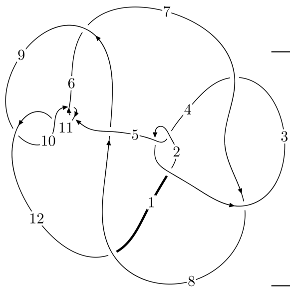
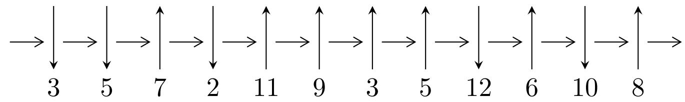
$12n_{0160}$ ($K12n_{0160}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle -3u^{34} + 6u^{33} + \cdots + b - 3,\ 3u^{34} - 3u^{33} + \cdots + a + 1,\ u^{35} - 2u^{34} + \cdots - 2u^2 - 1 \rangle$
$I_2^u = \langle -u^7 - u^5 - 2u^3 + u^2 + b - u,\ -u^6 - u^4 - 2u^2 + a + u - 1,\ u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1 \rangle$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 44 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. $I_1^u = \langle -3u^{34}+6u^{33}+\cdots+b-3,\ 3u^{34}-3u^{33}+\cdots+a+1,\ u^{35}-2u^{34}+\cdots-2u^2-1\rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -3u^{34}+3u^{33}+\cdots-2u-1 \\ 3u^{34}-6u^{33}+\cdots+u+3 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2u^{34}+2u^{33}+\cdots-2u-1 \\ 2u^{34}-4u^{33}+\cdots+7u^2+2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{20}-3u^{18}-7u^{16}-10u^{14}-10u^{12}-7u^{10}-u^8+2u^6+3u^4+u^2-1 \\ u^{22}+4u^{20}+\cdots+2u^4+u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{34}+u^{33}+\cdots+3u^2-3u \\ u^{34}-2u^{33}+\cdots+4u^2+1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^4+u^2+1 \\ -u^4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^9+2u^7+3u^5+2u^3+u \\ -u^9-u^7-u^5+u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^8-u^6-u^4+1 \\ u^{10}+2u^8+3u^6+2u^4+u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{34}-2u^{33}+24u^{32}-8u^{31}+92u^{30}-18u^{29}+247u^{28}-13u^{27}+523u^{26}+50u^{25}+904u^{24}+221u^{23}+1321u^{22}+524u^{21}+1669u^{20}+895u^{19}+1845u^{18}+1222u^{17}+1810u^{16}+1360u^{15}+1576u^{14}+1256u^{13}+1216u^{12}+958u^{11}+820u^{10}+594u^9+460u^8+299u^7+205u^6+110u^5+63u^4+27u^3+5u^2+4u-2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} + 52u^{34} + \cdots + 32u + 1$
c_2, c_4	$u^{35} - 10u^{34} + \cdots + 12u - 1$
c_3, c_7	$u^{35} - u^{34} + \cdots - 1024u - 512$
c_5, c_{10}	$u^{35} - 2u^{34} + \cdots - 2u^2 - 1$
c_6	$u^{35} + 10u^{34} + \cdots - 206u - 31$
c_8	$u^{35} - 2u^{34} + \cdots - 412u - 241$
c_9, c_{11}	$u^{35} + 12u^{34} + \cdots - 4u - 1$
c_{12}	$u^{35} + 36u^{33} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} - 128y^{34} + \cdots + 420y - 1$
c_2, c_4	$y^{35} - 52y^{34} + \cdots + 32y - 1$
c_3, c_7	$y^{35} + 57y^{34} + \cdots + 2621440y - 262144$
c_5, c_{10}	$y^{35} + 12y^{34} + \cdots - 4y - 1$
c_6	$y^{35} + 12y^{34} + \cdots - 10140y - 961$
c_8	$y^{35} + 12y^{34} + \cdots - 1095024y - 58081$
c_9, c_{11}	$y^{35} + 24y^{34} + \cdots - 16y - 1$
c_{12}	$y^{35} + 72y^{34} + \cdots - 4y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.737220 + 0.648144I$ $a = \quad 1.74315 - 1.73886I$ $b = -2.41211 + 0.15211I$	$-0.58521 - 2.05799I$	$0.94554 + 1.75994I$
