$	$-15.6450 - 6.2232I$	0
$u = 1.58427 + 0.22493I$ $a = -0.76018 - 1.95860I$ $b = 0.01038 - 1.96358I$	$18.6754 - 0.6900I$	0
$u = 1.58427 - 0.22493I$ $a = -0.76018 + 1.95860I$ $b = 0.01038 + 1.96358I$	$18.6754 + 0.6900I$	0
$u = 0.214741 + 0.039322I$ $a = 4.08599 - 2.69357I$ $b = -0.103979 - 1.039010I$	$-1.75783 - 2.05331I$	$-11.26159 + 3.08731I$
$u = 0.214741 - 0.039322I$ $a = 4.08599 + 2.69357I$ $b = -0.103979 + 1.039010I$	$-1.75783 + 2.05331I$	$-11.26159 - 3.08731I$

II. $\boldsymbol{I_2^u = \langle -u^5 + 2u^3 + b - u,\ -u^5 + 2u^4 + \cdots + a^2 - a,\ u^6 - 3u^4 + 2u^2 + 1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^2 + y + 1)^6$
c_2, c_6, c_8	$(y^2 - y + 1)^6$
c_3	$y^{12} + 10y^{11} + \cdots - 40y + 1$
c_4, c_9	$(y + 1)^{12}$
c_5, c_{10}, c_{11}	$(y^3 - 3y^2 + 2y + 1)^4$
c_7	$y^{12} - 14y^{11} + \cdots + 14y + 1$
c_{12}	$(y^3 - y^2 + 2y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.307140 + 0.215080I$ $a = 0.900631 + 0.022679I$ $b = 1.000000I$	$-4.66906 - 4.85801I$	$-9.50976 + 6.44355I$
$u = 1.307140 + 0.215080I$ $a = -0.073266 + 1.169920I$ $b = 1.000000I$	$-4.66906 - 0.79824I$	$-9.50976 - 0.48465I$
$u = 1.307140 - 0.215080I$ $a = 0.900631 - 0.022679I$ $b = -1.000000I$	$-4.66906 + 4.85801I$	$-9.50976 - 6.44355I$
$u = 1.307140 - 0.215080I$ $a = -0.073266 - 1.169920I$ $b = -1.000000I$	$-4.66906 + 0.79824I$	$-9.50976 + 0.48465I$
$u = -1.307140 + 0.215080I$ $a = -1.56299 + 0.58496I$ $b = 1.000000I$	$-4.66906 + 0.79824I$	$-9.50976 + 0.48465I$
$u = -1.307140 + 0.215080I$ $a = -0.58909 + 1.73220I$ $b = 1.000000I$	$-4.66906 + 4.85801I$	$-9.50976 - 6.44355I$
$u = -1.307140 - 0.215080I$ $a = -1.56299 - 0.58496I$ $b = -1.000000I$	$-4.66906 - 0.79824I$	$-9.50976 - 0.48465I$
$u = -1.307140 - 0.215080I$ $a = -0.58909 - 1.73220I$ $b = -1.000000I$	$-4.66906 - 4.85801I$	$-9.50976 + 6.44355I$
$u = 0.569840I$ $a = 0.662359 + 0.392362I$ $b = 1.000000I$	$-0.53148 - 2.02988I$	$-2.98049 + 3.46410I$
$u = 0.569840I$ $a = 0.66236 - 1.90212I$ $b = 1.000000I$	$-0.53148 + 2.02988I$	$-2.98049 - 3.46410I$

	Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$-\,0.569840I$		
$a =$	$0.662359 - 0.392362I$	$-0.53148 + 2.02988I$	$-2.98049 - 3.46410I$
$b =$	$-\,1.000000I$		
$u =$	$-\,0.569840I$		
$a =$	$0.66236 + 1.90212I$	$-0.53148 - 2.02988I$	$-2.98049 + 3.46410I$
$b =$	$-\,1.000000I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{38}+25u^{37}+\cdots+101u+25)$
c_2, c_6	$((u^4-u^2+1)^3)(u^{38}-u^{37}+\cdots+11u-5)$
c_3	$(u^{12}+6u^{11}+\cdots-2u+1)(u^{38}-5u^{37}+\cdots-3u+1)$
c_4, c_9	$((u^2+1)^6)(u^{38}-u^{37}+\cdots+23u-1)$
c_5, c_{10}, c_{11}	$((u^6-3u^4+2u^2+1)^2)(u^{38}-u^{37}+\cdots+7u-1)$
c_7	$(u^{12}-12u^{11}+\cdots-2u+1)(u^{38}-5u^{37}+\cdots-40603u+13213)$
c_8	$((u^4-u^2+1)^3)(u^{38}-3u^{37}+\cdots-u+5)$
c_{12}	$((u^3+u^2-1)^4)(u^{38}+3u^{37}+\cdots-17u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{38}-17y^{37}+\cdots-41901y+625)$
c_2, c_6	$((y^2-y+1)^6)(y^{38}-25y^{37}+\cdots-101y+25)$
c_3	$(y^{12}+10y^{11}+\cdots-40y+1)(y^{38}-65y^{37}+\cdots+205y+1)$
c_4, c_9	$((y+1)^{12})(y^{38}+53y^{37}+\cdots-195y+1)$
c_5, c_{10}, c_{11}	$((y^3-3y^2+2y+1)^4)(y^{38}-39y^{37}+\cdots-39y+1)$
c_7	$(y^{12}-14y^{11}+\cdots+14y+1)$ $\cdot(y^{38}-49y^{37}+\cdots-3299858645y+174583369)$
c_8	$((y^2-y+1)^6)(y^{38}+59y^{37}+\cdots-201y+25)$
c_{12}	$((y^3-y^2+2y-1)^4)(y^{38}+57y^{37}+\cdots-183y+1)$