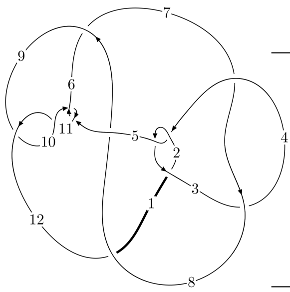
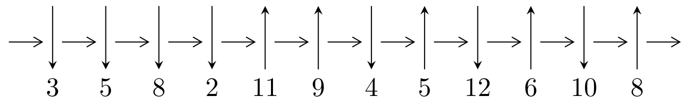
$12n_{0162}$ ($K12n_{0162}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2u^{38} - 4u^{37} + \cdots + b - 2,\ -2u^{38} + 2u^{37} + \cdots + a + 3,\ u^{39} - 2u^{38} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle -u^7 - u^5 - u^3 + u^2 + b,\ -u^6 - u^4 - 2u^2 + a - 1,\ u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1 \rangle$$

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

$$I^u_1 = \langle 2u^{38}-4u^{37}+\cdots+b-2,\ -2u^{38}+2u^{37}+\cdots+a+3,\ u^{39}-2u^{38}+\cdots+2u+1\rangle$$

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} 2u^{38}-2u^{37}+\cdots+3u-3 \\ -2u^{38}+4u^{37}+\cdots+6u+2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 3u^{38}-3u^{37}+\cdots+3u-3 \\ -3u^{38}+6u^{37}+\cdots+9u+3 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^{38}-u^{37}+\cdots+3u-2 \\ -u^{38}+2u^{37}+\cdots+4u+1 \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -4u^{38}+6u^{37}-28u^{36}+32u^{35}-120u^{34}+122u^{33}-369u^{32}+323u^{31}-893u^{30}+680u^{29}-1762u^{28}+1139u^{27}-2917u^{26}+1542u^{25}-4078u^{24}+1638u^{23}-4860u^{22}+1250u^{21}-4902u^{20}+407u^{19}-4141u^{18}-578u^{17}-2860u^{16}-1302u^{15}-1518u^{14}-1484u^{13}-540u^{12}-1166u^{11}-62u^{10}-622u^{9}+52u^8-188u^7+8u^6+28u^5-32u^4+47u^3-17u^2+8u-6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39} + 4u^{38} + \cdots + 6u + 1$
c_2, c_4	$u^{39} - 10u^{38} + \cdots - 10u + 1$
c_3, c_7	$u^{39} + u^{38} + \cdots + 1024u + 512$
c_5, c_{10}	$u^{39} - 2u^{38} + \cdots + 2u + 1$
c_6	$u^{39} + 10u^{38} + \cdots + 1722u + 193$
c_8	$u^{39} - 2u^{38} + \cdots + 2u + 1$
c_9, c_{11}	$u^{39} + 12u^{38} + \cdots + 18u - 1$
c_{12}	$u^{39} + 8u^{38} + \cdots + 1136340u - 591991$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} + 72y^{38} + \cdots + 42y - 1$
c_2, c_4	$y^{39} - 4y^{38} + \cdots + 6y - 1$
c_3, c_7	$y^{39} + 57y^{38} + \cdots - 3145728y - 262144$
c_5, c_{10}	$y^{39} + 12y^{38} + \cdots + 18y - 1$
c_6	$y^{39} - 20y^{38} + \cdots + 882042y - 37249$
c_8	$y^{39} - 52y^{38} + \cdots + 18y - 1$
c_9, c_{11}	$y^{39} + 32y^{38} + \cdots + 438y - 1$
c_{12}	$y^{39} - 112y^{38} + \cdots + 32115490504994y - 350453344081$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.120246 + 1.009060I$ $a = 0.245784 - 1.091900I$ $b = 0.063842 + 0.428041I$	$-2.16299 + 2.79564I$	$-3.22234 - 5.02358I$
$u = 0.120246 - 1.009060I$ $a = 0.245784 + 1.091900I$ $b = 0.063842 - 0.428041I$	$-2.16299 - 2.79564I$	$-3.22234 + 5.02358I$
$u = -0.784016 + 0.696729I$ $a = 1.54879 + 0.28318I$ $b = -1.30776 + 1.31337I$	$3.90920 + 2.54093I$	$3.58364 - 2.83796I$
$u = -0.784016 - 0.696729I$ $a = 1.54879 - 0.28318I$ $b = -1.30776 - 1.31337I$	$3.90920 - 2.54093I$	$3.58364 + 2.83796I$
$u = 0.596432 + 0.887614I$ $a = -0.515948 - 0.665357I$ $b = -0.671166 + 1.160530I$	$0.19918 + 2.33431I$	$0.66043 - 2.69942I$
$u = 0.596432 - 0.887614I$ $a = -0.515948 + 0.665357I$ $b = -0.671166 - 1.160530I$	$0.19918 - 2.33431I$	$0.66043 + 2.69942I$
$u = -0.293261 + 1.042380I$ $a = 0.412665 + 0.456169I$ $b = 0.948855 + 0.872815I$	$7.61588 + 0.58808I$	$-2.37285 + 1.24200I$
$u = -0.293261 - 1.042380I$ $a = 0.412665 - 0.456169I$ $b = 0.948855 - 0.872815I$	$7.61588 - 0.58808I$	$-2.37285 - 1.24200I$
$u = -0.248492 + 1.061350I$ $a = -1.15816 - 0.97210I$ $b = -0.264108 + 0.521722I$	$7.32167 - 7.23317I$	$-2.97850 + 5.46930I$