$u = \quad 0.737220 - 0.648144I$ $a = \quad 1.74315 + 1.73886I$ $b = -2.41211 - 0.15211I$	$-0.58521 + 2.05799I$	$0.94554 - 1.75994I$
$u = \quad 0.101201 + 0.967150I$ $a = -0.223398 - 0.378771I$ $b = -0.343721 + 0.254391I$	$-2.08113 + 1.70930I$	$0.77222 - 3.96512I$
$u = \quad 0.101201 - 0.967150I$ $a = -0.223398 + 0.378771I$ $b = -0.343721 - 0.254391I$	$-2.08113 - 1.70930I$	$0.77222 + 3.96512I$
$u = \quad 0.678017 + 0.796351I$ $a = -1.63124 - 0.26748I$ $b = \quad 0.89300 + 1.48039I$	$1.40101 + 2.20417I$	$3.92249 - 4.39905I$
$u = \quad 0.678017 - 0.796351I$ $a = -1.63124 + 0.26748I$ $b = \quad 0.89300 - 1.48039I$	$1.40101 - 2.20417I$	$3.92249 + 4.39905I$
$u = -0.030827 + 1.048300I$ $a = \quad 0.987634 + 0.536168I$ $b = \quad 0.592511 - 1.018810I$	$-6.06605 - 1.60204I$	$-6.58193 + 1.49646I$
$u = -0.030827 - 1.048300I$ $a = \quad 0.987634 - 0.536168I$ $b = \quad 0.592511 + 1.018810I$	$-6.06605 + 1.60204I$	$-6.58193 - 1.49646I$
$u = \quad 0.838636 + 0.644982I$ $a = -0.76138 + 2.67985I$ $b = \quad 2.36698 - 1.75635I$	$-10.48130 - 6.27093I$	$0.94475 + 1.94965I$
$u = \quad 0.838636 - 0.644982I$ $a = -0.76138 - 2.67985I$ $b = \quad 2.36698 + 1.75635I$	$-10.48130 + 6.27093I$	$0.94475 - 1.94965I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.781183+0.727089I$ $a=-0.051887+0.135238I$ $b=\ \ 0.057797+0.143372I$	$3.78767+1.08265I$	$9.73080-0.41634I$
$u=-0.781183-0.727089I$ $a=-0.051887-0.135238I$ $b=\ \ 0.057797-0.143372I$	$3.78767-1.08265I$	$9.73080+0.41634I$
$u=-0.632282+0.665654I$ $a=\ \ 0.152240-0.624708I$ $b=-0.319580-0.496331I$	$-1.37778-0.83460I$	$0.396623+0.019030I$
$u=-0.632282-0.665654I$ $a=\ \ 0.152240+0.624708I$ $b=-0.319580+0.496331I$	$-1.37778+0.83460I$	$0.396623-0.019030I$
$u=-0.121893+1.112050I$ $a=-1.224660-0.088950I$ $b=-0.248194+1.351040I$	$-17.1086-5.6948I$	$-5.50780+3.28741I$
$u=-0.121893-1.112050I$ $a=-1.224660+0.088950I$ $b=-0.248194-1.351040I$	$-17.1086+5.6948I$	$-5.50780-3.28741I$
$u=\ \ 0.660177+0.922712I$ $a=\ \ 0.183127-1.365060I$ $b=-1.38045+0.73221I$	$1.00684+2.97409I$	$3.31167-1.92596I$
$u=\ \ 0.660177-0.922712I$ $a=\ \ 0.183127+1.365060I$ $b=-1.38045-0.73221I$	$1.00684-2.97409I$	$3.31167+1.92596I$
$u=-0.518083+1.034140I$ $a=-0.493003+0.558538I$ $b=\ \ 0.322191+0.799204I$	$-14.7020-1.1608I$	$-3.27320+2.65041I$
$u=-0.518083-1.034140I$ $a=-0.493003-0.558538I$ $b=\ \ 0.322191-0.799204I$	$-14.7020+1.1608I$	$-3.27320-2.65041I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.645286 + 0.989574I$ $a = 0.110285 - 0.455498I$ $b = -0.379583 - 0.403061I$	$-2.35824 - 4.23049I$	$-1.64611 + 4.83730I$
$u = -0.645286 - 0.989574I$ $a = 0.110285 + 0.455498I$ $b = -0.379583 + 0.403061I$	$-2.35824 + 4.23049I$	$-1.64611 - 4.83730I$
$u = 0.801511 + 0.879701I$ $a = 1.77931 + 2.04057I$ $b = 0.36896 - 3.20080I$	$-6.25391 + 2.99402I$	$1.83860 - 2.69092I$