$u = -0.248492 - 1.061350I$ $a = -1.15816 + 0.97210I$ $b = -0.264108 - 0.521722I$	$7.32167 + 7.23317I$	$-2.97850 - 5.46930I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.727925 + 0.815935I$ $a = 1.03158 - 1.88331I$ $b = -2.28549 + 0.08879I$	$1.36861 + 0.67210I$	$-0.227831 - 0.290291I$
$u = 0.727925 - 0.815935I$ $a = 1.03158 + 1.88331I$ $b = -2.28549 - 0.08879I$	$1.36861 - 0.67210I$	$-0.227831 + 0.290291I$
$u = 0.219912 + 0.863651I$ $a = -0.840864 - 0.340640I$ $b = -0.408735 + 0.084317I$	$-0.71566 + 1.83000I$	$-2.05496 - 5.14676I$
$u = 0.219912 - 0.863651I$ $a = -0.840864 + 0.340640I$ $b = -0.408735 - 0.084317I$	$-0.71566 - 1.83000I$	$-2.05496 + 5.14676I$
$u = -0.699877 + 0.873292I$ $a = -0.469502 + 0.267136I$ $b = -0.70229 - 1.61147I$	$-0.05262 - 2.68764I$	$1.74155 + 3.66223I$
$u = -0.699877 - 0.873292I$ $a = -0.469502 - 0.267136I$ $b = -0.70229 + 1.61147I$	$-0.05262 + 2.68764I$	$1.74155 - 3.66223I$
$u = -0.801951 + 0.791302I$ $a = -1.14040 - 0.96544I$ $b = 1.86997 + 0.11290I$	$5.59974 - 0.03074I$	$4.36542 + 0.32402I$
$u = -0.801951 - 0.791302I$ $a = -1.14040 + 0.96544I$ $b = 1.86997 - 0.11290I$	$5.59974 + 0.03074I$	$4.36542 - 0.32402I$
$u = 0.864121 + 0.732996I$ $a = -1.98825 + 1.82338I$ $b = 3.31808 + 0.25253I$	$14.7085 - 6.7067I$	$2.84933 + 2.28339I$
$u = 0.864121 - 0.732996I$ $a = -1.98825 - 1.82338I$ $b = 3.31808 - 0.25253I$	$14.7085 + 6.7067I$	$2.84933 - 2.28339I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.060322+0.863529I$ $a=\ \ 1.31866+0.55049I$ $b=-0.236777-1.257920I$	$-3.43952-0.92375I$	$-7.85826-1.02249I$
$u=-0.060322-0.863529I$ $a=\ \ 1.31866-0.55049I$ $b=-0.236777+1.257920I$	$-3.43952+0.92375I$	$-7.85826+1.02249I$
$u=\ \ 0.863742+0.759791I$ $a=\ \ 1.91967+0.29557I$ $b=-1.83974-1.49581I$	$15.2033+1.5546I$	$3.37626-1.94136I$
$u=\ \ 0.863742-0.759791I$ $a=\ \ 1.91967-0.29557I$ $b=-1.83974+1.49581I$	$15.2033-1.5546I$	$3.37626+1.94136I$
$u=\ \ 0.718483+0.920822I$ $a=-1.98095+0.84172I$ $b=\ \ 2.64227+1.17341I$	$1.04684+4.85277I$	$-1.08190-5.10627I$
$u=\ \ 0.718483-0.920822I$ $a=-1.98095-0.84172I$ $b=\ \ 2.64227-1.17341I$	$1.04684-4.85277I$	$-1.08190+5.10627I$
$u=-0.756351+0.955946I$ $a=\ \ 1.29073+0.97706I$ $b=-1.70884+0.75010I$	$5.09426-5.82741I$	$3.18362+5.23319I$
$u=-0.756351-0.955946I$ $a=\ \ 1.29073-0.97706I$ $b=-1.70884-0.75010I$	$5.09426+5.82741I$	$3.18362-5.23319I$
$u=-0.711811+0.997242I$ $a=-0.37938-1.46724I$ $b=\ \ 2.21221+0.85051I$	$3.00218-8.19358I$	$1.84671+8.19526I$
$u=-0.711811-0.997242I$ $a=-0.37938+1.46724I$ $b=\ \ 2.21221-0.85051I$	$3.00218+8.19358I$	$1.84671-8.19526I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.777121 + 1.000210I$ $a = -0.10510 + 1.98160I$ $b = 1.90838 - 0.99134I$	$14.4580 + 4.5482I$	$2.23048 - 2.92809I$
$u = 0.777121 - 1.000210I$ $a = -0.10510 - 1.98160I$ $b = 1.90838 + 0.99134I$	$14.4580 - 4.5482I$	$2.23048 + 2.92809I$
$u = 0.764056 + 1.013960I$ $a = 2.01030 - 1.76059I$ $b = -3.73540 - 0.89810I$	$13.8390 + 12.7651I$	$1.42561 - 7.10495I$
$u = 0.764056 - 1.013960I$ $a = 2.01030 + 1.76059I$ $b = -3.73540 + 0.89810I$	$13.8390 - 12.7651I$	$1.42561 + 7.10495I$
$u = -0.727545 + 0.029883I$ $a = 0.918981 + 0.363391I$ $b = -0.008973 + 1.054810I$	$10.90740 - 4.01643I$	$3.18279 + 2.27518I$
$u = -0.727545 - 0.029883I$ $a = 0.918981 - 0.363391I$ $b = -0.008973 - 1.054810I$	$10.90740 + 4.01643I$	$3.18279 - 2.27518I$
$u = 0.541767 + 0.138295I$ $a = -0.429515 + 0.451386I$ $b = 0.417940 + 0.509275I$	$1.42481 + 0.81540I$	$4.93808 - 2.26255I$
$u = 0.541767 - 0.138295I$ $a = -0.429515 - 0.451386I$ $b = 0.417940 - 0.509275I$	$1.42481 - 0.81540I$	$4.93808 + 2.26255I$
$u = -0.220361$ $a = -3.37818$ $b = -0.424531$	-1.26360	-9.17460

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^7 + 4u^6 + 5u^5 + 5u^4 + 10u^3 + 5u^2 + u - 1$

(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	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.140343 + 0.966856I$ $a = -0.630598 + 0.707882I$ $b = 0.392669 - 0.901894I$	$-3.42837 + 2.09337I$	$-7.72019 - 4.44592I$
$u = 0.140343 - 0.966856I$ $a = -0.630598 - 0.707882I$ $b = 0.392669 + 0.901894I$	$-3.42837 - 2.09337I$	$-7.72019 + 4.44592I$
$u = 0.628449 + 0.875112I$ $a = 0.481040 + 0.507127I$ $b = 0.79657 - 1.60206I$	$-1.02799 + 2.45442I$	$-7.83797 - 2.47153I$
$u = 0.628449 - 0.875112I$ $a = 0.481040 - 0.507127I$ $b = 0.79657 + 1.60206I$	$-1.02799 - 2.45442I$	$-7.83797 + 2.47153I$
$u = -0.796005 + 0.733148I$ $a = -0.552775 - 1.001020I$ $b = 1.094590 - 0.173964I$	$2.72642 + 1.33617I$	$1.031098 - 0.174453I$
$u = -0.796005 - 0.733148I$ $a = -0.552775 + 1.001020I$ $b = 1.094590 + 0.173964I$	$2.72642 - 1.33617I$	$1.031098 + 0.174453I$
$u = -0.728966 + 0.986295I$ $a = 0.896321 + 0.526299I$ $b = -1.74212 + 0.33916I$	$1.95319 - 7.08493I$	$-0.87316 + 5.18429I$
$u = -0.728966 - 0.986295I$ $a = 0.896321 - 0.526299I$ $b = -1.74212 - 0.33916I$	$1.95319 + 7.08493I$	$-0.87316 - 5.18429I$
$u = 0.512358$ $a = 1.61202$ $b = -0.0834351$	-0.446489	2.80040

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{39}+4u^{38}+\cdots+6u+1)$
c_2	$((u-1)^9)(u^{39}-10u^{38}+\cdots-10u+1)$
c_3, c_7	$u^9(u^{39}+u^{38}+\cdots+1024u+512)$
c_4	$((u+1)^9)(u^{39}-10u^{38}+\cdots-10u+1)$
c_5	$(u^9-u^8+\cdots+u+1)(u^{39}-2u^{38}+\cdots+2u+1)$
c_6	$(u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1)$ $\cdot(u^{39}+10u^{38}+\cdots+1722u+193)$
c_8	$(u^9+u^8+\cdots-u-1)(u^{39}-2u^{38}+\cdots+2u+1)$
c_9	$(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{39}+12u^{38}+\cdots+18u-1)$
c_{10}	$(u^9+u^8+\cdots+u-1)(u^{39}-2u^{38}+\cdots+2u+1)$
c_{11}	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{39}+12u^{38}+\cdots+18u-1)$
c_{12}	$(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{39}+8u^{38}+\cdots+1136340u-591991)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{39}+72y^{38}+\cdots+42y-1)$
c_2, c_4	$((y-1)^9)(y^{39}-4y^{38}+\cdots+6y-1)$
c_3, c_7	$y^9(y^{39}+57y^{38}+\cdots-3145728y-262144)$
c_5, c_{10}	$(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{39}+12y^{38}+\cdots+18y-1)$
c_6	$(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^{39}-20y^{38}+\cdots+882042y-37249)$
c_8	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{39}-52y^{38}+\cdots+18y-1)$
c_9, c_{11}	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot(y^{39}+32y^{38}+\cdots+438y-1)$
c_{12}	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{39}-112y^{38}+\cdots+32115490504994y-350453344081)$