$u = 0.801511 - 0.879701I$ $a = 1.77931 - 2.04057I$ $b = 0.36896 + 3.20080I$	$-6.25391 - 2.99402I$	$1.83860 + 2.69092I$
$u = 0.677300 + 1.008060I$ $a = -2.02100 + 1.40176I$ $b = 2.78188 + 1.08787I$	$-1.65574 + 7.47330I$	$-0.96819 - 6.53783I$
$u = 0.677300 - 1.008060I$ $a = -2.02100 - 1.40176I$ $b = 2.78188 - 1.08787I$	$-1.65574 - 7.47330I$	$-0.96819 + 6.53783I$
$u = -0.718651 + 0.985154I$ $a = 0.0048122 + 0.1319630I$ $b = 0.133462 + 0.090095I$	$3.00104 - 6.75637I$	$7.73187 + 5.52332I$
$u = -0.718651 - 0.985154I$ $a = 0.0048122 - 0.1319630I$ $b = 0.133462 - 0.090095I$	$3.00104 + 6.75637I$	$7.73187 - 5.52332I$
$u = -0.715979 + 0.271293I$ $a = 0.797619 + 0.724413I$ $b = 0.767607 + 0.302276I$	$-12.50660 - 3.28011I$	$0.69781 + 2.19401I$
$u = -0.715979 - 0.271293I$ $a = 0.797619 - 0.724413I$ $b = 0.767607 - 0.302276I$	$-12.50660 + 3.28011I$	$0.69781 - 2.19401I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.715761 + 1.041330I$ $a = 2.74535 - 0.31064I$ $b = -2.28849 - 2.63647I$	$-11.6867 + 12.0828I$	$-0.83819 - 6.56234I$
$u = 0.715761 - 1.041330I$ $a = 2.74535 + 0.31064I$ $b = -2.28849 + 2.63647I$	$-11.6867 - 12.0828I$	$-0.83819 + 6.56234I$
$u = -0.268541 + 0.381611I$ $a = 0.20602 - 1.57922I$ $b = -0.547327 - 0.502704I$	$-1.72551 - 0.80413I$	$-2.43242 + 1.76310I$
$u = -0.268541 - 0.381611I$ $a = 0.20602 + 1.57922I$ $b = -0.547327 + 0.502704I$	$-1.72551 + 0.80413I$	$-2.43242 - 1.76310I$
$u = 0.445806$ $a = -0.605941$ $b = 0.270132$	0.870658	11.9110

II. $\boldsymbol{I_2^u = \langle -u^7 - u^5 - 2u^3 + u^2 + b - u,\ -u^6 - u^4 - 2u^2 + a + u - 1,\ u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1 \rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^6 + u^4 + 2u^2 - u + 1 \\ u^7 + u^5 + 2u^3 - u^2 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^6 + u^4 + 2u^2 + 1 \\ u^7 + u^5 + u^3 - u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ -u^3 - u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^6 + u^4 + 2u^2 - u + 1 \\ u^7 + u^5 + 2u^3 - u^2 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^8 - u^6 - u^4 + 1 \\ u^8 + u^7 + u^6 + 2u^5 + u^4 + 2u^3 + 2u - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^8 - u^6 - u^4 + 1 \\ u^8 + u^7 + u^6 + 2u^5 + u^4 + 2u^3 + 2u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^7 + 4u^6 + 3u^5 + 3u^4 + 6u^3 + 3u^2 - u + 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_7	u^9
c_4	$(u+1)^9$
c_5	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_6	$u^9 + 5u^8 + 12u^7 + 15u^6 + 9u^5 - u^4 - 4u^3 - 2u^2 + u + 1$
c_8, c_{12}	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_9	$u^9 - 3u^8 + 8u^7 - 13u^6 + 17u^5 - 17u^4 + 12u^3 - 6u^2 + u + 1$
c_{10}	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_{11}	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_7	y^9
c_5, c_{10}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_6	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$
c_8, c_{12}	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_9, c_{11}	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.140343 + 0.966856I$ $a = -0.770941 - 0.258974I$ $b = 0.142194 - 0.781734I$	$-3.42837 + 2.09337I$	$-5.30979 - 3.87975I$
$u = 0.140343 - 0.966856I$ $a = -0.770941 + 0.258974I$ $b = 0.142194 + 0.781734I$	$-3.42837 - 2.09337I$	$-5.30979 + 3.87975I$
$u = 0.628449 + 0.875112I$ $a = -0.147409 - 0.367985I$ $b = 0.229389 - 0.360259I$	$-1.02799 + 2.45442I$	$0.49381 - 3.35442I$
$u = 0.628449 - 0.875112I$ $a = -0.147409 + 0.367985I$ $b = 0.229389 + 0.360259I$	$-1.02799 - 2.45442I$	$0.49381 + 3.35442I$
$u = -0.796005 + 0.733148I$ $a = 0.24323 - 1.73417I$ $b = 1.07779 + 1.55873I$	$2.72642 + 1.33617I$	$1.53709 - 1.22905I$
$u = -0.796005 - 0.733148I$ $a = 0.24323 + 1.73417I$ $b = 1.07779 - 1.55873I$	$2.72642 - 1.33617I$	$1.53709 + 1.22905I$
$u = -0.728966 + 0.986295I$ $a = 1.62529 - 0.46000I$ $b = -0.73109 + 1.93833I$	$1.95319 - 7.08493I$	$0.02676 + 6.64241I$
$u = -0.728966 - 0.986295I$ $a = 1.62529 + 0.46000I$ $b = -0.73109 - 1.93833I$	$1.95319 + 7.08493I$	$0.02676 - 6.64241I$
$u = 0.512358$ $a = 1.09967$ $b = 0.563422$	-0.446489	2.50430

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{35}+52u^{34}+\cdots+32u+1)$
c_2	$((u-1)^9)(u^{35}-10u^{34}+\cdots+12u-1)$
c_3, c_7	$u^9(u^{35}-u^{34}+\cdots-1024u-512)$
c_4	$((u+1)^9)(u^{35}-10u^{34}+\cdots+12u-1)$
c_5	$(u^9-u^8+\cdots+u+1)(u^{35}-2u^{34}+\cdots-2u^2-1)$
c_6	$(u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1)$ $\cdot(u^{35}+10u^{34}+\cdots-206u-31)$
c_8	$(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{35}-2u^{34}+\cdots-412u-241)$
c_9	$(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{35}+12u^{34}+\cdots-4u-1)$
c_{10}	$(u^9+u^8+\cdots+u-1)(u^{35}-2u^{34}+\cdots-2u^2-1)$
c_{11}	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{35}+12u^{34}+\cdots-4u-1)$
c_{12}	$(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{35}+36u^{33}+\cdots-2u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{35}-128y^{34}+\cdots+420y-1)$
c_2, c_4	$((y-1)^9)(y^{35}-52y^{34}+\cdots+32y-1)$
c_3, c_7	$y^9(y^{35}+57y^{34}+\cdots+2621440y-262144)$
c_5, c_{10}	$(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{35}+12y^{34}+\cdots-4y-1)$
c_6	$(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^{35}+12y^{34}+\cdots-10140y-961)$
c_8	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{35}+12y^{34}+\cdots-1095024y-58081)$
c_9, c_{11}	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot(y^{35}+24y^{34}+\cdots-16y-1)$
c_{12}	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{35}+72y^{34}+\cdots-4y-1)$